Teacher Education in the 21st Century
Emerging Skills for a Changing World

Edited by Maria Jose Hernández-Serrano

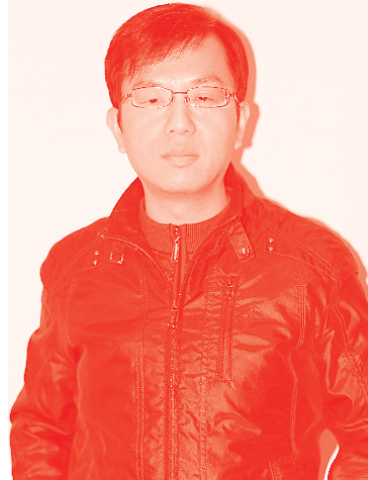# Teacher Education in the 21st Century - Emerging Skills for a Changing World

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Meet the editor

Maria Jose Hernández-Serrano, DPhil, is a tenured lecturer in the Department of Theory and History of Education, University of Salamanca, Spain, where she currently teaches Teacher Education. She is interested in the analysis of cognitive and affective processes, along with the study of social contingencies affecting educational institutions and requiring new skills for educators. Her publications are mainly of the educational process mediated by technologies and digital competences. Her new research interest is on the transdisciplinary application of brain-based research to educational contexts and virtual environments, and the neuropedagogical implications of the technologies on the development of the brain in younger students. Dr. Serrano is currently the deputy director of Institutional and International Relationships in de School of Education, University of Salamanca.

Contents

Preface

In our current, diverse, unstable, hyper-connected, and continuously evolving world, teachers need to be constantly equipped with pedagogical competences in their professional development. Situations like the COVID-19 pandemic present educational challenges that make us consider that the educational process must guarantee the accessible, personalized, and globalized learning of all students.

At the same time, we are witnessing a new era in the context of the Fourth Industrial Revolution, with some principles such as collaboration, higher-order thinking skills, or interdependence, which are guiding the innovation in several areas, with consequences for the training of future generations and thus for the teachers who are training them. The adaptability of Teacher Education is thus key in responding to constantly emerging social demands.

When considering the literature referring to competences labelled twenty-first-century skills, they have been connected to digital imperatives from economic developments to civic and prosocial skills for effective participation and collaboration in society. This book is considering together the digital competences (including information, media, and technological literacy) with other non-technology-driven skills (initiative, flexibility, creativity, critical thinking) along with moral skills for effective training in social values required in our changing societies (cross-cultural equity, tolerance, emotional comprehension, and responsibility to others and the environment).

From a theoretical and practical perspective, this book offers a reference framework of innovative aims and urges for a twenty-first-century teacher. It covers four areas with present and future challenges that teachers are facing worldwide. The first area focuses on digital environments, which are no longer complementary spaces to the classroom, but rather are environments for personalization of the educational process with new forms of participation, collaboration, flexibility, access, production, and evaluation of learning.

The second area includes new educational theories and pedagogical interactions for the adaptation to new challenges, considering the impacts on the professional transformation of future teachers.

The third area considers the recurrent issue of citizenship education inside school environments, since teachers prepare students for and depend on social positive contexts, they must manage different conflicts, dealing with hate and violent behaviors, requiring models of prevention and promotion of positive and solidary relationships.

Finally, the fourth area examines multiple diversity issues, ranging from functional to ethical, by providing teachers with ways to design educational processes based on reducing distances from the difference, able to recognize and avoid exclusion or prejudices of students.

These areas constitute the four main sections of the book, which contains twenty chapters from authors worldwide.

The first section "Digital Evolution for Flexible and Collaborative Learning Environments" includes chapters dealing with the most noteworthy issues brought by digitalization, such as the chapter on the digital gap that presents a comparative international study in Jordan, New Zealand, and Norway (Chapter 1 by Steinar Thorvaldsen and Siri Sollied Madsen), and chapters on methodologies for remote support and a model revision for teachers' sophisticated knowledge (Chapter 2 by Laura Sara Agrati), a comparison between two media and information curriculums, UNESCO and Alfamed, with the required literacy skills for Teacher Education (Chapter 3 by Paula Renés-Arellano, Ignacio Aguaded and Maria Jose Hernandez-Serrano), the limitation of deep learning and critical thinking skills influenced by digitalization (Chapter 4 by Siri Sollied Madsen, Steinar Thorvaldsen and Sissel Sollied), and a proposed model for virtual teaching contextualized in Kenia schools (Chapter 5 by Catherine Adhiambo Amimo).

The second section "Pedagogical Interactions and Professional Transformation" collects chapters on rethinking pedagogies for supporting learner requirements within the models and standards for education (Chapter 6 by Joshua C. Elliott and Craig S. Tunks), pedagogical continuities and sustainability teaching (Chapter 7, by Rachel Farrell and Ciaran Sugrue), the role of learner perspective in the curriculum transformation in South Africa (Chapter 8 by Mamsi Ethel Khuzwayo and Kwanele Booi), the need for self-study research in Teacher Education (Chapter 9 by Kåre Hauge), and the non-academic capabilities of pre-service teachers during remote teaching in Australia (Chapter 10 by Ondine Jayne Bradbury, Tatainia Stewart, Anabelle Barker and Jessica Rowe).

The third section "Citizenship Education, Managing Conflicts and Sustainable Development" brings experiences in civic education with chapters on the Dialogos Way of dialogic learning and teaching in Norway (Chapter 11 by Eirik Hæreid Marcussen, Michael Weiss, and Guro Hansen Helskog), the critical inquiry-based learning method for elementary schools in Canada (Chapter 12 by Yiola Cleovoulou), and the Green Pedagogy for sustainable skills in Norway and Austria (Chapter 13 by Anne Fox and Christine Wogowitsch). In addition, the section includes chapters detailing two models for dealing with conflict situations, both developed in the United States: the Trauma-sensitive innovations for teaching with intention (Chapter 14 by Christian Scannell) and the INSIGHT intervention for managing temperament in early education (Chapter 15 by Martinique Ann Sealy, Kathleen Moritz Rudasill, Jentry S. Barrett, Jungwon Eum, Nicole Adams, Angela Hinrichs, and Sandee McClowry).

The fourth section "Sensitizing on Diversity, Multiculturalism and Inclusion" introduces actions for helping teachers build more inclusive classrooms with chapters on promoting LGTB+ in early childhood education (Chapter 16 by Adam S. Kennedy), cultural diversity for deconstructing social prejudices (Chapter 17 by Jesus Jaime-Diaz and Josie Méndez-Negrete), sustaining quality inclusion of students with disabilities (Chapter 18 by Sara Movahedazarhouligh), and linguistic diversity in the context of students' assessment (Chapter 19 by Helena Reierstam and Meeri Hellstén). The final chapter in this section presents a proposal for action research on diversity by proposing recommendations for teacher education policies and teacher educators (Chapter 20 by Catherine Lammert).

In sum, the book presents a reflective analysis of the pedagogical hubs of a changing world, considering the most fundamental areas of the current contingencies in education. It revisits the concept of quality of teaching and learning and presents some principles, methods, and models.

I am grateful to all the chapter authors for their active collaboration in this book project. They have come together to produce a comprehensive reference manual for Teacher Education, considering emerging skills and new requirements in a changing world.

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Section 1

Digital Evolution for Flexible and Collaborative Learning Environments

Chapter 1

Decoding the Digital Gap in Teacher Education: Three Perspectives across the Globe

Steinar Thorvaldsen and Siri Sollied Madsen

Abstract

Educational use of technology is regularly assessed, and results often show a gap between educational policies and what is actually practiced. This chapter will help clarify how teacher educators experience the changing educational contexts due to the digital revolution, how their meaning-making shifts, and how outside forces influence those processes. The results are based on comparative international studies. Central for this study is practitioners' professional digital competence, their attitudes towards digital technology and the use of digital technology in education. We found that the influence and contribution of digital practice is carried out quite differently across the globe. Our research questions were: How do practitioners experience teaching in a rapidly changing context? How do attitudes change due to top-down governing of education? and What motivates teacher educators to implement digital technology?

Keywords: professional digital competences, digital attitudes, educators, digital gap, theory of action, political governing

1. Introduction

Societies are gradually becoming a world of digitally rich environments, which includes classroom practice, home equipment and private pocket devices. Digital technologies are deeply transforming what it means to be literate, and digital competence is considered a vital aspect of education that organizations should systematically improve [1]. Educational technologies have brought about many changes in the teaching and learning environment in our schools. While application of appropriate technological processes and the use of ICT facilitates learning, there is an ongoing debate about the usefulness of technology. This chapter attempts to illuminate some of the tensions in this debate.

The global situation within higher education changed drastically in 2020. A public survey in Europe on the impact of the Covid-19 crisis found these results [2]:

- 60% of the respondents had not used online learning before the crisis.

- Over 60% felt that they had improved their digital skills during the crisis and more than 50% of respondents want to do more.

- 95% consider that the Covid-19 crisis marks a point of no return for how technology is used in education and training.

The respondents also said that online learning resources and content need to be more relevant, interactive and easy to use. Preparing teacher students to use ICT is an enduring focus in teacher education, an issue that has been accelerated by the school closures during the Covid-19 crisis and the transfer to remote teaching. The new European Digital Education Action Plan (2021–2027) [2] outlines the European Commission's vision for high-quality, inclusive and accessible digital education in Europe. It is a call for action towards stronger cooperation at the European level to learn from the Covid-19 pandemic, during which technology is being used on an unprecedented scale in education and training, and make education and training systems fit for the digital age. The new action plan has two strategic priorities: (a) fostering the development of a high-performing digital education ecosystem and (b) enhancing digital skills and competences for the digital transformation.

In this situation, it is of great importance to understand academics' perceptions and professional usage of digital technologies in higher education. The digital revolution may be technologically inevitable; however, research shows that access to digital tools are less important for students' learning than how teachers use them across subjects [3, 4]. Krumsvik [5] even argued that one are still in the infancy of understanding how digital technology might contribute to the field of education, and Elstad [6] asserted that educational technology so far has raised several false expectations. Moving to the next phase of implementing education technology (EdTec), the question becomes: How can we improve on what we have learned?

Research has shown that the integration of ICT into academic pedagogic practice is a complex process [7, 8]. Teaching and learning are in themselves complex processes, and ICT integration should not only focus on academics' knowledge of technology, pedagogy and curriculum, but also consider academics' attitudes. Against the multitude of important issues to be considered within EdTec, the research identifies academics' *attitudes* as the most important element [9, 10]. Hence, it is not merely the nature of the technology itself, or the access to technology, that promotes or prevents good use of technology, but academics' beliefs and attitudes are essential and at the heart of the process.

The purpose of this study is to explore how teacher educators make the pedagogical shift in their use of ICT. Teacher education is of special interest because it plays a double role concerning technology. It is a learning organization, and at the same time, the object of study and research is learning itself. Teacher educators are, to a large extent, role models reflecting the practice of EdTec, using technology by design, collaboration with peers, scaffolding authentic experiences and continuous feedback [11, 12]. A teacher educator who uses digital tools for the enhancement of learning also prepares pre-service teachers for how digital tools can be used in their future work [13, 14]. Creating good-quality teacher education in digital arenas embraces the needs of children, schools, technology, and the curriculum.

This chapter describes the situation from countries with quite different educational cultures and presents some recommendations that may contribute to an interactive development of integrating digital technologies within a learning organization.

2. Conceptual framework

The studies in this chapter are based on the 'theory of action' by Argyris and Schön [15, 16], which is widely used in organizational theory to describe the relationship of people in learning organizations [17]. The descriptive framework serves as a methodological instrument for the systematic analysis of learning organizations at the meso level (between macro and micro level). This approach begins

by defining a concept of humans as action makers, and the theory explains the mechanisms by which we connect our thoughts to our actions. Human beings can take action for a stimulus if they have the attitude and the competencies they need. The theoretical framework offers an analytical distinction between espoused theory (attitudes towards digital technology), and theory in use (digital competence). Espoused theory is the theory of action, which is used to explain or justify a particular pattern of activity. In other words, espoused theory can be understood as the attitude of an individual or an organization towards practices. The theory in used is defined as the theory of action implicated in carrying out this pattern of activity, in other words, the practical action of competence. As described by Argyris and Schön [16], the applied organizational theory can be tacit rather than explicit. The tacit theories in use do not necessarily match the organization's espoused theory. The formal documents of an organization, such as such as policy statements or job descriptions, often contain espoused theories of action that are not compatible with the actual pattern of activity of the organization [16]. The mechanisms can occur both consciously and subconsciously; determining the discrepancy between the espoused theory and the theory in use may be challenging.

The study assesses the following three different constructs: the teacher educators' level of professional digital competence (PDC), attitudes towards digital technology in education and the application of digital technology in educational contexts. In the appendix of this chapter, details of the questionnaire are presented. Briefly, the three terms can be described like this:

Professional digital competence (PDC). The concept of PDC is a central element in discourses about teachers' proficiency in using ICT [18–20]. PDC refers to aspects of teachers' work related to the teaching profession that extend beyond subject knowledge. PDC is not limited to classroom teaching, for example school-home communication, online feedback and assessment, classroom management in technology-rich classrooms and how a teacher approaches her/his own continuous professional development in the use of ICT. Subject-related digital competence deals with the particulars of every subject and how each can be taught with and through technology. This may include the use of modeling and simulations. The term is a moving target in the sense that it evolves rapidly in line with the emergence of new technologies.

Espoused theory. Items were prepared based on the OECD report 'Connected Minds: Technology and Today's Learners' [21] and its description of the field's existing attitudes towards technology to understand teacher educators' professional attitudes (their espoused theories). In this chapter, the field is characterized by a continuum from being technology averse to being technology positive. Statements were created to determine respondents' own motivations for using digital tools, their attitudes towards the position of digital tools in the public domain and their attitudes towards the use of digital tools in the classroom. Were prepared to identify the respondents' own motivations for using digital tools, their attitudes towards digital tools' position in the public arena and their attitudes towards the use of digital tools in teaching.

Professional application of tools. This shows the magnitude to which the participants used digital tools and work procedures in their teaching for the past year (i.e., the *digital performance* within the organization). The construct consisted of 16 single items on digital tools/work methods applied in teaching during the past year.

2.1 Single-loop learning (SLL) and double-loop learning (DLL)

A central and comprehensive topic in Argyris and Schön's learning theory is the connection between learning, change and resistance to change. It defines two models, namely single-loop learning processes (SLL, often called Model I) and
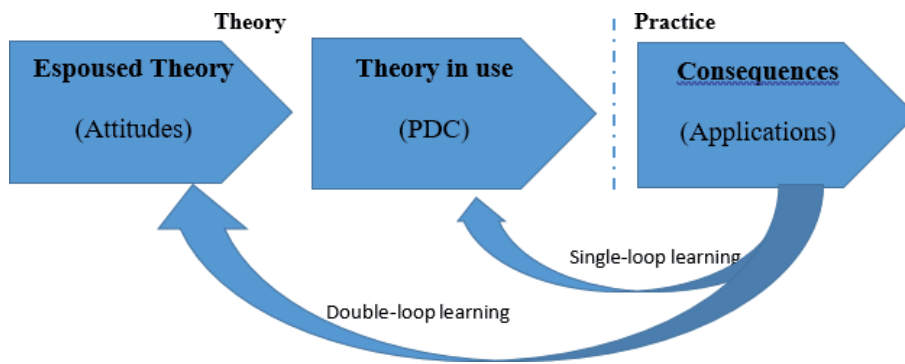
Figure 1.
Single-loop learning (SLL) and double-loop learning (DLL) processes. Adapted from [15]. Organizations that only stress SLL operate within a so-called SLL trap.

double-loop learning processes (DLL or Model II), to highlight organizational learning potential. The models are illustrated in **Figure 1**.

SLL processes involve following the routines and some sort of pre-set plan. This is less risky for the individual and the organization as well as affords greater control. It may also be characterized as a technical way of thinking. SLL seems to be present when aims, values, frameworks and strategies are taken for granted, with only minor updates. The emphasis is on techniques being made more efficient. Any reflection has the same goal. This chapter links SLL with PDC.

DLL processes, by contrast, are more creative and reflexive, as they involve the consideration of notions about what is good. Reflection here is more fundamental. First, the basic assumptions behind ideas or policies are confronted and challenged. Second, hypotheses are publicly tested. Third, the processes are challenging, not self-seeking and have organizational goals. The governing aim includes valid information and internal commitment. DLL involves questioning the role of the framing and learning systems that underlie the actual goals and strategies [15, 16]. Here, DLL is linked with professional attitudes.

The study applies Argyris and Schön's [16] definition of a learning organization to be the 'ability to see things in new ways, gain new understandings, and produce new patterns of behaviours—all on a continuing basis and in a way that engages the organisation as a whole'. Learning within teacher education is a dynamic process, not a prescriptive checklist of best practices [22]. Argyris describes what he calles 'SLL traps' as patterns of values, behaviors and outcomes that 'make it difficult to produce the learning that is required to generate fundamental change' [22]. To be a learning organization means having a culture cantered on DLL processes and staying resilient against the SLL traps that may emerge in the organization [22, 23]. When SLL traps are formed in a DLL organization, there is a growing dissonance. Organizations that focus on innovation learning are more likely to develop a learning culture in SLL and DLL. The motivation in DLL has to be developed in line with the required pedagogy of the organization.

2.2 The study objectives

This chapter seeks to increase the understanding of how the technological revolution and its impact on education can be understood from a practitioner's point of view. It elaborates further the complexity behind the observed mismatch between policies and the use of digital technology in teacher education. Our study addressed the following three research questions:

1. How do teacher educators and teacher students perceive their PDC, professional attitudes and professional use of tools in teaching?

2. Is it possible to predict the extent of digital technologies used in teaching through the degree of PDC and attitudes?

3. What is the relationship of SLL and DLL with digital performance in the organization's learning processes?

We hypothesized that there is no significant positive relationship between SLL and DLL and organizational learning performance among the respondents. The examination of causal relations is based on Argyris and Schön's theory of action.

3. Materials and results

The materials in this chapter are based on information from both quantitative and qualitative studies. Previous quantitative studies [24, 25] examined different strategies to implement digital technology in teacher education based on Argyris and Schön's theory of action. In these studies, the researcher applied samples from academic staff in three countries: Norway (N = 67, response rate 83.8%), New Zealand (N = 47, response rate = 73.4%) and Jordan (N = 107, response rate = 31%). The study from Norway was carried out at the University of Tromsø at the Department of Education, the study from New Zealand from the University of Waikato Department of Education and the Jordanian study was carried out at Al-Hussein Bin Talal University in Ma'an, a poor-environment area of Southern Governorate with lectures from the Faculty of Educational Sciences. All participants answered the questionnaire (Appendix 1) based on Argyris and Schön's theory of action. The items were collapsed into three multi-item constructs, as described in Section 2. All three constructs showed acceptable reliability values, with Cronbach's alpha coefficients between 0.71 and 0.88. The construct describing 'use of tools' had to be modified in Jordan, according to the common types of software available for academics in the university's computer centre.

What is the level of ICT use, PDC and attitudes in teaching and learning among lecturers in the university under study? **Table 1** shows the mean and standard deviation of the multi-item concepts in teaching during the past year. The highest score on PDC was in Norway, while New Zealand scored highest in 'use' (2.99 = occasional use when teaching) and on 'professional attitudes'. The samples from New Zealand and Norway are representative data and may be tested for statistical differences. Both the difference in PCD and in 'use' proves to be statistically significant with p-value = .045 and p-value<0.001, respectively.

	Attitudes Mean (SD)	PDC Mean (SD)	Use Mean (SD)
Jordan	3.25 (.90)	3.55 (1.20)	—
New Zealand	3.37 (.62)	3.71 (.69)	2.99 (.53)
Norway	3.00 (.73)	3.91 (.76)	2.59(.54)

Table 1.
Self-perceived results from Jordan, New Zealand and Norway. The variable describing 'use of tools' had to be modified in Jordan, and the results cannot be compared directly with the other countries.

The regression analysis conducted for each country (**Table 2**) reveals interesting differences and showed that the degree of using digital technology tools can be predicted statistically. In Norway, the best predictor was 'professional attitude' (Beta = .282, p-value = .003), while the best predictor in New Zealand was 'PDC' (Beta = .363, p-value = .002). It appears from this analysis that the influence and contribution of digital practice is carried out quite differently in the two countries. In Norway, the professional use or application of digital tools is dominated by professional and autonomous attitudes, while in New Zealand it is dominated by PDC. At the same time, PDC is somewhat lower in New Zealand than in Norway, but the professional application of digital tools is significantly higher.

The results in **Tables 1** and **2** provide answers to our first two research questions. To address the third research, the study had to go one step deeper in a qualitative analysis of interviews with the academic staff in New Zealand and Norway [26, 27], to explore closer how curriculum and motivation are affected by educational policy and strategies.

One difference between Norway and New Zealand is what educational traditions their curricula for schools are based on, as shown in **Table 3**. In 2006, Norway was the first country in Europe with a curriculum based on digital skills [28]. Norwegian schools operated with a set of five basic skills seen as fundamental to all learning at all levels through school: oral skills, reading, writing, numeracy and digital skills [29]. Such skills are often referred to as the 3Rs – reading, writing and arithmetic, and traditionally, they have been considered the foundations of learning. Nowadays, the 3Rs alone are not enough to provide students with the skills needed to function in the 21st century [30]. The New Zealand curriculum had to a greater extent, integrated the notion of the 4Cs as central to 21st century skills: critical thinking, communication, collaboration and creativity [31]. This is just a small excerpt of the two curricula, and they both include the 3Rs and the 4Cs, but they are not equally in focus when comparing the two sets of formal documents.

Both the Norwegian and New Zealand teacher educators expressed a concern regarding the political pressure they are experiencing. The New Zealand teacher educators fear a potential political movement towards a more skill-based curriculum and

		Attitudes	PDC
Jordan	Use =	0.55[§]	0.27[§]
New Zealand	Use =	0.15	0.36[**]
Norway	Use =	0.28[**]	0.12

[**]*Significant at the 0.01 level (2-tailed).*
[§]*The sample from Jordan has a low response rate and is not reliable for statistical testing.*

Table 2.
Linear regression coefficients to predict use of ICT technology in three countries.

New Zealand key competencies	Norwegian basic skills
Thinking	Oral skills
Using language, symbols, and texts	Reading
Managing self	Writing
Relating to others	Digital skills
Participating and contributing	Numeracy

Table 3.
The New Zealand key competences [32] and the Norwegian basic skills [29].

assess the skill-based perspective as outdated. On the other hand, all of the Norwegian teacher educators expressed critical positions regarding their own skill-based definition of learning, and expressed that a change of definition of what is regarded as fundamental for learning would be a change for the better. When asked to take a stance regarding the skill-based and competency-based perspective on learning, both the Norwegian and New Zealand teacher educators' attitudes towards this difference were surprisingly coherent despite the different affiliations and national curricula.

The Norwegian curriculum consisted of three formal documents and covered both the 3Rs and the 4Cs in different sections. It could therefore be legitimately claimed that merely comparing the two excerpts could paint an unjust picture of the differences between the two educational cultures. To correct for this possibility, the Norwegian participants were also asked about their use of the parts expressing the 4Cs. One of the participants expressed having a somewhat vague knowledge of these frameworks, and the remaining teacher educators claimed to 'know of it'. Of all the participants, not one expressed a close and reflective attitude towards the framework, and only one replied that she/he had used the document explicitly in her/his own teaching. The remainder either did not use it at all or explained that the use is implicit or that it merely exists as a backdrop to their teaching. So, when espousing their views, both the Norwegian and the New Zealand teacher educators were generally critical towards a narrower definition of skills, but when the Norwegian educators were asked about their theory in use, there were discrepancies between their espoused theory and their theory in use [26]. This insight made us question what motivated their practices, and ask whether different motivational factors could explain why such discrepancies occurred.

Motivational theory is central because although Norwegian schools have had a widespread ongoing policy regarding the use of digital technology, national surveys reveal a gap between the established policy and actual practice in Norwegian education. An often-used formula for work performance is: performance = abilities × motivation [33–35] Norwegian and New Zealand teacher educators' abilities (digital competence) and performance (professional application of digital tools) was measured. Our research indicates Norwegian teacher educators have better abilities to teach using digital technology, but are teaching less using digital technology compared to their New Zealand counterparts. Based on Maier's [35] formula, motivation seems to be a key aspect, and Herzberg's [36] two-factor theory was used to categorize the responses. Herzberg's findings suggest that the factors involved in producing motivation are separate and distinct from those that lead to job dissatisfaction. The opposite of job satisfaction is no job satisfaction, and the opposite of job dissatisfaction is no job dissatisfaction [36]. Two different needs are involved—one stems from the built-in drive to avoid pain, and the other from the ability to achieve and experience psychological growth. The stimulus for growth is the job content, and the stimulus inducing pain avoidance behavior is the job environment [36]. He called the two sets of factors: motivation factors (growth) and hygiene factors (dissatisfaction avoidance).

When clarifying their motivation for using digital technology, the Norwegian teacher educators explained their digital practices with nine motivation factors and nine hygiene factors spread across ten informants. The hygiene factors were explained as mandatory curricula and work conditions when teaching online. The New Zealand teacher educators explained their use of digital technology with 14 motivation factors and only four hygiene factors. The explained motivation among the New Zealand teacher educators was generally intrinsic, and its presence created job satisfaction. While the Norwegian teacher educators explained their pedagogical practices with equal occurrences of extrinsic factors, that further was perceived in a way creating dissatisfaction.

4. Discussion

Even though being on opposite sides of the globe, Norway and New Zealand educate teachers in digitally rich environments. For many years, they have been teaching students with high access to technology and educational resources [21]. However, a noticeable difference is that the two countries have different implementation strategies for digital technology in education. Norway has been exposed to a stronger top-down educational implementation of ICT in schools than have other countries [5].

New Zealand teacher educators appear to be more motivated to work with digital technology than Norwegians [27]. This lack of motivation is one reason that could explain why the application of digital tools seemed less in Norway than in New Zealand. The hygiene factors mentioned were also described in a way that indicated that both policy and work conditions are sources of frustration and dissatisfaction. Norwegian teacher educators explained that the main reason they use digital tools is the top-down implementation of government policy. Only 16% of Norwegian staff respondents moderately or strongly disagreed with the statement 'Society's expectations of the impact of digital tools are exaggerated', while 58% of staff moderately or strongly agreed with the affirmation. Thus, most teachers do not agree with the signals that are communicated in public. Therefore, a fundamental question in the use of digital technology in Norway is the policy related to its implementation; as part of the work environment, politics creates job frustration. Teacher educators in both countries highlighted achievements and policies as the main reasons for using digital technology, but Norwegian teacher educators were especially critical of their own country's policy.

What is even more surprising is that the same trend applies when asking whether there are excessive expectations about the effect of digital tools on academic debates at the Norwegian university. On this question, only 13% of staff responded that they somewhat or completely disagree that academic debates at the university have exaggerated expectations about the effects of digital tools. However, 50% agreed that academic debates at the Norwegian university are characterized by too-high expectations about the effect of digital tools. These figures represent a dual culture in which employees have an attitude towards digital tools, indicating that the majority of teacher education staff do not consider digital tools essential for good teaching. This suggests an internal educational culture that does not correspond to public culture and university policies in general. The Norwegian staff expressed loyalty towards the formal curriculum, but struggled with an inconsistent espoused theory when talking about their own practice.

The figures from New Zealand are more in line with the public culture and with the expressed university policies. The Jordanian data are more difficult to interpret, but seems to be somewhere between the two other countries.

Our regression analysis found that the contribution to digital practice occurs somewhat differently between the countries. The digital practice of the Norwegian staff is dominated by the *professional attitude*, whereas in New Zealand, it is dominated by *PDC*.

Argyris and Schön's theory of action may give us a relevant framework to understand this observation on a deeper conceptual level. The theory emphasizes SLL and DLL learning processes. From the analysis above, we infer that the didactical perspective in New Zealand may be characterized as dominated by conventional SLL processes based on PDC. In contrast, the academic staff in Norway are strongly involved in DLL processes in which their professional attitudes are more concerned. The interactions are illustrated in **Figure 1**. SLL is practical and rational at the default and basic didactical level, whereas the DLL mode is more open to discussions and adaptations and provides more opportunities for alternatives. With political pressure experience, the academic staff will look for new methods when

the SLL results in a mismatch between educational goals and the achieved goals. When entering a DLL process and looking critically into the preconditions for the challenges at hand, the Norwegian academics have to enter a systemic double loop. Thus, teachers' independent attitudes and beliefs function as redirectors of the use of ICT in their educational contexts.

According to Elstad [37], political expectations about the modernization of the school system using ICT and the allocation of funds following this policy created agendas which are not compatible with the constraints and operational character- istics within education. If you are presented with an ideology, and this guides the practice, students are more likely to act based on SLL. Experience provides a greater opportunity to evaluate not only policies, but also how policies affect practice. This knowledge is a prerequisite for critical analysis of teaching and for acting based on DLL. Teacher beliefs and attitudes about ICT use and integration challenge institu- tions to reconceptualize technological infused ways of 'seeing and doing things'.

To be a learning organization means to have a culture that involves DLL pro- cesses when needed, and to remain resilient against the SLL traps that may emerge in the organization and create tension and dissonance [22]. Because SLL is prevalent in the dominant culture [38], learning organizations such as those involved in teacher training may be susceptible to SLL traps that develop from the dominant societal culture. We interpret the observed tensions on the use of ICT within teacher education as the occurrence of such SLL traps.

The results of the qualitative interviews [26, 27] revealed that this could be understood as a global concern. It is a concern for deep educational values in many different cultures. Teacher educators were critical to position themselves towards a skills-based learning perspective, and positively towards a competency-oriented perspective. These two perspectives were understood as quite conflicting perspec- tives, almost mutually exclusive. How can a skills-based and a competency-oriented view be combined in a common understanding of learning? The contradictory elements of this discussion seem to be deeply embedded in the educational culture.

Langset, Jacobsen and Haugsbakken [39] stated that, contrary to top-down initiatives, a more horizontal approach supports pedagogical variation and tailored solutions needed in large heterogeneous organizations. The project carried out by Langset et al. [39] focused on local initiative and participation, as well as the feeling of autonomy experienced by the participants. Participants were free to explore new applications at their own pace and decide what new technologies to implement and how to use them in their courses. Their study findings showed that these were important factors supporting the argument for horizontal approaches rather than top-down implementation.

A recent study from Uganda [40] found that regardless of the resource- constrained context and pedagogical challenges experienced by academics, their attitude demonstrated resilience, flexibility and determination to embrace ICT in their teaching practice. This study challenges the notion of academics being passive, 'making do' with what is at hand [41] and claims that academics are resourceful practitioners, seeking inventive ways to teach more effectively.

5. Concluding remarks

Our aim was to study university departments of education as learning organiza- tions using a self-designed questionnaire involving Argyris and Schön's SLL and DLL (**Figure 1**) tied directly to the pedagogical application of digital tools. The results were used to discuss the influence of skills (PDC) and attitudes (mindsets and opinions) of the respondents on the pedagogical applications (practice) within the

organizations. Many governments have been active in inducing and reforming both the school system and teacher education. This chapter has presented findings regarding how this affects teacher educators' attitudes towards their professional position. The Norwegian implementation plan positions digital technology in teaching in a way that activates resistance and creates contrasts between teacher educators' experiences and work-related requirements.

Multiple linear regressions were used to understand the relationships and contributions of SLL and DLL to organizational learning performance. The investigation empirically identified the potential for the development of an SLL and DLL culture to foster positive contributions to organizational learning performance.

Our study found that Argyris and Schön's separation between SLL and DLL in their theory of action may contribute to a deeper acknowledgement of the fundamental challenges which have to be settled in the domain of educational technology. Both processes exist at the same time and may have different actors. Both actors are important and may make valuable contributions to refining the learning process when technology is involved. However, a policy-induced legitimate system (SLL) is not enough and may create the observed dissonance (SLL trap). Employees are motivated to work within a fixed SLL framework, which does not reflect the complexity of reality. Therefore, there is a risk of developing professional tunnel vision, where employees are forced to abandon what is professionally reasonable. However, teacher education requires flexible and functional team thinking (SSL + DLL) to develop the 'noble art of education'. Technology and high ambitions at the structural macro level are not enough; there is a need for local structures at the meso-level.

The political enthusiasm that has prevailed in the field is now, to a greater extent, faced with critical reflections. The ranking of political goals over pedagogical goals hear is mostly contrary to teachers' understanding of teacher proficiency. The observation that digital tools are not successfully integrated into teacher training may be related to optimistic expectations associated with the use of digital technology in our society [42, 43]. In further studies, this technological optimism must critically examined, which has promoted an unrealistic view of the capacity of digital tools in education.

Teacher educators have developed an awareness of how digital technology can be integrated into curricula and the types of strategies that are best suited to help pre-service teacher students gain this knowledge for their future work. According to Ertmer et al. [44], fundamental change to use ICT in constructive ways may only occur if academics' inherent attitudes about the role of technology is concurrent with their practice. The present study raises such awareness while clarifying the content and complicated processes of integrating technology into teaching and learning. Faster, better, cheaper, applied to education, is not a productive concept. It is a false economy, since it is very difficult to have all three simultaneously. This requires educational institutions to be professional learning organizations, with communities of school professionals engaged in an ongoing dialog to promote cycles of development and reflection in students and teachers.

There are several implications of this study for the field of higher education. First, the idea that technology in itself will transform education if teachers are given access to it has been seriously challenged with empirical data. Second, if society want to meet the high ambitions for digital competence, the repertoire of ICT use in didactically meaningful ways has to grow. Third, the pedagogical landscape is complicated, and the development may preferably be done as an iterative process in its meso-level, between the macro and micro structure. We would suggest that instead of generally focusing on ICT in teacher training, teachers should work systematically at the local level to increase the repertoire—not the use itself—of digital learning technologies.

The implementation of digital technology and the development of digital competence in education require much more than basic digital infrastructure and an ambitious curriculum. Structures at the national level are not enough. There is an urgent need for professional development at the local level to expand the pedagogical repertoire and the didactic motivation of teachers concerning digital technology. This calls for an iterative progress of work in a social context, and requires education institutions as professional learning organizations, engage in an ongoing dialog to promote development and reflection cycles for students and teachers.

Appendix

Our updated questionnaire is based on Argyris and Schön's theory and involves three main constructs: *Professional Digital Competence*, *Professional Attitude* and *Professional Applications of Tools*. To gain insight into the respondents' theories in use, the questionnaire contained questions regarding the extent of use of different digital technologies. Professional digital competence is operationalized using Tømte and Olsen [45] and Lund, Furberg, Bakken and Engelien [46]. In accordance with the definition, three defined aspects of digital competence structured the questionnaire statements: pedagogic and didactic understanding, subject-specific understanding, and technological understanding. This definition of digital competence is generally in agreement with resent literature regarding its categorical understanding of digital competence. To illuminate attitudes (espoused theories), statements were prepared based on the OECD report 'Connected Minds: Technology and Today's Learners' [21] and its description of the field's existing attitudes towards technology. In the report, the field is described as characterized by stretching from being technology averse to technology positive. Statements were prepared to identify the respondents' own motivations for using digital tools, the respondents' attitudes towards digital tools' position in the public arena and attitudes towards the use of digital tools in educational settings.

PDC and professional attitude were measured on a five-point Likert-scaled where 1 = strongly disagree, 2 = moderately disagree, 3 = neutral, 4 = moderately agree and 5 = strongly agree. Professional application of tools was measured based on the reported frequency of use of 16 digital technologies and work methods of the participants in their own teaching in the past year, with 1 = never, 2 = rarely, 3 = occasionally, 4 = often and 5 = extensively. Some items had a reversed scale, denoted by REV (reversal). The main construct of the surveys is illustrated by the version for the teacher educators. However, the survey should be slightly modified for use among teacher students to reflect the differences in their educational context. The constructs were each based on the following questionnaire items:

Professional Digital Competence (PDC).

Decide to what extent you agree or disagree with each of the following statements:

- I am familiar with digital tools that can help diversify teaching.

- I am, in general, confident when using digital tools.

- I find it easy to become familiar with new digital tools.

- I can use digital tools that are appropriate for the aspects of the subjects I am teaching.

- It is difficult to use digital tools as an educational resource within my subject. REV.

- When I am using digital tools, it is difficult to adjust the content to the individual student's needs. REV.

- I have no clear idea of the learning outcome when using digital tools in my teaching. REV.

- I use digital tools when giving feedback to students.

Professional Attitude.

Decide to what extent you agree or disagree with the following statement:

- When I use digital tools in my teaching, I find it adds value.

- The use of digital tools is essential for good teaching.

- Society's expectations of the impact of digital tools are exaggerated. REV.

- Expectations related to the use of digital tools in education frustrate me. REV.

- In professional debates at our organization, the expectations of the impact of digital tools are exaggerated. REV.

- The use of digital tools is disruptive for the relationship between student and teacher. REV.

- Digital tools can make the students more interested in the subject I am teaching.

- I like testing new digital tools in my teaching.

Professional Application of Tools.

Which digital tools and work methods have you used in your own teaching in the past year?

- Digital tools for testing with multiple choice questions

- Moodle or Fronter (each university's learning management system)

- Digital tools for presentation (like PowerPoint or Prezi)

- Word processor

- Spreadsheets (like Excel)

- Use of video

- Production of film/video/animation

- Online discussions

- Online meetings (like Lync, Adobe Connect or Skype)

- Production of Wiki (website that allows collaborative modification)

- Screen capture (like Camtasia or Mediasite)

- Programs for scientific analyses

- Student response systems (online questions answered by phone or computers, like Kahoot! or Socrative)

- Tools for collaborative writing (like Google Docs)

- Social media (like Facebook or Twitter)

- The Internet as a source of knowledge

Acknowledgements

Conflict of interest

The authors declare no conflict of interest.

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Chapter 2

Remote Support through Technologies: A Research-Training on Teachers' 'Sophisticated Knowledge'

Laura Sara Agrati

Abstract

The COVID-19 pandemic accelerated the process of transforming teaching practices, such as remotely supporting students through innovative technological means. After a reflection on the impact of COVID-19 emergency on teachers' skills, on the basis of a series of professional resources made available to teachers in order to support remote participation and learning of students, the work presents methodologies and results of an intervention-research, which involved 108 teachers in service, aimed at develop the teachers' ability to integrate remote teaching technologies resources, with a view to personalizing interventions and effectiveness of learning content. The survey highlighted that relationship with students has been the teaching practice aspect most influenced by technologies/digital resources in the period of the pandemic. Such results offer support for didactic research to integrate the well-known explanatory model of TPACK (Technological Pedagogical Content Knowledge) with further aspects relating to 'sophisticated' knowledge, more linked to adaptation and *re-shaping* of knowledge to be taught with reference to the students needs.

Keywords: COVID19 emergency, teaching technologies, TPACK

1. Introduction - support of teachers as a COVID-19 emergency

The pandemic crisis has affected people's lifestyles by inducing countries to change the management of entire sectors of private and public life [1–3]. It is estimated that over 1.58 billion children and young people attending education-training courses - around 94% of students worldwide - in 200 countries no longer went to school in March 2020 [1, 4] and that countries have had to adopt various measures to continue students' learning during school closure.

Countries have used a variety of resources to ensure remote learning for students (radio and television); specifically, to ensure online education, recovered instructional resources [5], as online platforms with tools included - educational content for exploring, real-time lessons on virtual meeting platforms, online support services for parents and students, self-paced formalized lessons [6].

Such situation is inevitably leading to the reconfiguration of the entire education system and, above all, to the acceleration of change in teaching-learning processes [7]. The urgent implementation of new ways to deal with the crisis - use of remote teaching, flexibility of schedules and functions, etc. - indeed, made it possible to experiment with 'solutions previously considered difficult or impossible to implement' (p. 4) and to concentrate efforts to address training needs that have always been known but which the pandemic situation has in fact forced to solve - such as, among others[i], support for the teaching profession and the preparation of teachers.

The COVID-19 pandemic and such abrupt modification of teaching delivery accelerated the process of transforming teaching practices, such as remotely supporting students through innovative technological means [7, 8]; such situation asked teachers above all to face new challenges such as that of supporting students remotely through innovative technological means. Since the early pandemic teachers were tasked to implement teaching in distance learning modalities, "often without sufficient guidance, training, or resources" ([7], p. 14). They:

> were largely unprepared to support continuity of learning and adapt to new teaching methodologies (...) Even in contexts with adequate infrastructure and connectivity, many educators lack the most basic ICT skills, meaning they will likely struggle with their own ongoing professional development, let alone with facilitating quality distance learning' ([7], p. 15).

For this reason, the COVID-19 crisis has highlighted among the many things that in-service teacher training 'are in need of reform to better train teachers in new methods of education delivery' ([7], p. 15).

As already noted by Hattie and by Pitler et al. [9, 10], the current situation has finally made it clear that to support the teaching profession and the preparation of teachers it is not enough to provide them with: 'Technology alone cannot guarantee good learning outcomes. More important than training teachers in ICT skills, is ensuring that they have the assessment and pedagogical skills to meet students at their level and to implement the accelerated curricula and differentiated learning strategies' ([7], p. 23).

As suggested by Anderson [11, 12], in order to avoid the negative effects of the so-called *coronateaching* [13][1] - i.e. the poor quality of the training offer and the ineffectiveness of the production of skills, due to sudden transformation of frontal lessons in virtual mode without investing the curriculum or teaching methodology - the support offered to students by teachers and tutors becomes fundamental, especially through - upstream - the redesign of the course in terms of both the curriculum and strategies, – downstream - the monitoring of students' learning processes.

The specific limit of the emergency adaptation of courses in online mode, in fact, would not be so much in the lack of support offered by teachers to students - in terms of the 'teacher-student' relationship -, but rather in the lack of link between

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[1] The neologism is taken from the UNESCO-IESCALC document 'COVID-19 and higher education' [13] in which it is defined as the tendency to 'transform present lessons in a virtual mode, without changing the curriculum or methodology (...) abrupt entry into a complex teaching modality, with multiple technological and pedagogical options and with a steep learning curve (which could involve) frustration and overwhelming adaptation to an educational modality never experienced before without the corresponding training' [13, p. 25].

pedagogical contents, of differentiated learning environments, by means of digital technologies and organization of learning experiences - in terms of the 'teacher-course' relationship -, which involves both the planning of the instructional design (ID) and the choice of learning design - LD [14–16].

As highlighted by UN ([7], p. 24) 'digital solutions need relevant content, adequate instructional models, effective teaching practices and a supportive learning environment'. It then becomes possible to dispel the *myth* of teaching 'with' technologies [17, 18] and put teaching strategies at the center.

2. (Useful) support to (real) needs of teachers

Already in 2019 the TALIS [19] survey revealed the strong need for teacher training in the use of information and communication technologies (ICT) - despite 60% of teachers received professional development in ICT, 18% in fact reported a higher need for development in this area. The preparation of teachers to support students' digital learning is not based only on ICT skills [5]: 'technology does not just change methods of teaching and learning, it can also elevate the role of teachers from imparting received knowledge towards working as co-creators of knowledge, as coaches, as mentors and as evaluators' ([5], p. 17).

Teacher training, in general and even more so in the current context, is effective if useful for build pedagogical and technical skills, for integrate digital tools into learning environment [5, 19, 20].

While in the early emergency the first generalized response was to provide tools[2] [4] that made it possible to set up a 'field' [21] distance learning, then it was possible to start thinking on the skills needed by the teacher to cope with this situation.

OECD [22] stressed in the second study that 'for educators, the COVID-19 pandemic is a quintessence of the adaptive and transformative challenge, for which there is no pre-configured playbook that can guide appropriate responses' ([22], p. 2) and provides a set of online educational resources to support continuity of teaching and learning:

1. *Curriculum resources* - as lectures, videos, interactive learning modules;

2. *Professional development resources* - resources to support teachers (or parents) in the ability to teach at a distance, to support learners, more independently at home rather than at school;

3. *Tools* - teaching and learning management tools, communication, creation or access to educational content.

The second one resources were assessed on the basis of a specific taxonomy for classifying the curriculum and professional development resources [23], see **Table 1**.

Regards resources for professional development suggested by OECD [8], the following table shows the professional skills activated as well as the related taxonomic category (see **Table 2**).

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[2] Applications, platforms and educational resources for use by parents, teachers, school administrators to support student learning and offer assistance during school closing periods.

1. Cognitive Skills	2. Interpersonal skills	3. Intrapersonal skills
1.1. *Processing and cognitive strategies* - CT: Critical Thinking; PS: Problem Solving; A: Analysis; LR: Logical Reasoning; I: Interpretation; DM: Decision Making; EF: Executive Functioning 1.2. *Knowledge*: LC: Literacy and communication skills; AL: Active listening skills; KD: Knowledge of the disciplines; Ev: Ability to use evidence and assess biases in information; DL: Digital Literacy 1.3. *Creativity*: C: Creativity; In: Innovation	2.1. *Collaborative group skills* - Cm: Communication; Cl: Collaboration; TW: Team Work; Cp: Cooperation; Co: Coordination; EP: Empathy, Perspective Taking; Tr: Trust; SO: Service Orientation; CR: Conflict Resolution; Ne: Negotiation 2.2. *Leadership*: Le: Leadership; Re: Responsibility; AC: Assertive Communication SP: Self-Presentation; SI: Social Influence	3.1. *Intellectual Openness* - Fl: Flexibility; Ad: Adaptability; Ar: Artistic and Cultural Appreciation; PS: Personal and Social Responsibility; IC: Intercultural competency; AD: Appreciation for diversity; CL: Capacity for lifelong learning II: Intellectual interest and curiosity 3.2. *Work Ethic, Responsibility* - Ini: Initiative; SD: Self-direction; Res: Responsibility; Pe: Perseverance; Pr: Productivity; Pt: Persistence; SR: Self-Regulation; MT: Meta-cognitive skills, anticipate future, reflexive skills Pro: Professionalism; Eth: Ethics; Int: Integrity; Cit: Citizenship; WO: Work Orientation 3.3. *Self-efficacy* - SA: Self-regulation (self-monitoring and self-assessment); PMH: Physical and mental health

Table 1.
Taxonomy for the analysis of professional development resources ([22, 23], p. 5).

The OECD [22] analysis highlights that the resources available to teachers for their effective professional development in a pandemic situation are only partly related to technological skills but invest broader ability, such as redesign of programs, flexible adaptation of strategies, for the effective support for student learning. Such resources must not be limited only to 'technological' (T) skills but even extend beyond the 'techno-pedagogical' (TP) ones, introduced by Mishra & Koehler [24, 25] within the TPCK (Technological Pedagogical Content Knowledge) descriptive model. This is considered as the Shulman's explanatory model integration - 'Pedagogical Content Knowledge' (PCK) - since to the distinction between disciplinary and pedagogical knowledge it adds that of the technological area. Its basic components are: a. technological knowledge ('knowledge of the technologies and skills necessary to operate with them - TK); b. pedagogical knowledge ('teaching/learning processes and practices, methods and approaches' - PK); c. content knowledge ('teachers' understanding of the semantics and syntactic organization of a discipline').

On the other hand, techno-pedagogical (TP) skill - as 'knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies' ([25], p. 10) - describes relationships and interactions between technological tools and specific pedagogical practices, in other words 'the pedagogical awareness of resources and technological constraints' [26]; on the other hand, pedagogical-content (PC) skill describes relationships/interactions between pedagogical practices and specific learning objectives [27]; it is 'the ability to teach content from the students' point of view' [28].

Analyzing carefully, in the construct of 'techno-pedagogical' (TP) skill the relationship with the 'student's point of view' - recognized only in the 'pedagogical-content' - would appear to characterize the skills necessary for the teacher to carry out a teaching remote in the pandemic phase.

Resources	Professional skill	Taxonomic category*
Teachercpd.ie (website)	How effectively teach and learn online How to find good sources of educational content How to enable online communication and collaboration How to create and share your educational content online	1.1. Processing and cognitive strategies 1.2. Knowledge 2.1. Collaborative group skills 3.1. Intellectual Openness 3.2. Work Ethic, Responsibility 3.3. Self-efficacy
Teachfromanywhere.google (platform)	How to make home teaching decisions with videos, without videos How to make distance learning accessible to all How to keep students engaged How to keep in touch with other teachers	1.1. Processing and cognitive strategies 1.2. Knowledge 2.1. Collaborative group skills 3.1. Intellectual Openness
Learningpractice.org (website)	How to adapt online courses How to manage trauma situations How to practice inclusive education and socio-emotional distance learning	1.1. Processing and cognitive strategies 3.2. Work Ethic, Responsibility 3.3. Self-efficacy
Quipper.com (website)	How to find learning resources for students How to track student homework online How to use learning videos and worksheets within digital teaching practice	1.2. Knowledge 2.1. Collaborative group skills 3.2. Work Ethic, Responsibility
Knotion.com (platform)	How to redesign the teaching-learning path in terms of the pedagogical model and the curriculum	1.1. Processing and cognitive strategies 1.2. Knowledge 1.3. Creativity 2.1. Collaborative group skills 2.2. Leadership 3.1. Intellectual Openness 3.2. Work Ethic, Responsibility 3.3. Self-efficacy

Table 2.
Professional development resources: Skills and taxonomic categories ([22], p. 5).

3. Situation and a research-training in Italy

As noted by OECD ([29], p. 8), the Italian government already adopted in March, then renewed in May, measures to support distance learning (digital platforms for schools, tools for learning, digital devices for limited means students) and, mainly, a training plan for school staff on methodologies and techniques for distance learning - dl n. 18/2020, n. 34/2020.

In the 'School Plan 2020–2021' - decree no. 39 of 26 June 2020 - launched in June, in the paragraph on 'Training' for teachers, the 'use of new technologies in relation to the different tasks and professionalism' is encouraged, as regards innovative

teaching-learning methodologies, school inclusion, interdisciplinary teaching models, methods and tools for evaluation. The document also proposes an integrated digital teaching solution described in terms of needs analysis, objectives to be pursued, tools to be used, timetable and frequency of lessons, therefore inherent in the redesign of teaching activities, which takes into account the digital potential of the school community, with particular regard to the access and full participation of students with specific needs.

The ministerial note n. 388 of 17 March, formerly, had focused attention on the redesign of the entire teaching activity, on the reshaping of the educational objectives, on the provision of new learning resources and methods of interaction with all pupils, as well as - for students with Special Needs - explanation of new forms of interaction/fruition between student and class, between student and other teachers, between teachers and families, the supply of new personalized material, constant monitoring through periodic feedback based on the established objectives.

The previous National Digital School Plan [30] already favored the modernization of infrastructures and technologies from 2007 to 2015 - see LIM action (2008), Cl@ssi 2.0 action (2009–2011), Scuol@ 2.0 action, Wi-Fi action (2013) - as well as a deep rethinking of teaching based on innovative learning environments - see 'Future Labs' Training Centers Action (since 2015 for the digital training of school representatives) - and has allowed the Italian school not to be completely unprepared for the COVID-19 emergency.

As already noted elsewhere through the metaphor of the 'supply-chain' [30], the digital training of in-service teachers in Italy takes place through integrated governance (see Law no. 107/2015) which holds together the European framework DigCompEdu 2.0 [31, 32], the PNSD and the training needs of territorial 'polo' schools[3].

As known, the European Framework DigCompEdu aimed at describing in six different areas the digital competences of teachers ([31], pp. 33):

Area 1: Professional Engagement - Using digital technologies for communication, collaboration and professional development – i.e. professional interaction with colleagues, students, parents and other parties, for the collective good of the organization;

Area 2: Digital Resources - Sourcing, creating and sharing digital resources;

Area 3: Teaching and Learning - Managing and orchestrating the use of digital technologies in teaching and learning;

Area 4: Assessment - Using digital technologies and strategies to enhance assessment;

Area 5: Empowering Learners - Using digital technologies to enhance inclusion, personalization and learners' active engagement;

Area 6: Facilitating Learners' Digital Competence - Enabling learners to creatively and responsibly use digital technologies for information, communication, content creation, wellbeing and problem-solving.

It provides a general 'reference frame for developers of digital competence models' ([31], p. 9) and it is assumed as a guidance for the design of effective training courses involving teachers [17, 33].

Methodologies and results of a research-intervention, aimed at develop teachers' ability to integrate inclusively remote teaching technologies resources and inspired by the DigCompEdu Framework, are described below.

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[3] Schools as territorial centers for teachers training of specific areas: technologies, inclusion etc. – see L. 107/2015.

Area 1: Professional Engagement	Area 2: Digital Resources	Area 3: Teaching and Learning		Area 5: Empowering Learners
1.1. Organizational communication	2.3 Managing, protecting and sharing digital resources	3.1 Teaching	3.2 Guidance	5.1 Accessibility and inclusion
To use digital technologies to enhance organizational communication with learners, parents and third parties. To contribute to collaboratively developing and improving organizational communication strategies.	To organize digital content and make it available to learners, parents and other educators. To effectively protect sensitive digital content. To respect and correctly apply privacy and copyright rules. To understand the use and creation of open licenses and open educational resources, including their proper attribution.	To plan for and implement digital devices and resources in the teaching process, so as to enhance the effectiveness of teaching interventions. To appropriately manage and orchestrate digital teaching strategies. To experiment with and develop new formats and pedagogical methods for instruction.	To use digital technologies and services to enhance the interaction with learners, individually and collectively, within and outside the learning session. To use digital technologies to offer timely and targeted guidance and assistance. To experiment with and develop new forms and formats for offering guidance and support.	To ensure accessibility to learning resources and activities, for all learners, including those with special needs. To consider and respond to learners' (digital) expectations, abilities, uses and misconceptions, as well as contextual, physical or cognitive constraints to their use of digital technologies.

Table 3.
DigCompEdu teachers' sub-skills - 'technologies for e-inclusion' ([31], p. 19–22]).

3.1 Technologies for e-inclusion: a research-intervention in the south of Italy

'Technologies for e-Inclusion' intervention-research [34, 35] has been carried out within the second COVID-semester - September–November 2020 - and aimed at developing DigCompEdu teachers' sub-skills (**Table 3**):

These are the sub-competences related to the area of design, rather than intervention towards the skills of the students. The intent was to investigate rather the 'introductory' relationship of the teacher with technologies, rather than the effect on the relationship between students and technologies. More specifically, as made explicit by Redecker ([31], pp. 16).

> *'The core of the DigCompEdu framework is defined by Areas 2-5. Together these areas explain educators' digital pedagogic competence, i.e. the digital competences educators need to foster efficient, inclusive and innovative teaching and learning*

strategies. Areas 1, 2 and 3 are anchored in the stages characteristic of any teaching process, whether supported by technologies or not'.

The competences listed in the Areas 2 and 3 detail how to make efficient and innovative use of digital technologies when planning and implementing teaching and learning. Instead, the competences listed in the Area 5 concern the potential of digital technologies for learner-centered teaching and learning strategies.

3.1.1 Context and population

The survey was carried out at two High School – A. 'Marone', Vico del Gargano, Puglia and B. 'Alberti', Benevento, Campania - having the following characteristics (**Table 4**):

The survey involved 108 teachers with the following characteristics (**Table 5**):

3.1.2 Methodology: object and question of investigation

Data was collected by administering an 'ad hoc' questionnaire divided into three areas: sociometric-professional data, technological knowledge/skills, inclusive knowledge/skills. The tool wanted to know the perceptions of the teachers involved with respect to the technological tools for distance learning, the devices for setting up e-learning learning environments and the strategies useful for accessing and participating in the teaching process online learning.

This chapter focuses on the question no. 12 - Which aspect of your teaching has been most influenced by digital technologies/resources? - related to the perceptions

High school	Target	n. teachers	n. students	Type of school
'Marone', Vico del Gargano, Foggia (Puglia)	High – school referents for inclusion	59	477	Grammar and scientific high school – Vocational Institute for Agriculture Polo School for Inclusion
'Alberti', Benevento (Campania)	Basic - basic knowledge on distance learning	49	585	Scientific and Technical high school

Table 4.
Characteristics of the schools involved.

School	n. teachers	Age	Qualification	Seniority of service	Professional Development training	Middle-management assignment
A.	59	Over 50 years (57,6%)	Bachelor degree (47,5%)	Over 10 years (86,4%)	Technological-digital (44,1%)	Digital innovation team member (35,6%)
B.	49	Over 50 years (73,5%)	Bachelor degree (73,5%)	Over 10 years (75,5%)	Technological-digital (36,7%)	Digital innovation team member (63,3%)
Tot.	108	64,8%	59,3%	81,5%	40,7%	48,1%

Table 5.
Characteristics of the teachers involved.

of teachers on the aspect of their teaching practice most influenced by technologies during the COVI19 emergency.

The aim is to infer useful information to describe areas of possible overlap between technological, pedagogical and disciplinary knowledge and thus reflect on the usefulness of the descriptive models of teachers' technological knowledge/skills.

3.1.3 Data analysis

Data were analyzed at two levels:

- synthesis of sociometric-professional data (see 'Sample representativeness') - aimed at describing the sample and its representativeness with respect to the reference population - see Tabb. 2 and 6;

- correlation (see 'Correlation') between answer no. 12 and four factors - qualification, seniority of service, previous professional development training and middle-management assignment - aimed at inferring information about the weight of these factors on the ability to choose and effectively use technologies in inclusion, in an emergency situation such as that determined by the COVID19 pandemic.

3.1.4 Sample representativeness

The group of teachers involved has an high average age (64,8%, over 50 years), a bachelor degree (59,3%), over 10 years of teaching experience (81,5%), previous training in the technological-digital area (40,7%) - as well as in the technologies (39,8%) and design of learning environments (19,4%) - and experience in middle management, specifically as digital innovation team member (48,15)[4] (**Figure 1**).

The following table shows the characteristics of the teachers involved – number and age - in relation to the ones of regional population, i.e. secondary school teachers from southern Italy, retrieved from MIUR (2020) and OCSE (2019). The total number of teachers in Italy is 836,496 for an age of over 50, at 59% - the older population of teachers in the world and in Europe [29] (**Table 6**).

The group of teachers of course A represents 0.097% of the Apulian colleagues with an average age of the rest of the region; the teachers of course B are 0.052% of the Campania colleagues, far beyond the 50-years average.

3.1.5 Correlation

Question no. 12 - Which aspect of your teaching has been most influenced by digital technologies/resources? - presented 6 response alternatives (**Table 8**): content clarification, content facilitation, simplification of learning materials, communication effectiveness, class participation, student participation. It sought to investigate in what relationship the teacher places technologies with respect to his teaching practice. The six alternative responses indicated three aspects of teaching practice that would be favored by the use of technologies, specifically:

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[4] Assignment without direct responsibility, unlike the digital animator (A. 3.4%; B. 22.4%) - coordinator of technological inclusion interventions and support of the school principal - and the 'instrumental function' in the technologies area (A. 0.0%; B. 14.3%) - guarantor of operational intervention actions. It should be noted that 61% of the teachers of the A. course declared that they had not held any of the professional positions in the technology area.
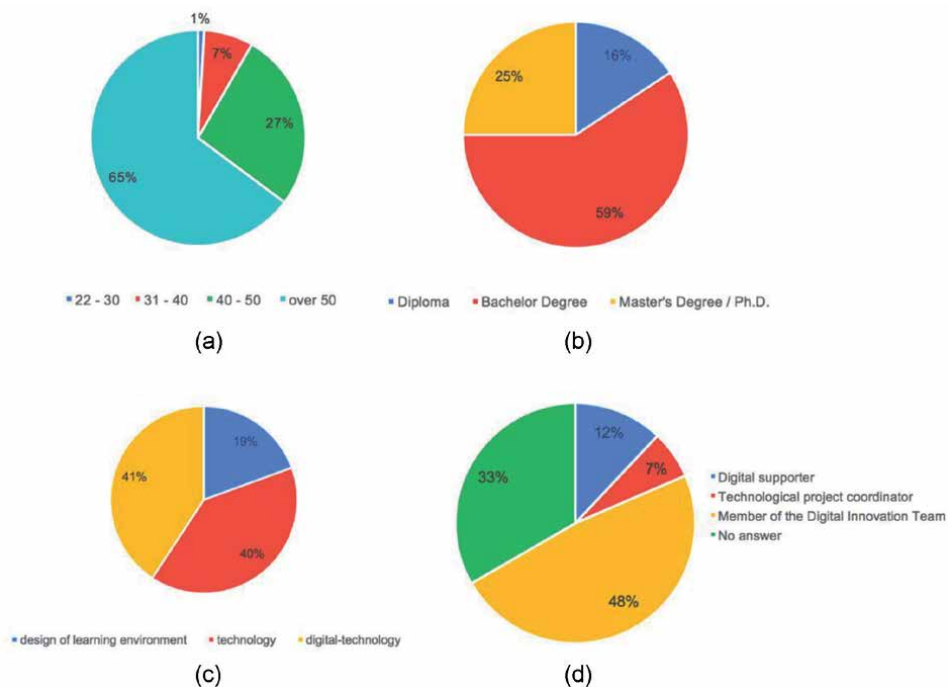
Figure 1.
(a) Age. (b) % of qualification. (c) % of PD training. (d) % middle-management assignment.

n. teachers				Age – over 50 years			
A.	Puglia	B.	Campania	A.	Puglia	B.	Campania
59 (0,097%)	61.094	49 (0,052%)	94.472	57,6% (−0,4%)	58%	73,5% (+14,2%)	59,3%

Table 6.
Sample representativeness.

- *what* - 'content clarification' and 'content facilitation' - focuses attention on learning content and tends to highlight the teacher's relationship with his/her discipline - see construct of 'relationship to knowledge';

- *how* - 'simplification of learning materials' and 'communicative effectiveness' - instead focuses attention on mediation and tends to highlight the teacher's relationship with the properly instructive dimension of his/her practice;

- *to whom* - 'class participation' and 'student participation' - shifts the focus, on the other hand, to the relational aspect of teaching, that is, the teacher's relationship with students and their participation.

These three aspects - *what*, *how* and *to whom* - were assumed as criteria for aggregating the data in the analysis process (see **Table 7**, **Figure 2**): they make it possible to better highlight where teachers' opinions and representations tend towards technologies: on aspects of content (*what*), of method (*how*) or with respect to students (*to whom*).

The following table shows absolute and percentages values of the six response alternatives (**Table 7**).

	A		B		Tot.	
	n.	%	n.	%	n.	%
To whom	31	52,5%	27	55,1%	58	53,7%
How	20	33,9%	12	24,5%	32	29,6%
What	8	13,6%	7	14,3%	15	13,9%
No answer	0	0,0%	3	6,1%	3	2,8%
Tot.	59	100,0%	49	100,0%	108	100,0%

Table 7.
Type of answers to question no. 12 in %.
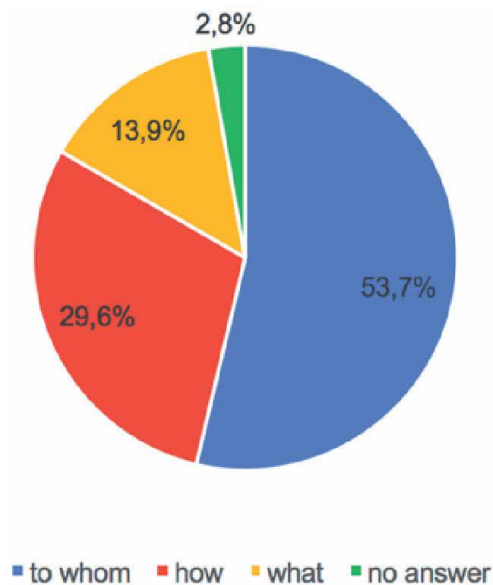
Figure 2.
Aspects of teaching influenced by technologies.

		A		B		Tot.	
Response alternatives		n.	%	n.	%	n.	%
Student participation		21	35,6%	18	36,7%	39	36,1%
Communication effectiveness		19	32,2%	11	22,4%	30	27,8%
Class participation		10	16,9%	9	18,4%	19	17,6%
Content clarification		8	13,6	7	14,3%	15	13,9%
No answer		0	0%	3	6,1%	3	2,8%
Simplification of learning materials		1	1,7%	1	2,0%	2	1,9%
Content facilitation		0	0%	0	0%	0	0,0%
Tot.		59	100%	49	100%	108	100%

Table 8.
Answers to question no. 12.

Table 7 shows the same answers grouped by type (**Figure** 2):

The prevalence of responses relating to the student-area (*to whom*) is highlighted, followed by the intervention methodologies/strategies (*how*) and teaching content (*what*) ones. The previous data are now correlated with the characteristics of the group of teachers involved (see **Table 2**):

	22–30 years	31–40 years	40–50 years	over 50 years	Total
To whom	1,7%	10,3%	19,0%	69,0%	53,7%
How	0,0%	6,3%	40,6%	53,1%	29,6%
What	0,0%	0,0%	33,3%	66,7%	13,9%
No answer	0,0%	0,0%	0,0%	100,0%	2,8%
Tot.	0,9%	7,4%	26,9%	64,8%	100,0%

Table 9.
Impact of technologies/age.
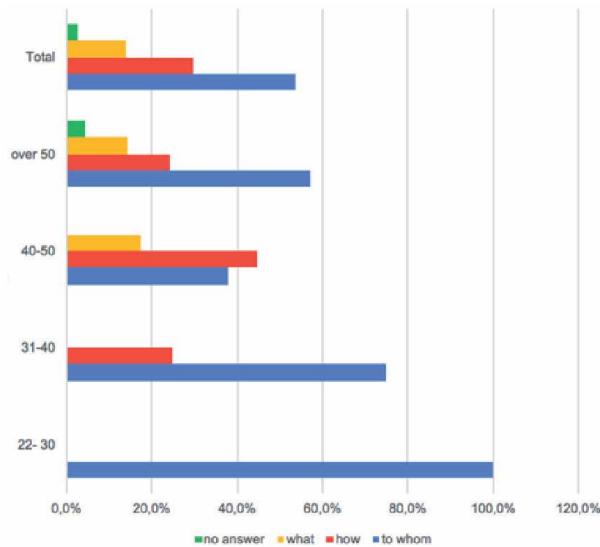
Figure 3.
Impact of technologies/age.
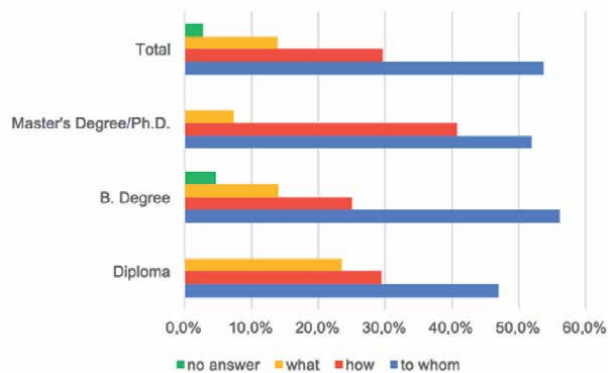
Figure 4.
Impact of technologies/qualification.

3.1.6 Impact of technologies and age

In all age groups, consideration of the impact of technologies on students prevails, with the exception of the 40–50 range where the influence on teaching methods is higher. It should be noted that within the younger classes - 22-30 years; 31–40 years - there is a complete lack of references to content - cf. **Table 9** - **Figures 3** and **4**.

3.1.7 Impact of technologies and qualification

Influence of technologies on students (*to whom*) prevails in all qualification grades (see **Table 10** - **Figure 5**). A slight increase compared to the methodologies (*how*) is found in the higher level of qualification.

3.1.8 Impact of technologies and seniority

Influence of technologies on students (*to whom*) prevails also within the seniority of service clusters (see **Table 11** – **Figure 6**). It peaks in the younger age group.

3.1.9 Impact of technologies and previous PD training

Influence of technologies on students (*to whom*) prevails also within the previous PD training clusters (see **Table 12** – **Figure 6**). It peaks in the 'design of learning environment', while it stabilizes for 'technology' and 'digital-technology'.

3.1.10 Impact of technologies and MM assignment

Same result for what concerns the characteristic of middle-management assignment (see **Table 13** - **Figure 7**). Influence of technologies on students (*to whom*)

	Diploma	**B. Degree**	**Master's Degree/Ph.D.**	**Total**
To whom	47,1%	56,3%	51,9%	53,7%
How	29,4%	25,0%	40,7%	29,6%
What	23,5%	14,1%	7,4%	13,9%
No answer	0,0%	4,7%	0,0%	2,8%
Tot.	100,0%	100,0%	100,0%	100,0%

Table 10.
Impact of technologies/qualification.
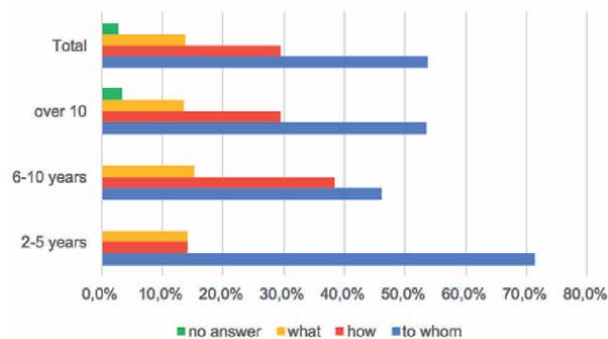
Figure 5.
Impact of technologies/seniority.

	2–5	6–10	over 10	Total
To whom	71,4%	46,2%	53,4%	53,7%
How	14,3%	38,5%	29,5%	29,6%
What	14,3%	15,4%	13,6%	13,9%
No answer	0,0%	0,0%	3,4%	2,8%
Tot.	100,0%	100,0%	100,0%	100,0%

Table 11.
Aspects of teaching/seniority.
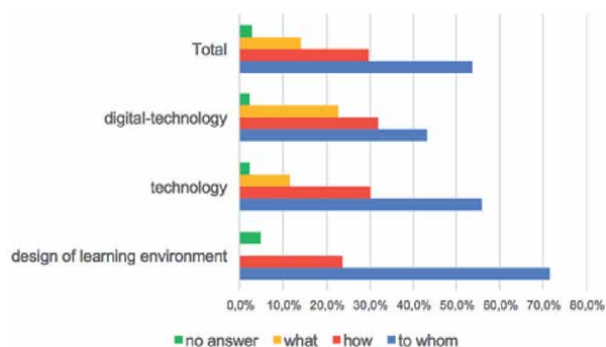
Figure 6.
Impact of technologies/PD training.

	Design of learning environment	Technology	Digital-technology	Total
To whom	71,4%	55,8%	43,2%	53,7%
How	23,8%	30,2%	31,8%	29,6%
What	0,0%	11,6%	22,7%	13,9%
No answer	4,8%	2,3%	2,3%	2,8%
Tot.	100,0%	100,0%	100,0%	100,0%

Table 12.
Impact of technologies/previous PD training.

	Digital animator	Instrumental function	Digital innovation team member	no answer	Total
To whom	53,8%	42,9%	55,8%	52,8%	53,7%
How	30,8%	42,9%	26,9%	30,6%	29,6%
What	0,0%	14,3%	15,4%	16,7%	13,9%
No answer	15,4%	0,0%	1,9%	0,0%	2,8%
Tot.	100,0%	100,0%	100,0%	100,0%	100,0%

Table 13.
Impact of technologies/MM assignment.

prevails in each of the three functions. It should be noted that for the Instrumental function the data of the participation of the tools (*to whom*) and the adaptation of strategies (*how*) are equivalent.
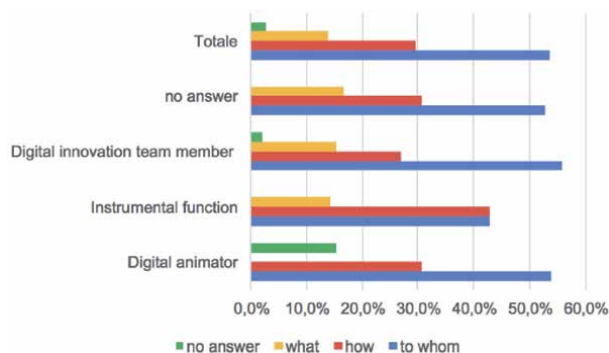
Figure 7.
Impact of technologies/MM assignment.

4. Results

The survey highlighted that the relationship with students has been the teaching practice aspect most influenced by technologies/digital resources in the period of the pandemic, according to the teachers involved.

The greatest urgency of the teachers was felt regarding the participation of single student and of class as well as regarding the communicative effectiveness - in terms of strategies - while teachers seem not to have bothered to facilitate the learning contents – **Tables 7** and **8**.

The group of teachers involved in the survey has stable and prevalent characteristics: on average elderly, with many years of experience and sufficient professional training on technologies.

Although the perception of the importance of the relationship with students does not seem to be affected, in general, by the characteristics of group – age, qualification, seniority, training, assignment - it nevertheless describes a different trend in them: it gradually increases with age (**Table 9**), it is higher in high qualification (**Table 10**), peaks in novices and then stabilizes in veterans (**Table 11**), prevails in those who have received more complex technological training (the design of learning environments - **Table 12**), is stable in every type of function (**Table 13**).

The trend of perceptions regarding teaching strategies (*how*) should also be considered: although it has a weight equal to half the participation of students (**Table 7**), it grows considerably with age (**Table 9**), it is quite high among teachers with high qualifications (**Table 10**) and with assignment as instrumental function (**Table 13**).

Unlike the professional assignment - which does not seem to affect the perception of the importance of the impact of technologies on the relationship with the student - the data of complex technology training should be compared with further investigations.

5. Conclusion. Rethinking the descriptive models of teaching

Support for students' learning processes should by now be taken as the focal point of the ability to teach, not secondary to disciplinary knowledge [36]. If valid in general, this assumption is even more valid in emergency conditions, when concentrate efforts on reducing potential exclusions is so necessary, as stated by supranational bodies [2, 5, 7] and confirmed by our survey.
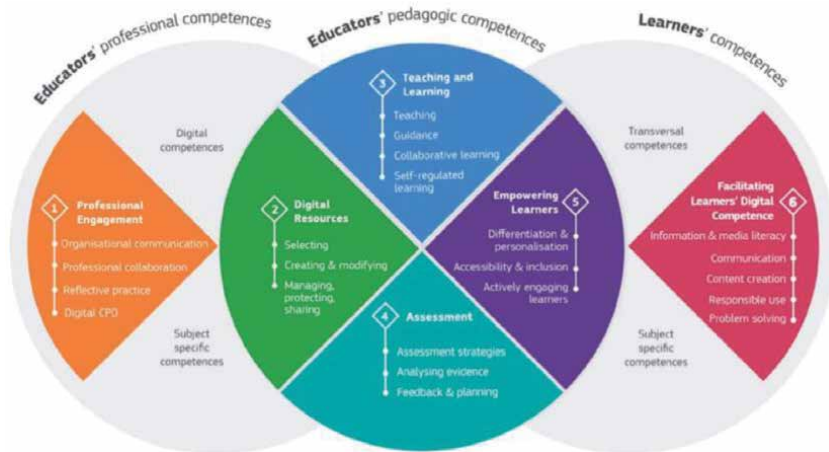
Figure 8.
The DigCompEdu areas and scope ([31], p. 15).

Place the student at the center of the teaching intervention - even more student with special needs - is the recommendation of Europe which, not by chance, adopted an articulated model of educators' technological [31] - **Figure 8**: to the 'characteristic phases of any teaching process, supported or not by technologies' (see area 1, 2, 3, 4) it adds the transversal area 5 of 'Empowering learners', which 'recognizes the potential of digital technologies for teaching strategies and learner-centered learning' ([31], p. 16).

In the traditional explanatory models of 'teacher's thinking' by Shulman and Koehler and Mishra [24, 25] the main components of the teacher's practical knowledge - 'learning contents' and 'intervention strategies' - are theoretically placed at the center, though they are not so relevant in the representations of the teachers involved in the survey and who are committed to addressing the problems related to 'emergency' distance learning during the COVID19 pandemic.

Traditional models of "teacher's thinking" [37, 38], mainly focused on disciplinary-knowledge, recognize other component of teaching didactic practice – elsewhere defined 'holistic', 'contextual' or 'relational' [39–41] - as "student participation" and "support to learning processes", as highlighted in the survey – but not specific weight.

The weakness of the TPCK construct would be the underlying logic of the 'overlap-separation' between the technological, pedagogical and disciplinary area. Although the authors state that 'the effective use of technologies in teaching is possible only when the teacher is able to integrate these three different cognitive components' ([25], p. 78), they should better clarify whether such integration takes place in actual practice, in the different procedures of teaching, or 'in the teacher's mind' as actual knowledge, then made into practice - as Shulman's thinking model seems to suggests [38]. Although, as stated by Koehler and Mishra ([25], p. 65), 'the TPCK framework for teacher knowledge is described in detail, as a complex interaction between three bodies of knowledge: content, pedagogy and technology'; albeit this framework seems to be useful to describe the dynamic/transactional relationship [27] between content, pedagogy and technology, it seems to be not sufficient to describe the actual complexity of the teacher's skills, given it underestimates the component of the 'student's point of view' [27]. Also for this, PCK and TPCK models are useful to describe the teacher's knowledge, as reasoning and procedures followed, but not sufficient to explain the stakes of the teaching practice [42–44], mainly in the *corona teaching* phase.

As noted elsewhere [17, 45], 'in other words, teacher should develop' the ability to teach content from the students 'point of view' (Ben-Peretz 2011, p. 4), making

the most of the possibilities offered by the e-learning environment. An extension of the TPACK, more "sophisticated" [17, 45] would be necessary to describe the knowledge of the teacher, which would concern not only the choice and delivery of effective digital content, from an organizational point of view, but also adaptation and *re-shaping* of knowledge to be taught on the basis of the characteristics of the students - as American experiences suggest (see *ICritical Thinking* of Educational Testing Service at the University of Princeton) and the DigCompEdu model - given that they take the perspective from the point of view of learning outcomes.

The current emergency scenario clarified the need to 'integrate' each components of teaching - planning, intervention, reporting, monitoring, etc. – in order to support student participation and learning: 'downstream', at the instructional level, and 'upstream', at the design level. On both levels, e-learning technologies can offer concrete support as long as teachers are adequately trained. The teachers involved perceive the learning needs of students as urgent, those who have received more complex training in technologies - not only at the instrumental level but also in learning environments - have felt this urgency even more. As noted by the OECD study ([22] – **Table 2**), among the skills underlying the professional development support of teachers there are disciplinary knowledge, support for 'processing and cognitive strategies' and 'collaborative group skills'.

The data should be compared with other similar studies (in terms of technological training of teachers) or different (with a larger population), to be taken as evidence and to allow a possible generalization of the results. The study presented was carried out in a population with stable and geographically similar socio-professional characteristics and highlighted that as age, length of service and level of training increase the importance given to the 'students' factor increases. 'in the relationship with technologies. Although it is extremely interesting to verify whether this trend would reappear in a population with diversified characteristics.

Acknowledgements

Conflict of interest

The authors declare no conflict of interest.

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The Revolutionary Media Education Decade: From the UNESCO to the ALFAMED Curriculum for Teacher Training

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Abstract

Nations across the globe are immersed in a technological revolution—intensified by the need to respond to COVID-19 issues. In order to be critical and responsible citizens in the current media ecosystem, it is important that students acquire and develop certain skills when consuming and producing information for and when communicating through the media. This is a major challenge that educational systems worldwide have to face. Hence, new curricula in media education to guide future teachers towards the successful acquisition of new media skills have been proposed. The aims of this work are to conduct a theoretical approach to this worldwide technological and media evolution in the past decade, to make an in-depth comparison between the Curriculum for teachers on media and information literacy published by the UNESCO (2011) and the publication of the new AlfaMed Curriculum for the training of teachers in media education (2021). This framework starts by providing an extensive analysis of the key elements of both curricula and of their corresponding modules, establishing, thus, a constructive comparison while updating them, according to the needs, changes, and realities that have taken place regarding digital literacy in the past decade. Finally, the chapter concludes with the detailing of the challenges and with proposals for teacher training in media and information literacy.

Keywords: Media and Information Literacy, EduCommunication, digital competences, curriculum innovation, teacher training

1. Introduction

The world, particularly developed nations, is undergoing a process of technological changes that has been especially influenced by the COVID-19 pandemic—it has changed how we interact with each other and our understanding of society. This upcoming decade will be of utmost importance in regard to educating and empowering people so they will be able to face these new digital media challenges.

In its latest report, "COVID-19 and Human Rights. We are all in this together" [1], the United Nations advocates education as an ally for the defense of human

rights—education is, after all, a fundamental element in the struggle against inequality and social vulnerability. Besides, the 2030 Agenda for Sustainable Development and its 17 objectives add a series of objectives to the area of EduCommunication. A veritable media ecosystem has made its way into modern society and, in order to navigate it as responsible citizens, students worldwide require certain critical thinking skills [2]. Accordingly, with teaching and learning processes in mind, it is vital to propose a new media curriculum to guide future educators towards the acquisition of updated media skills. For this reason, the goal of this chapter is to delve into the new AlfaMed Curriculum for the training of teachers in media education [3], which has been based on the famous Curriculum for teachers on media and information literacy published by the UNESCO in 2011 [4]. For this reason, in this chapter is proposed a comparative study between both curricula, from a perspective of the aforementioned changes and transformations that citizens have been experiencing in the past decade.

One of the main goals set by the UNESCO in 2011 was to ensure that people, teachers in particular, were critical with the media. Adopting a critical stance towards the media is even more necessary today, when the pandemic has increased our media consumption and use of social networks [5]. This objective has been echoed in the new AlfaMed curriculum, which has been designed by AlfaMed Network researchers from different countries in Europe and Latin America.

This work is structured from a media conceptualization competence and key elements from the media curriculum. It analyzes the modules that are collected in both curricula, establishing thus a constructive and updated comparison, which reflects digital literacy's changes, new realities, and needs from the past decade.

2. Media competences in the past decade

The past decade will be remembered for the start of one of the most sterling pandemics in recent history, as well as for the unprecedented technological revolution that has transformed the world. For example, cloud computing has become widespread, the internet has become ubiquitous, social networks such as Instagram or Pinterest were created, the iPad revolutionized the market, and in 2011, Snapchat and Twitch appeared, paving the way to a new understanding of entertainment. On a massive scale, online video games have become a favorite among young people, especially through the use of consoles such as the PlayStation 4 (PS4) (see **Figure 1**). Social networks, however, display an everchanging landscape—Instagram is still around and YouTube and TikTok are some of the most popular platforms [5].

Children's first contact with tablets is happening earlier and earlier, at the same time that adults have borne witness to the evolution of desktop computers into increasingly lightweight, powerful, and cheaper laptops. There are mobile phones that can act as full-fledged computer replacements and cloud storage being used instead of USB flash drives. Music streaming services in the shape of mobile apps have rendered specialized audio player devices obsolete. This is the context where people of all generations, younger and older alike, are living.

Technological progress cannot be stopped—it is embodied by the creation of new products, companies that are constantly renewing themselves, and by users who demand more and more immediacy and quality service.

A new debate has surged amidst this panorama, regarding how the educational systems of different countries are responding to the diverse contexts, needs, and demands of a digital society that has seen how technologies have revolutionized the educational system as whole. With the arrival of the COVID-19, teachers from
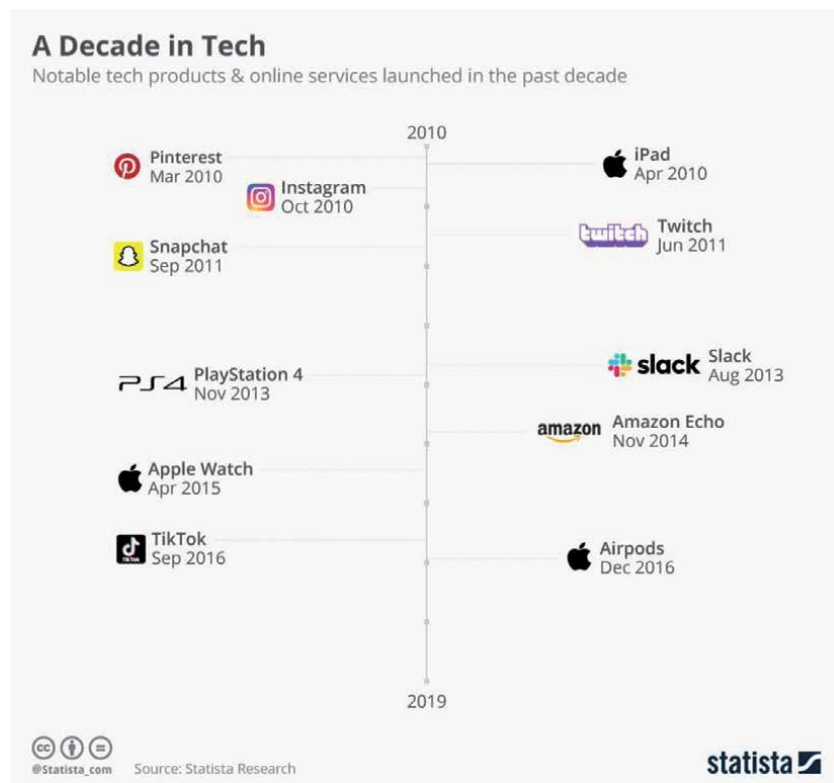
Figure 1.
Evolution of the past ten years in technologies. Source: Statista, from: https://bit.ly/3lmHbGp.

all over the world had to adapt to new ways of learning and teaching, innovate with methodologies that could be applied online, reorganize spaces, resources, and time—in short, they had to devise a new way of understanding the curriculum.

Curriculum theories and definitions have been evolving for several decades, some stemming from objective-based planning models, typical of rationalist theories such as those promoted by Dewey, Tyler, or Bloom, while others emerged with the support of reconceptualist theories or processual or critical approaches. In one way or another, the term curriculum has been defined as a learning plan [6] and is constituted by capacities, values, contents, methods, and procedures that require certain management and evaluation models, which should be successfully conducted by educational organizations [7]. The term "curriculum" has been adopted in various ways, depending on the country, to respond to specific demands [8]. In this sense, and taking into account the current media society, the expression "digital competence" was coined to describe one of the essential skills that people should acquire [9], establishing, this way, a direct relationship between media competence and education—the teaching of this competence relies mainly on media and digital literacy processes.

In 2008, the European Parliament made an etymological approach of the concept of media education—a paramount concept that each country understood in its own way until the publication of the Media and Information Literacy Curriculum for Teachers in 2011 by the UNESCO [10]. Its aim was that people were able to identify the functions of the media and its devices in their daily lives, thus, empowering them to exercise their individual right to seek, receive, and transmit information and ideas from a critical thinking standpoint.

Media education, media and information literacy (MIL) or media literacy (ML), were defined in the recommendation made by the European Commission to the European Parliament (August 20, 2009) on media literacy in the digital environment. Article 11 of this recommendation pleads for a more competitive audiovisual content industry and for a more inclusive knowledge society. It also stresses the importance of media access through a critical lens: to be able to understand and evaluate different means of communication with sound criteria. Moreover, article 18 of this recommendation emphasizes the need to address media literacy in different ways and at different levels, from educational systems to local authorities—they are closer to the population and should foster support initiatives of the non-formal education sector. Civil society, too, should actively contribute to the promotion of media literacy.

The truth is that being exposed to the media does not mean that you will acquire media competence—younger people, such as children and teenagers, lack criteria that would make them responsible and critical consumers [11]. This is why it is imperative that teachers learn skills and strategies that would allow them not only to consume media, but also to be active agents in the processes of construction of digitized meanings, becoming themselves, thus, intelligent prosumers who are then capable of transmitting the same skills to their students. Furthermore, teachers should become veritable designers who will take the initiative to, critically, creatively, and sustainably, access, select, produce, and distribute, digital material in any type of media [12]. Teachers have to work with centennials and millennials, which, in itself, pose new challenges regarding in-class dynamics. The implementation of new pedagogical methods and tools is directly related to teacher training and requires the development of multidisciplinary learning networks [13, 14].

For this reason, the curriculum must adapt to the aforementioned changes, to new ways of understanding communication processes, media consumption, and the building of citizenship identities. In a recent publication by Pérez-Tornero, Orozco and Hamburguer [15], "MILID Yearbook 2018/2019. Media and information literacy in critical times: Re-imagining learning and information environments," professionals from different fields, such as EduCommunication, have compiled reflections, research, and analyses on the current state of media and information literacy. This work is divided into three parts: MIL Augmenting Information Freedom and Knowledge Status, MIL and the Different Actors and Situations of Learning, MIL Providing New Opportunities. Specifically, and regarding media literacy teaching and learning processes, the importance of dialogue with students is mentioned as crucial in understanding the ideas, expectations, and assessments of other people in media environments.

3. From the UNESCO's teaching curriculum to AlfaMed's: shared content, challenges and proposals

There have been several changes in EduCommunication in the past ten years. However, the foundations laid by the UNESCO in 2011 on the media and information literacy curriculum for teachers have been maintained [4], although they have been updated by the AlfaMed Curriculum regarding media education training of teachers in 2021 [3]. Nevertheless, it's been observed, after a thorough analysis of the organization and the structure of both curricula, that the purposes, objectives, and curricular organizations have kept the same guidelines.

3.1 The UNESCO and AlfaMed curricula shared content

Both curricula share the fundamental goal of attempting to be a benchmark guide on the media education curriculum for teachers—they both agree that

teachers need to be adequately trained so they will be able to critically and reflectively educate their students on media literacy.

Accordingly, the UNESCO curriculum proposed three topic areas for teacher training in thematic education: 1. Awareness and understanding of the media and information for democratic discourses and social participation. 2. Evaluation of media texts and sources of information. 3. Production and use of media and information.

These topic areas are enriched by a curriculum that outlines seven competencies on which the teaching staff will be trained. It will establish a relationship between them with a series of central modules (9), electives (2), and three optional units that will enrich the teacher's curriculum. Likewise, all modules include units with their respective key topics, objectives, didactic approaches, activities, and evaluation recommendations.

The following are the seven competencies in which teachers will develop media literacy skills according to the UNESCO curriculum:

- Competence 1: Understanding the role of the media and information in democracy. "The MIL teacher will take the first steps in learning about the functions of the media and other information providers and about the importance they have for citizens and for educated decision-making."

- Competence 2: Understanding media content and its uses. "The MIL teacher must be able to demonstrate knowledge and understanding of the ways in which people use the media in their personal and public lives, the relationships between people and media content, as well as the use of the media for a variety of purposes."

- Competence 3: Effective and efficient information access. "The MIL Professor must have the ability to determine the type of information that is required for a particular task and retrieve it effectively and efficiently."

- Competence 4: Critical evaluation of information and information sources. "The MIL teacher will be able to critically evaluate a piece of information and its sources and incorporate the selected information into problem solving and analysis of ideas."

- Competence 5: Applying new and traditional formats to the media. "The MIL teacher will be able to understand the uses of digital technology, communication tools, and networks for the collection of information and decision-making."

- Competence 6: Positioning the sociocultural context of media content. "The AMI teacher will be able to demonstrate that knowledge and understanding of media content occurs within social and cultural contexts."

- Competence 7: Promote MIL among students and manage the required changes. "The MIL teacher will be able to use the knowledge and skills acquired through their AMI training to promote media and information literacy among students and will be able to deal with changes related to the school/college environment."

The AlfaMed curriculum maintains the same areas and competencies, although it makes a few changes related to modules and activities—it also updates the

contents associated with social networks contexts, which had not emerged until 2011. Below is a comparative table of the modules proposed by the UNESCO and AlfaMed media literacy teaching curricula (**Table 1**).

In the case of the AlfaMed curriculum, a series of general modules have been proposed, without dividing them into basic or optional, in an attempt to respond to media literacy current needs. Likewise, while the UNESCO does establish a list of the competencies that teachers must acquire (see **Figure 2**), the AlfaMed curriculum does not establish such a relationship, instead, it considers the entire proposal as a general response to these competences.

Taking into consideration what has been described so far about the relationship between competences and modules proposed in both curricula, it is necessary to detail the didactic units corresponding to each module that constitute

	Curriculum for teachers on media and information literacy (UNESCO, 2011)		AlfaMed curriculum for the training of teachers in media education (AlfaMed, 2021)
Basic modules	Module 1: citizenship, freedom of expression and information, information access, democratic discourse, and lifelong learning	Grouped total modules	Module I. Media and information literacy: justification, conceptualization, and contexts
	Module 2: understanding the news, the media, and information ethics		Module II. From traditional media to emerging media
	Module 3: representation in the media and information		Module III. Participatory culture and prosumers in the age of sharing
	Module 4: language in the media and information		Module IV. Representation in the media and information: values and emotions
	Module 5: advertising		Module V. Languages in the new media and information
	Module 6: new and traditional media		Module VI. Advertising
	Module 7: opportunities and challenges on the internet		Module VII. Opportunities and challenges of the internet
	Module 8: information literacy and skills		Module VIII. Information, misinformation, and their implications
	Module 9: communication, MIL and learning—module		Module IX. Digital security, privacy, and digital citizenship
Optional modules	Module 10: audience		Module *X. media* competence and learning
	Module 11: media, technology, and the global world (global village)		
	Module 3, Unit 5: digital photo editing and alterations		
	Module 4, Unit 4: camera shots and angles, conveying a message		
	Module 5, Unit 5: transnational advertising and "super brands"		

Table 1.
Comparative modules of the curricula for teacher training in media education UNESCO–AlfaMed.
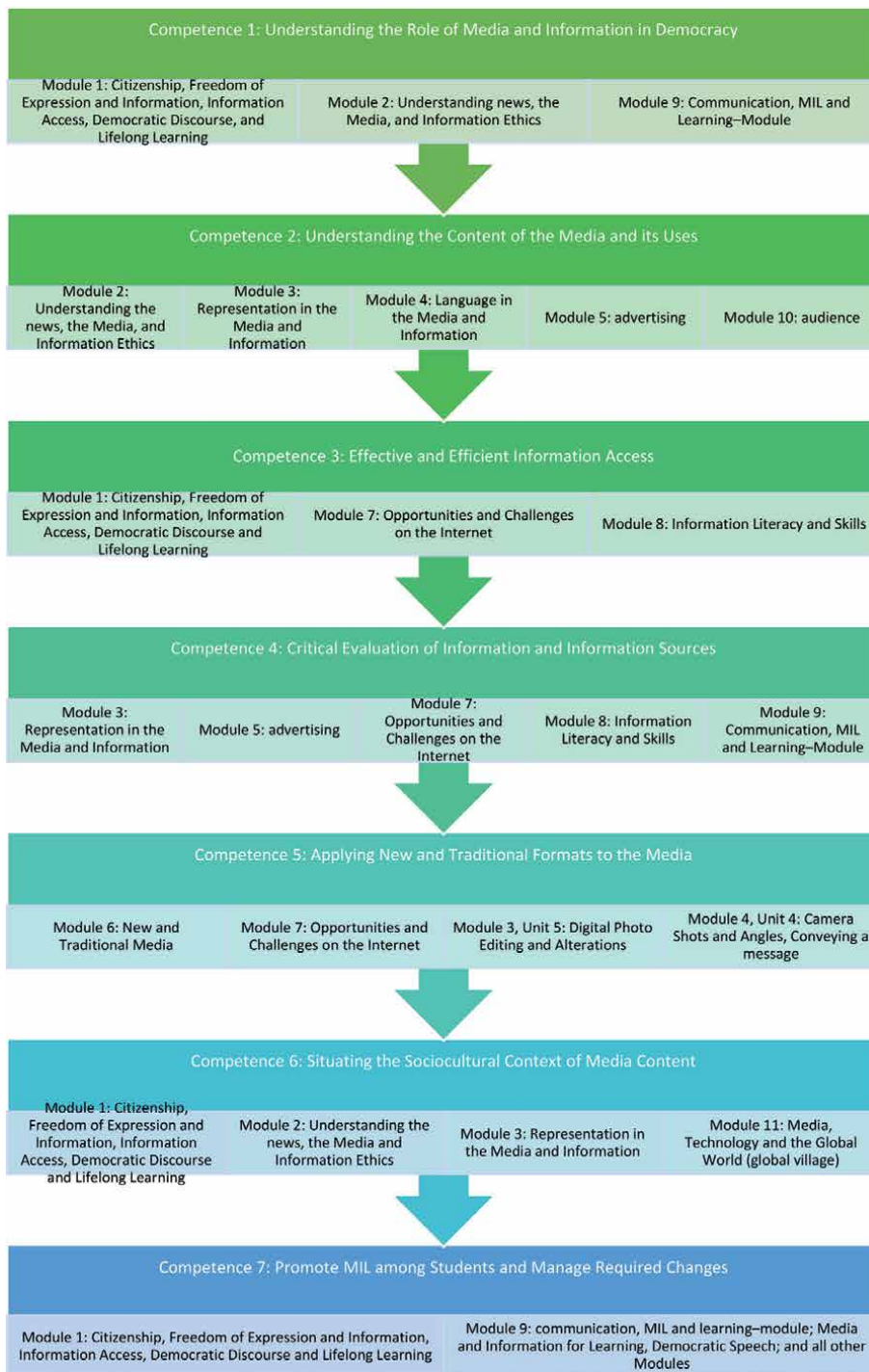
Figure 2.
List of competences and modules according to the UNESCO curriculum (2011).

the pedagogical and action–practical part of the teacher training in media and information literacy.

The comparison starts with the curriculum proposed by the UNESCO—we will analyze the relationship between its modules and units, from the basic and

optional modules. Specifically, the first teaching units correspond to the following basic modules:

- Module 1: Citizenship, freedom of expression and information, information access, democratic discourse, and lifelong learning (from childhood to adulthood):

  ○ Unit 1: Understanding Media and Information Literacy: An Orientation

  ○ Unit 2: MIL and civic participation

  ○ Unit 3: Interacting with the media and other information providers such as libraries, archives, and the internet

  ○ Unit 4: MIL, teaching and learning

- Module 2: Understanding the news, the media, and information ethics

  ○ Unit 1: Journalism and society

  ○ Unit 2: Freedom, ethics, and accountability

  ○ Unit 3: What generates news—exploring the criteria

  ○ Unit 4: The News Development Process: Beyond Five Whys and a How

- Module 3: Representation in the media and information

  ○ Unit 2: Industry Codes on Diversity and Representation

  ○ Unit 3: Television, movies, and book publishing

  ○ Unit 4: Performance and music videos

- Module 4: Language in the media and information

  ○ Unit 1: Reading the media and information texts

  ○ Unit 2: The medium and the message: printed and broadcast news

  ○ Unit 3: Movie and story genres

- Module 5: Advertising

  ○ Unit 1: Advertising, revenue, and regulations

  ○ Unit 2: Public service announcements

  ○ Unit 3: Advertising: the creative process

  ○ Unit 4: Advertising and the political field

- Module 6: New and traditional media

  ○ Unit 1: From traditional media to new media technologies

  ○ Unit 2: Use of new media technologies in society—mass and digital communications

  ○ Unit 3: Uses of interactive multimedia tools, including digital games in classrooms

- Module 7: Opportunities and challenges on the internet

  ○ Unit 1: Young people in the virtual world

  ○ Unit 2: Challenges and risks in the virtual world

- Module 8: Information literacy and library skills

  ○ Unit 1: Concepts and application of information literacy

  ○ Unit 2: Information literacy and learning environment

  ○ Unit 3: Digital information literacy

- Module 9: Communication, MIL and learning—culminating module

  ○ Unit 1: Communication, teaching, and learning

  ○ Unit 2: Learning theories and MIL

  ○ Unit 3: Managing change to foster a favorable environment for MIL schools

Module 10 on Hearing is integrated into the optional modules that only contain one teaching unit under the same name, Module 11 on Media, technology and the global world (global village), which includes four units: Unit 1. Media ownership in today's global world; Unit 2. Sociocultural and political dimensions of globalized media; Unit 3. Information as a product (commodity); and Unit 4. The emergence of alternative media. The next module is the third one collected by the Unit 5. Digital photo editing and alterations; the fourth module deals with a didactic unit (Unit 4) on Camera planes and angles, transmitting a message and finally the fifth module that addresses transnational Advertising and "super brands," to end with a glossary of media and information literacy terms.

The second analysis corresponds to the AlfaMed curriculum, which integrates all the modules as fundamental elements of teacher training as follows:

- Module I. Media and information literacy: justification, conceptualization and contexts

  ○ Unit 1.1. Media and information literacy: justification and conceptualization

  ○ Unit 1.2. Media competence: dimensions and indicators

  ○ Unit 1.3. Contexts of intervention: formal, non-formal, and informal

- Module II. From traditional media to emerging media

  ○ Unit 2.1. From mainstream media to digital and alternative formats

  ○ Unit 2.2. Digital and emerging media

  ○ Unidad 2.3. Social networks: new media for interaction

- Module III. Participatory culture and prosumers in the age of sharing

  ○ Unit 3.1. Platforms for the consumption, production, and dissemination of content

  ○ Unit 3.2. The prosumer in a participatory society

  ○ Unit 3.3. Citizenship and participatory culture

- Module IV. Representation in the media and information: values and emotions

  ○ Unit 4.1. Ethics and responsibility in the representation of information: visual, textual, and multimodal aspects in different media types.

  ○ Unit 4.2. Gender, identity, and sexual orientation

  ○ Unit 4.3. Race, ethnicity, and identity

  ○ Unit 4.4. Inclusion and different capacities

- Module V. Languages in the new media and information

  ○ Unit 5.1. General characteristics of digital codes and languages (algorithms, hashtags, emoticons)

  ○ Unit 5.2. Narrative strategies of the new media configurations

  ○ Unit 5.3. Genres of influence (booktubers, edutubers, science youtubers, gamers)

- Module VI. Advertising

  ○ Unit 6.1. The advertising message: from print to viral

  ○ Unit 6.2. New advertising formats, monetization, and datafication of human processes

  ○ Unit 6.3. Who creates / positions / configures the advertising message? From content curator to educational community manager

- Module VII. Opportunities and challenges of the internet

  ○ Unit 7.1. Uses and importance of the internet in society

  ○ Unit 7.2. Internet opportunities in the educational space as a means of informal learning and as an educational tool

  ○ Unit 7.3. Risks and problematic uses of the internet

- Module VIII. Information, misinformation and their implications

  ○ Unit 8.1. Opinions in the era of infoxication

  ○ Unit 8.2. Infodemic and types of misinformation (information disorders: virality, hoaxes, and fake news)

  ○ Unit 8.3. Contexts and networks: strategies to manage disinformation

- Module IX. Digital security, privacy, and digital citizenship

  ○ Unit 9.1. Approach to Big Data and information in the Cloud

  ○ Unit 9.2. Online privacy, security, and data protection

  ○ Unit 9.3 Malware, hacking, bots, and network fraud (phishing)

  ○ Unit 9.4. Digital citizenship, duties and responsibilities

- Module X. Media competence and learning

  ○ Unit 10.1. The role of the teacher as a guide and facilitator students' media competence development

  ○ Unit 10.2. Participatory and innovative methodologies in the media context

  ○ Unit 10.3. Educational resources and good pedagogical practices in media competence

As evidenced in the modules and didactic units, both curricula start from the same contextualizing thread of media education and develop its conceptualization, typology, and justification. Next, they move on to expand on the media education of teachers. The AlfaMed curriculum, however, progresses even further and updates the most relevant content related to today's hypermedia society—it offers topics such as social networks, fake news, risks, security and privacy, and ends with proposals and resources that will promote the development of media competence.

3.2 Challenges and proposals for teacher training in media and information literacy

These changes have driven the creation of different curricula in teacher training in media literacy and with them, new objectives emerge—teachers are being forced to adapt to new objectives, updated contents, and new teaching methodologies. More specifically, the AlfaMed curriculum proposes certain methodological strategies that will foster learning and teaching innovation. Flipped classroom is a good example of the latter. This methodology allows for certain learning processes to take place outside the classroom, which means that class time may be used for more personalized knowledge building. Mobile learning is another outstanding tool through which one may carry out educational practices regardless of location and time, making the most of the advantages of mobile devices. One of the most cutting-edge methodologies is design thinking—the teacher will suggest objectives and problems that should be handled by the students in a creative and efficient manner. Finally, in this new digital learning panorama, massive open online courses

(MOOC) have turned into a crucial tool in online learning, since it allows students to better organize their time, at the same time that they foster responsibility, commitment, and autonomy.

Likewise, widespread social networks and the emergence of new actors in the digital landscape such as influencers—who have become role models for many young students—represent new challenges for teachers. These new forms of expression and communication, as well as the acquisition of information and content require specific skills on the part of teachers so they may safely deal with them in class. Consequently, both curricula, particularly AlfaMed's, make reference to and propose activities that will aid teachers when facing these challenges—an example of the latter is the use of edutubers in a school context.

Similarly, although the challenges can be rethought from the teaching point of view, without forgetting to emphasize the need for educational and political institutions to also support this development. Teacher training is part of the improvement of digital competences—school organizations, educations policies, and the publishing and technology industries must also get involved in the training and development process [16]. The updating of media teaching methods should continue to be promoted because, as stated in a study by Monteiro and Leite [17], students have highlighted the importance of implementing technologies in the class and have defended the need for an updated teacher training. It is essential to focus on the specialized training of teachers, detect their abilities and skills, and facilitate their respective processes of pedagogical and didactic adaptation.

4. Conclusions

As stated in this book chapter, one of the UNESCO's greatest challenges is to train teachers in the face of new realities and to enforce equity and quality in education. With regards to teaching needs in digital competences, the UNESCO has devised documents, such as the UNESCO/ILO Recommendation concerning the Status of Teachers (1966) or the UNESCO Recommendation concerning the Status of Higher Education Teaching Personnel (1997), which are updated every three years by an expert committee. Furthermore, taking into account the current media society, it also advocates for the implementation of media literacy programs that will address various elements such as production, representation, audience, and language—key aspects also defended by Buckingham [9]. The media training of the population, if conducted from a critical and responsible perspective and if carried out with the media, itself, in mind and using medium resources, will inevitably lead to reflections on how it may be updated and to how teacher training should be addressed within primary, secondary, and higher education [18, 19]. Following this line, this chapter also defend the need to respect the new Digital Education Action Plan (2021–2027) proposed by the European Commission to promote high-quality digital education that is inclusive and accessible all over Europe—if there is something COVID-19 has taught us, it is that the use of technology in education grew dramatically and it has been vital to adapt all educational and training systems around it. This is an operation that should not stop. This plan includes two strategic priorities: the promotion of the development of a high-performance digital educational ecosystem and the improvement of digital skills and abilities to achieve true digital transformation. They both include the need to improve online infrastructure and connectivity, better planning for the development of digital skills under privacy and ethical standards, and the fostering of digital literacy at all ages. This represents an overhaul of the current program that will guide teachers to educate the citizens of the future.

Therefore, it is necessary to continue to research and to prioritize the incorporation of tools, strategies, and training proposals on media education in the preparation of teachers, therefore, an update of the curriculum proposed by the UNESCO in 2011 is necessary, as is also advocated by Alcolea-Díaz et al. [4], in line with the AlfaMed curriculum for teacher training on media education published by the AlfaMed Network [3]. In addition, this need is also supported by a recent study from the Organization for Economic Cooperation and Development [20], which stated that less than 40% of educators consider themselves prepared to use modern technologies when teaching, and detailed significant differences between the countries of the European Union.

In conclusion, to promote the updating of the teacher's curriculum means to defend the quality of education. The adaptation to this training will respond to new demands and needs, and will benefit teachers, who will, in turn, educate their students as future citizens—participatory, critical, and responsible citizens in the current media ecosystem.

Acknowledgements

Conflict of interest

The authors declare no conflict of interest.

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Chapter 4

Are Teacher Students' Deep Learning and Critical Thinking at Risk of Being Limited in Digital Learning Environments?

Siri Sollied Madsen, Steinar Thorvaldsen and Sissel Sollied

Abstract

The 21st century is quite different from the 20th in regard to the skills people need for work, citizenship, and self-actualisation. Proficiency in the 21st century differs primarily due to the emergence of sophisticated information and communication technologies. In this chapter, we will discuss whether teaching students are sufficiently prepared regarding the need for 21st century skills and how learning in a digital age affects the need for high-level critical thinking. Based on 20 in-depth interviews of Norwegian and New Zealand teaching educators, teaching students' low critical thinking skills seem to be understood as a global challenge and as connected to the digital revolution. Despite being from different sides of the globe, teaching educators from both countries expressed concern regarding students' in-depth learning and critical thinking skills in an educational where learning is influenced by digital technology. This article discusses the dilemmas regarding having easier access to greater amounts of information, which requires a different form of critical thinking. We question whether we are and have been preparing students sufficiently for this educational change.

Keywords: deep learning, critical thinking, digital technology, teacher education, digital learning

1. Introduction

The 21st century is, according to Dede [1], quite different from the 20th in regard to the skills people need for work, citizenship, and self-actualisation. Proficiency in the 21st century differs primarily due to the emergence of sophisticated information and communication technologies (ICTs). All over the world, ICT in education has been incorporated into formal national guidelines of the degree requirements of teacher education as an official policy. Digital technology in itself is often seen as a catalyst for educational change, and technology as a symbol for change is often understood as something positive, as investments in technology supports development in society [2].

Despite the fact that a fifth of the 21st century is behind us, it seems we are not up to speed regarding the skills anticipated as central for our digital era. Furthermore, there is a lack of clarity regarding what 21st century skills really are.

The digital revolution is part of the change making 21st century skills different from those learned in schooling through the 20th century. ICT is changing the nature of perennial skills that are valuable in the modern world, as well as creating new contextual skills necessary for digital societies [1]. The world has changed fundamentally in the last few decades, and in effect, the role of learning and education has changed. Many of the skills needed in past centuries, such as critical thinking and problem solving, are, according to Trilling and Fadel [3], even more relevant today. How these skills are learned and practiced in everyday life in the 21st century though, is rapidly shifting.

This chapter presents a critical perspective on how learners' information, media and technology skills can be understood, and how they are connected to learning and innovation skills. Data for this chapter is based on qualitative in-depth interviews of ten teaching educators at the University of Waikato in New Zealand and ten teaching educators from UiT, the Arctic University of Norway. Both countries are facing similar educational challenges when teaching in digital environments, as both must educate teaching students in digital-rich environments with high access to various ICTs and educational resources at home [4]. The universities are similar in size and student numbers.

This comparative study of Norwegian and New Zealand teaching education has led us to question how we educate students to meet the future and whether the educational systems are adapting sufficiently to new digital learning contexts. Is teaching students' deep learning and critical thinking at risk of being limited in digital learning environments? In short, are students sufficiently prepared for the future?

2. Different perspectives on skills

2.1 The 3Rs—Traditional education

There is widespread agreement among educators and the public about the importance of the traditional fundamental building blocks that underpin student learning. These skills are often referred to as the 3Rs—reading, writing and arithmetic [5]. These are important skills, but as Crockett et al. [6] have argued, for students to progress from the foundations of learning, teachers need to expand their thinking outside their 'primary focus and fixation on the Three Rs (3Rs)—beyond traditional literacy to an additional set of 21st century fluencies, skills that reflect the times we live in'.

2.2 The 4Cs as common ground for 21st century skills

The notion that the 3Rs are not sufficient when preparing students for the future is not a new idea. Broader skills are needed and have been discussed since the first half of the 20th century. One example is an informal meeting of college examiners attending the 1948 American Psychological Association Convention in Boston, which was the start of the development of the theoretical framework known as Bloom's taxonomy. This is a well-known and commonly used system of classifying the goals of the educational process beyond the 3Rs [7]. A common ground in the search for 21st century skills is by Keane, Keane and Blicbau [8] described as the 4Cs:

- Critical thinking

- Communication

- Collaboration

- Creativity

This understanding is based on three influential organisations associated with education, management, and industry developed definitions for 21st century learning. These organisations are the Ministerial Council for Education, Employment, Training and Youth Affairs (MCEETYA), the American Management Association (AMA), and AT21CS, a public and private partnership among governments, educators, academics, and industries [8]. While basic skills such as numeracy and literacy remain essential building blocks for learning, higher order skills such as the 4Cs are equally vital for learning and employment in the 21st century. Keane and Blicbau [5] write that 21st century skills are about fusing the 3Rs and the 4Cs, but the contextual aspect is also of great importance because context contributes to defining and affecting how different skills are used.

2.3 Twenty-first century skills and digital technology

Students in the 21st century live in a technology- and media-rich environment with access to a wide range of information, powerful digital tools, and the ability to collaborate and communicate with others. This affects what form of critical thinking is required. Fundamental to the development of 21st century skills is the importance of ICT for learning [8]. A discussion paper prepared for the European Union stated that information and communication technology (ICT) is at the core of 21st century skills. It is regarded as both an argument for the need for these skills, and a tool that can support the acquisition and assessment of them. The rapid development of ICT also requires a whole new set of competences related to ICT and technological literacy [9].

Keane, Keane, and Blicbau [8] write that using these technologies in education matter because students need to be prepared this digital world, in which they require a skillset that is broader than the traditional foundations of the 3Rs. Tucker and Courts [10] claim that teachers who mainly concentrate on a fixed curriculum that focuses on learning through repetition and memorisation find it difficult to connect new technologies to the traditional view of classroom learning.

To be effective, teachers and students need to be able to demonstrate both the 3Rs and the 4Cs in relation to an online world. Government policy has been somewhat based on the assumption that access to technology is the key to achieving success. However, simply providing students with digital technology will not lead to development of these skills. How the teacher utilises these devices in the classroom is important for improved student outcomes [5]. Dede [1] claims that we need to move from consensus about the vision of 21st century learning to a thorough understanding of and commitment to the outcomes of 21st century learning. In reality, he claims, the ability to use digital devices in no way means that students know anything about global awareness or health literacy, learning and innovation skills, life and career skills, or even media literacy skills.

There are new skills to master, and they must be understood intertwined with changing contextual skills. Trilling and Fadel [3] have an extended model, where the 4Cs are part of a skillset called learning and innovation skills. They propose two extended sets of skills: information, media and technology skills; and career and life skills (see **Table 1**).

It is important to keep in mind that digital technology in itself is just a tool. Keane and Blicblau [5] state that without an understanding of learning theory, the use of transformative technology may actually be ineffectual. So, to have digital

1. Learning and innovation skills	2. Information, media, and technology skills	3. Career and life skills
• Critical thinking	• Information literacy	• Flexibility and adaptability
• Communication and collaboration	• Media literacy	• Initiative and self-direction
• Creativity and innovation	• ICT literacy	• Social and cross-cultural interaction
		• Productivity and accountability
		• Leadership and responsibility

Table 1.
Three components of 21st century skills [3].

competence for learning, technological skills must be understood intertwined with other sets of skills and knowledge, like learning and innovation skills (the 4Cs).

2.4 Twenty-first century skills in today's education—are we there yet?

This has been an ongoing discussion for centuries, and yet it seems like educational practices and systems are having trouble adapting to the espoused learning theories, required formal policy, and understanding of the need for these skills [11]. Keane and Blicbau [5] criticise education for using technology in schools at the enhancement rather than the transformative stage, meaning that tasks could be completed satisfactorily without using technology, and without really changing the task. They claim we need to better provide the appropriate situations that will allow students to develop skills using the 4Cs. Lund [12] claims that schools either lack a view of technology or operate with a view of technology that is at best reductionist. A central control and management mechanism in schools is a standardised test. These tests provide some insight into students' learning outcomes, but if used unilaterally, may also risk the development of a limited dynamic practice. As Resnick [13] writes, when preparing children for the future, how learning outcomes are assessed must be reconsidered. We need to focus on what is most important for children to learn, not what is easiest to measure and evaluate. The same concern is expressed when discussing digital technology and education. If we are only concerned with measuring the effects of the use of technology, instead of examining how digital technology changes the school culture, we risk cultivating a reductionist approach and ignoring possibilities for innovation [12]. These challenges are not exclusively related to digital practices, as school traditions for learning have in general been criticised for being pacifying. Jordet [14] writes that Norwegian schools are characterised by sedentary activities where the students are placed in the role of passive recipients of handed down knowledge. Such educational practices give students few opportunities to unfold their relational, meaning-seeking, creative, exploratory, and intentional natures. He states that for schools to be able to contribute to children mastering their lives and becoming participants in work and society, the schools' traditions, thinking, and practices must be changed to better support students' self-realising and active natures. Oostveen, Oshawa, and Goodman [15] found that meaningful learning is far more likely if new technologies are recognised as providing transformative opportunities.

2.5 Digital natives and digital immigrants

Elstad [16] claims that young people born after 1980 have digital capabilities and are therefore regarded as digital natives, in contrast to older teachers who are

described as digital immigrants when born earlier than 1980 [17]. Digital immigrants are in governing positions in education, both as policymakers and educators. Could important stakeholders' lack of digital technology be the reason education is not keeping up to date with new learning theories? Most teaching students referenced in this study were born in 1980 or later and are considered digital natives. Prensky describes digital natives as 'native speakers of technology, fluent in the digital language of computers, video games, and the internet' [18]. In this chapter, we present teaching educators' evaluations of their students and their learning processes. In other words, so-called digital immigrants are evaluating digital natives, but it is not merely their technological skills being evaluated. As mentioned, these skills must be understood as intertwined. Students' learning and innovation skills, like critical thinking, are intertwined with their information, media, and technology skills, and both sets of skills must be trained. Combined, it creates the need for new contextual skills. Keane, Keane, and Blicblau [8] write that simply using technology does not guarantee that deep learning will occur. The use of technology needs to align and adapt with our knowledge of learning to be able to operate in a transformative space.

A study of teaching students and their educators showed that teaching educators scored higher on professional digital competence than their students, but were more critical towards the technology in educational contexts than their students [2]. The differences between teaching educators and teaching students in this study were mostly unrelated to being digital immigrants or natives. They were connected to the complex competence gained through professional practice, regarding the interaction of content knowledge, pedagogical knowledge, and technological knowledge [19].

Knowledge of technology is only one critical component of teachers' use of technology in their practice; they also need to know how to use it for successful integration in teaching and student learning. Being critical is not necessarily about being behind and not up to date, but about taking steps aside to gain a deeper perspective. Successful teaching is not only about finding the right technology, but also the values, norms, and attitudes that reside within the academic staff in teacher training organisations [2].

One group of digital natives is defined as Generation Z. Tucker and Courts describe Generation Z as those who were born after 1990 [10]. This generation is described as 'technically savvy, well adapted at communicating via the internet, and used to instant action due to the internet technology they have always known'. The traditional education model has, according to Tucker and Courts [10], been slow to adapt to the learning styles of these students, and researchers across the globe seem to agree on this. What seems more unclear is an understanding of what form of adaptation is needed, and how we get there. How do Generation Z's learning styles and strategies affect learning processes in education?

2.6 Deep learning and critical thinking

Deep learning involves paying attention to underlying meaning. It is associated with the use of analytic skills, cross-referencing, imaginative reconstruction, and independent thinking. In contrast, surface learning strategies typically place more emphasis on rote learning and simple descriptions [20]. Deep approaches differ from surface approaches, where reproducing knowledge and syllabus-bounded practices is central. A third approach is the strategic approach, which is based on a competitive form of motivation and attempts to maximise academic achievement with minimum effort [21]. One tool for understanding deep learning is Biggs and Collis' [22] developed structure of observed learning outcomes (SOLO), which

form the basis of the SOLO taxonomy. The SOLO taxonomy focuses on the development of surface understanding to deep understanding, with a continuum of complexity and response to learning across the hierarchy of its levels of understanding. The SOLO taxonomy illustrates different levels of understanding:

1. Prestructural understanding is described as incompetence.

2. Unistructural understanding where relevant aspects can be identified.

3. Multistructural understanding where aspects are combined and described.

4. Relational understanding integrated in multistructural understandings. Being able to analyse, apply, argue, and compare aspects of one's understanding.

5. Extended abstract is when the learner is able to create, formulate, generate, hypothesise, reflect, and theorise based on a relational understanding.

The higher the levels of understanding in the SOLO taxonomy, the higher the level of critical thinking, creativity, and communication. Critical thinking is the discipline of actively and skilfully conceptualising, applying, analysing, synthesising, and/or evaluating information gathered from, or generated by observation, experience, reflection, reasoning, or communication [5, 8]. All these aspects are central for 21st century skills and deep learning.

When teaching educators are asked about students' learning processes, there is great concern regarding their ability to apply deep learning approaches. This is a complex field with a range of perceptions and understandings. Many of the teaching educators expressed conflicting views, where they addressed challenges and described how digital technology was fostering learning. In this chapter, we focus on the challenges of teaching with digital technology, and not so much on the benefits, which are many.

3. Method

3.1 First phase: the survey

This study is based on an explanatory sequential design, in which a conducted survey comprises the first phase of a sequence of methods. It is a comparative study involving 64 Norwegian participants from UiT, the Arctic University of Troms, and 44 New Zealand participants from the University of Waikato, with a response rate of 83.8% and 73.4%, respectively. The survey builds on Argyris and Schön's theory of action [23] and consists of three main constructs: professional digital competence, professional attitudes towards digital technology in education, and professional application of digital tools.

Based on their results, ten participants from each university were invited to participate in an in-depth qualitative interview.

3.2 Second phase: the interview

The first step in strategically selecting interview participants was to ensure that all participants had *high digital competence*, with the aim of gathering informed opinions regarding the use of technology in educational contexts. The second step

was to select participants within this group of digitally skilled teaching educators based on maximum variation sampling. Maximum variation sampling is a purposeful selection of participants with different perspectives on a phenomenon [24]. As Creswell [24] explains, the maximum variation sampling strategy requires defining a category that produces different responses to paint a varied picture of the participants. The category *attitudes towards digital technology* was used to select five participants who responded more critically and five participants who responded more positively towards digital technology within each country (**Figures 1** and **2**).

A total of 20 semi-structured interviews were conducted to understand and elaborate upon the results of the survey. The transcribed interviews were subsequently analysed using NVivo. One must consider the uncertainty arising when
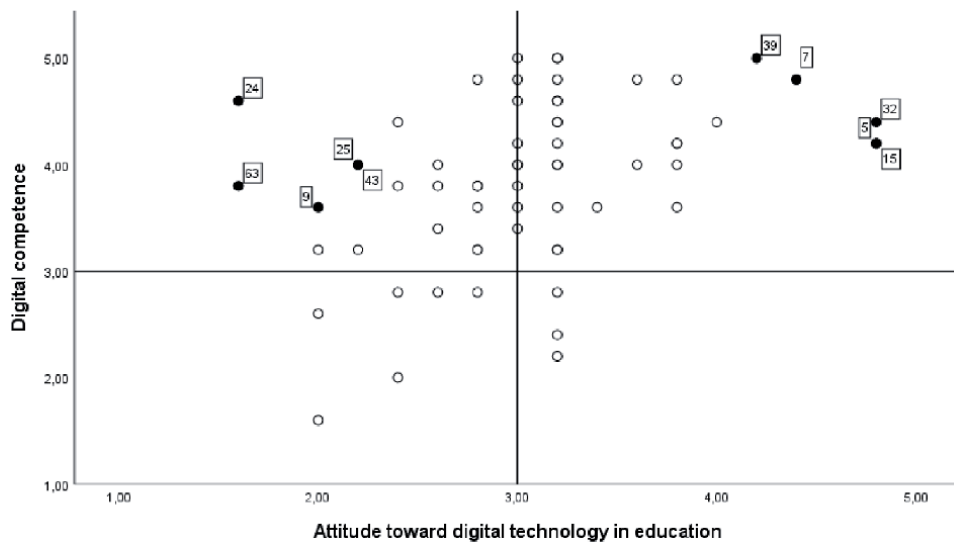
Figure 1.
Selection of Norwegian teaching educators.
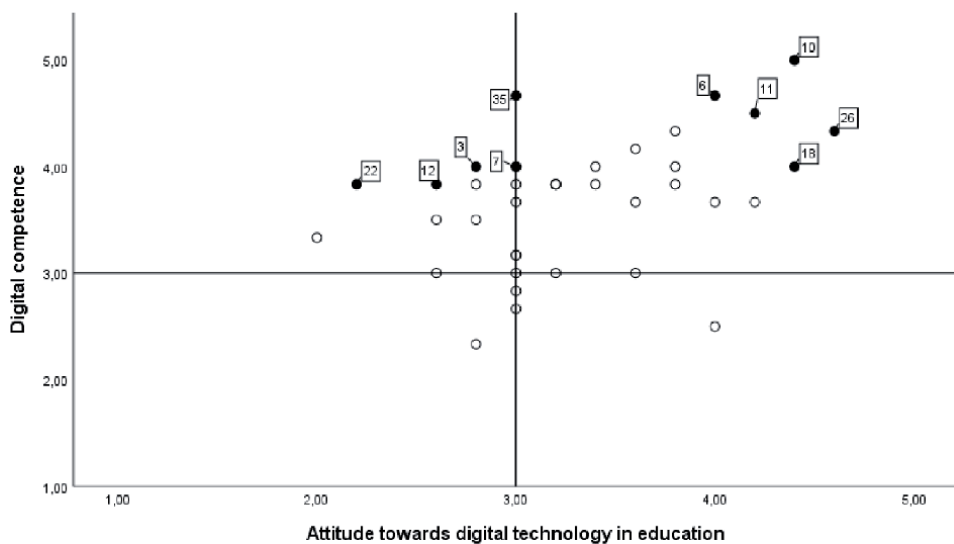
Figure 2.
Selection of New Zealand teaching educators.

translating from one language to another. The survey, interview guide, and participant statements were translated from Norwegian to English. There are nuances when translating and analysing that may be lost, and these could have influenced the results. An ongoing collaboration with New Zealand researchers throughout the process was very helpful in concept- and language-related clarifications.

4. Deep learning and critical thinking in a digital learning environment

This builds on a comparative study, but findings showed that the challenges experienced were evident in both countries. Despite being from different sides of the globe, teaching educators from both Norway and New Zealand expressed a concern regarding students' learning in digital contexts. Overall, 13 of the 20 interviewed teaching educators expressed a concern regarding students' deep learning, critical thinking, and source criticism. They link the students' lack of learning and innovation skills with their level of digital literacy skills (cf. Trilling and Fadels' model of 21st century skills). If their learning and innovation skills are not high enough, their use of digital technology seems to be at risk of not being used at a transformative level, and in some instances limits the quality of their learning processes.

4.1 Deep learning?

4.1.1 Norwegian teaching educators' perception of students' level of learning and learning approaches

One of the teaching educators was quite astonished that students could be very technically competent without being able to search the web for knowledge. He explained that he had bachelor students not able to find literature, and when he demonstrated, the students were blown away as if it was magic. The ability to make use of keywords when searching for information and relevant articles was poor among students, he said, and he was surprised by the fact that they were not able to use the knowledge they ought to have attained during their education.

Another teaching educator claimed that the students' learning approaches were superficial and based on surface learning. She explained the reason was that they had not learned or practiced deep learning processes. 'When asked to read a text, they do not extract what is important and relevant. They just dutifully read to complete the task'. She said it was fine that they were using Google when studying, but the worry was that the content seemed to move straight from the screen and out of their mouths, bypassing the students' own relevant reflections. Another teaching educator claimed that there was an evident difference between students who had studied media and communication at the senior level in school and those who had not. They understood that there was quite a lot of work involved in being able to utilise the digital tools in a productive way, while the rest was basing their learning processes on a copy-paste strategy. She explained that students tended to express a strategy of searching for readymade abstracts online. This was very unfortunate because the type of learning we want to promote in our teacher education is largely based on reflection, not just reproduction of readymade connections between levels of understanding.

I asked the teaching educators if it was a challenge to get students to engage in deep learning when readymade answers were easily assessable online. The teaching educator replied, 'Of course'. He explained how he had noticed that students were often using online references instead of the syllabus. 'It can be the same keywords as is described in our syllabus, but they would rather google it. So, that is when I question what source criticism they have applied to secure their information'. He

explained that the students were not concerned with this, and uncritically used this on tests and exams. One critical question to be asked was: When using a traditional lens when assessing the students, what are we measuring as new tools and contexts for learning have transformed learning activities and outcomes? Do we have practices for evaluation that aligns with the new learning activities and intended outcome?

The same teaching educator's experience with digital tools was that they were not always helpful. Furthermore, he felt it somewhat distorted/disabled the learning processes. This understanding was confirmed by another educator who explained that she thought of digital technology as a detour. 'Sometimes we use digital technology like PowerPoint, when traditional methods like using a black board can work as a better tool'. She explained that students expressed their preference for educators using PowerPoint, as they found it better not having to write everything down.

4.1.2 New Zealand educators' perception of students' level of learning and learning approaches

In New Zealand, teaching educators were also vocal regarding this challenge. One teaching educator explained how she had noticed that students were increasingly entering search words in Google to access what she referred to as 'easy takeaway knowledge'. The consequence, she explained, was that the students did not have to engage deeply or really work with the content. 'Students can access it very easily, and it almost replaces thorough research, like reading academic articles,' she said. She explained how this availability of a lot of information on the internet undermined students' capacity to read critically, do research, and read academic journals or chapters. She elaborated that this aspect of availability, quick easy access, was undermining the development of academic capacities and serious research for assignments. A critical selection of information takes more time. 'You have to actually digest those harder articles, and it seems to me that students read less of those […] even if they use them in their assignment it is superficial.' Another one supported this perception and explained: 'the easiness of technology creates a false notion of what learning is about, that you don't have to work for knowledge. I don't think that's true. If you look at anyone who is good at something, they have put in a lot of work and practice. I think digital technologies might be kind of responsible for this notion of learning'.

Some research shows that students who often use technology tend to do worse when compared with students who use less of such tools [4, 25–27]. Mueller and Oppenheimer [28] conducted a study in which they concluded that the use of a laptop negatively affected the students' test results. They focused on the students' use of laptops instead of traditional writing during lectures. They argued that note taking by hand calls for different cognitive processes than writing on a laptop. One can write faster on a laptop and take more notes. 'Although more notes are beneficial, at least to a point, if the notes are taken indiscriminately or by mindlessly transcribing content, as is more likely the case on a laptop than when notes are taken longhand, the benefit disappears' [28]. Writing by hand is slower, and one cannot take verbatim notes in the same way as with a laptop. Instead, students listen, digest, and summarise so that they can succinctly capture the essence of the information. Taking notes by hand forces the brain to engage in deeper learning, which fosters comprehension and retention [29–31]. As May points out, 'even when technology allows us to do more in less time, it does not always foster learning'. This is in line with the teaching educator who claimed that that learning has a tendency to be too easy. When students are copying and pasting from the internet and using

digital technology uncritically, they miss out on the constituting process of struggling with individual concepts and developing their 21st century skills, like reflecting, generating, being creative, theorising different concepts, and communicating independent ideas. It seemed like the teaching educators had trouble engaging students in deep learning processes as digital technology created a learning environment that fostered the strategic approach, and they experienced challenges where students attempted to maximise academic achievement with minimum effort. Perhaps they did this unaware of the consequences these approaches could have on their potential learning outcomes.

Deep learning strategies cannot be externally imposed and must be interest-led. Interest can be stimulated by placing less emphasis on curriculum content and more on contextual interpretation, in other words, the 4Cs [20]. Learning activities need to be interesting and engaging and allow critical reflection and dialogue with peers and mentors [32].

4.2 Critical thinking?

4.2.1 Norwegian teaching educators' perception of students' level of critical thinking

Critical thinking is vital for problem solving, but one teaching educator explained that students' critical thinking skills were virtually non-existent, and that a lot of effort was put into trying to develop those skills alongside their digital skills. Another explained that as much as digital tools were creating opportunities in teaching, they were also creating challenges. Those challenges were related to teaching students to be critical. When is it useful to use it, and what resources are usable in academic settings?

> 'The students' ability to use and utilise digital tools shocks me, because it is very poor. They are consumers; they are not producers. The job we do here is about making them able to become producers as well, so that they can utilise the learning resources available. They need to be prepared better through high school in relation to the critical use of digital tools; there are many who have major shortcomings. I think it has gotten worse really, because it's like if it's not on Facebook or Google, then it does not exist. It's a little scary. It seems that they are becoming less and less aware that it is just a person who has written this, and that information could have been written with underlying agendas. The critical reflections are something we have to work quite a lot with, and more for each new class just the three years I have been here.' (translated from interview).

One teaching educator related the challenge to the fact that it was very easy to retrieve information, without necessarily understanding what it means. One can just type in a word or look something up, 'then you just read exactly what comes out, because you typed in a word'. The problem, she explained, was that the students were not able to see the whole picture. It was noticed in their presentation on exams, or in things they wrote, that they did not fully understand the concepts they were writing about. Their presentation was really just reformulation of something copied from the internet, and was not coherent.

One challenge is related to what extent they understand the concepts they are writing about; another is whether the source is trustworthy. The students were warned both in writing and orally, one teaching educator explained, not to use bloggers' opinions and secondary interpretations as a basis for academic writing. The students still handed in papers with hardly any syllabus literature or academic

references. One teaching educator explained that she had been teaching for so long that she remembered well the time when education was much more book centred.

> *'One had to search for and order different articles at the library, and so on. Now it is all online, and that is great. It makes things easier. From that perspective, the students have accepted the possibilities online, and that is good. Nevertheless, there is a negative side to this. I do not find that students' source criticism has developed or increased according to this change. For instance, I do not accept references to Wikipedia in my papers, even if there is a lot sensible information written there. I encourage them to start there to get an overview. It can function as a platform for relevant references. But they have to be critical regarding what they are basing their arguments on, and the skills to do this are lacking.'*

4.2.2 New Zealand teaching educators' perception of students' level of critical thinking

The same perception is widespread among the New Zealand teaching educators. One explained that one of the things they were focusing on was critical analysis and information literacy. He said, 'The information is at our fingertips, but we need to really think about when we're using it and how it's being used, and be able to seek out robust information for what we need, and understand exactly what we're using'. Another participant explained that she had noticed that there was an overreliance on inaccurate media rather than knowing that they could go to a particular resource and have more valid information.

'So they can't make those kind of judgements about what is valid and what isn't valid to cite, because there's been no role models for them to look at and learn from. So the whole concept to any kind of academic approach to writing, whether it is through social media or other aspects of writing, is a very big learning curve for them... they struggle.'

The same challenge was exemplified by an interaction with another teaching educator and a student.

'One of my postgraduate students this week wanted to know what I meant by "doing critical review", which is an instruction for an assignment. And she copied something in, and I said: Where did you get this from? She said: Oh, I got it off Mr. Google, and I'm sort of thinking is this really, you know... This is a postgraduate student who is saying that, and doing that. That is actually pretty problematic. So, you can't make too many assumptions about where people are at.'

She explained that the biggest challenge was that the students needed to develop their critical perspectives on what they were seeing, and referred to this as 'very patchy'. She was trying to encourage academic writing, thinking, and discussion, to make students extract knowledge and the underpinning ideas. To 'have the students in the position where they can tell the good from the bad, the useful from the not so useful information. That has been a problem.'

One teaching educator challenged the notion of students as superficial in their learning because of digital technology; she claimed that the challenge was about the need for a different set of skills.

> *'I certainly don't feel that students are more superficial because they're using them, or because they can access Wikipedia or... I think they need to learn a different set of skills, but I think that once you have developed those skills, I think you can actually get into deeper learning, and I think digital technology enhances those skills. I think we can be superficial in whatever we do. But, it's not because of digital technology we become superficial.'*

Based on what the teaching educators explained, it seems like digital learning environments are enabling advanced multi-structural learning at such a high level that their lack of relational understanding and ability to create extended abstracts have been overlooked. Digital tools make students appear skilled in handling information as they can copy ready-made text online by googling keywords. This apparent skill in writing could be misleading for teachers in their assessment of the student. When students reach higher education, they are perceived as unskilled and uncritical, as higher education reveals a worrying lack of learning strategies that would enable them to reach deeper levels of understanding [22]. It seems that through primary and secondary education, they develop an imbalance between learning and innovation skills, and information, media, and technology skills [3]. Furthermore, this imbalance seems to create an asymmetrical reinforcing effect as digital environments make it easy to present multi-structural understanding at a high level, which can disguise the need to work with students' ability to think critically, a central part of the higher order of thinking in the SOLO taxonomy.

5. What to think of future teacher education?

That 'everything used to be better' is a claim made by all generations. One teaching educator pointed out that 'students in the past have also written things they do not understand themselves. I do not think that is new. Everyone just wants to find the easiest way to a good grade, maybe.' However, if seeking the easiest way is a fundamental human trait, it is a challenge for teaching and learning now that knowledge is more easily accessible and presented, without engaging critical thinking and deeper cognitive processes. Wajcman [33] states that 'Rather than simply saving time, technologies change the nature and meaning of tasks and work activities, as well as creating new material and cultural practices'. We need to adapt to these changing practices and learning activities, and adjust how we educate our students to be prepared in this new learning context. The teaching educators in this study had some suggestions.

5.1 How to adapt, and what not to adapt?

Teaching educators in this study expressed a worry regarding the digital format versus traditional books. As information is more easily accessible, students tend not to read the books and research the greater context information it was gathered from. In a book, you often have to read larger sections to get a grasp of the concepts. When googling keywords, it is easy to find a lot of 'hits,' and then mix a selection of copied sections. This can apparently look like a reasonable text, but it is surface learning and without deep understanding of the content. Reading a book will perhaps create deeper learning, even though the text produced is less polished than a copy-paste text from already digested sections online.

> *'I mean obviously, students have different skills, but I am thinking that critical thinking skills, reading hard information is definitely undermined, that is what I am thinking. I am noticing that with students.' (New Zealand teaching educator)*

> *'I do not think their digital skills have become any higher in the last five years, I think almost on the contrary. They are very good at watching videos and looking for things online, but I do not think they are good at retrieving relevant information. They are not as source-critical as I would like. We probably have a job to do to make them able and skilled.' (Norwegian teaching educator)*

The two skillsets, learning and innovation skills and digital skills, are connected. Students will not flourish in their digital skills if they are not intertwined with the 4Cs. Digital natives and Generation Z have a good technical understanding, but integrating that with the skills of being creative and critical is central to achieving deep learning processes in digital learning environments.

> *'They (students) are not able to transfer those skills and understandings into their learning environment. I would say the key thing again here is that the students might come in with skills and abilities, but not necessarily pedagogical understanding of how to actually implement that in their teaching practice. I think that's the key thing that we, initial teacher education lecturers, need to really focus on, and I think we need to come up to the plate and think about the digital literacies our students have... and actually think about being responsive to those as well.' (New Zealand teaching educator)*

One teaching educator who perceived students as getting shallower in their learning was vocal about the value of structuring education around the use of books as well as digital devices.

> *'I require them to read a textbook, because I think that doing lectures actually, online, is actually not a satisfactory way to get one's point across. So instead, what I do is I weave my points across all the ways that I teach each week, so all the things I present, all of my interactions and discussion groups and... I think it works up to a point, but I'm expecting them to read the textbook quite well, really.'*

To round up this chapter, I leave the final word to one of the New Zealand teaching educators who summed up most of the main findings in our study.

> *'I think digital technology can be a lot more passive at times, and in terms of students, I think they just see technology as providing the answer. I think it is important to challenge them and say, "There may not be an exact answer to the question; you have to keep challenging and questioning." I sometimes believe they have become a lot more passive, and just accepting what comes via the technology as being the one and only, or the right way of doing things. Rather than challenging. I think it is due to the way the world has shifted. Where it is a lot easier for them to go online and get something, rather than physically having to go somewhere and think about it, like a library or hunt out a book, or... Everything is right there. Therefore, I think that passive learning most probably happens a lot more because of the technology, because they can just access wherever they are. In terms of preparation, coming through from high school, yes, I think there are some definite skills in terms of being critical of information that needs to be taught, prior to coming into higher education. Particularly in the sense of questioning the information they are accepting. I believe some disadvantages are that most probably the students do not challenge enough, they just accept technology, and I think that might be the way technology has been introduced over the years. "Here it is, here is the answer." "If you don't know, just google it, and you'll get something." So that passive, not questioning, not challenging... I think is a real disadvantage.'*

6. Conclusion

It seems that students' development of critical thinking and deep learning is challenged in digital learning environments. A high level of ICT literacy seems

to challenge the lens traditionally used to assess students' capabilities and needs. Furthermore, ICT skills and learning and innovation skills seem to mutually influence each other, as low learning and innovation skills make the students' ICT skills stagnate when assessing their critical use of online resources. We find that learning in a digital environment complicates the development of critical thinking, but we also believe that this can be corrected by redefining what it takes to prepare students for the future. For a long time, the focus has been on developing their digital skills. However, it would seem like we have not paid enough attention to what the digital transformation requires of interwoven aspects related to learning in digital societies. We need to develop the traditions in education, where the focus has been on technical skills more than on interdisciplinary competencies. If we are able to better secure and develop students' abilities to be critical and creative, and to collaborate and communicate, digital learning environments could act as learning resources for all students. Without this skillset, there is a risk of students using digital resources in a way that prohibits deep learning and the development of higher order thinking. Based on the input of the teaching educators, it is essential that education is structured in a way that a lack of the 4Cs is noticed by educators and teachers, and that learning is structured to develop such skills. It is unfortunate if students acquire a high degree of information, media, and technology skills, as digital immigrants do, without the learning and innovation skills required to manoeuvre constructively in the overwhelming and easily accessible landscape of digital learning. Education needs to structure learning that challenges students to connect different skillsets, so new contextual skills and knowledge are developed. Just like critical thinking in digital spaces.

Acknowledgements

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From the Classroom into Virtual Learning Environments: Essential Knowledge, Competences, Skills and Pedagogical Strategies for the 21st Century Teacher Education in Kenya

Catherine Adhiambo Amimo

Abstract

As teachers in Kenya begin to migrate from the classroom to virtual learning spaces following COVID 19 pandemic, there is pressing need to realign Teacher Education to requisite Knowledge, competences, skills, and attitudes that will support online teaching. This chapter explores these needs using a combination of lived experiences and literature review that captured a meta-analysis of research trends on e-learning. While trends in Teacher Education indicate progression towards adoption of technology, there are disparities between the theory and practice. Evidence from recent research and reports; and the recollected experiences confirmed knowledge, competence, skills and pedagogical gaps in the implementation of online learning, that have been exacerbated by COVID-19. The researcher recommends that teacher education should sensitize and train teacher trainees on how to access, analyze and use new knowledge emerging with technology; they also should be coached on how learners learn with technology and on fundamentals of the communication process. Particularly the course on educational technology, should focus on how to create and manage online courses. The 5-stage E-Moderator Model and Universal Design for Learning (UDL) are recommended as effective pedagogical scaffold for online teaching.

Keywords: online learning, digital resources, teacher education, virtual learning spaces, pedagogy, e-learning, 5-stage E-moderator model, universal design for learning

1. Introduction

Anyone who enjoys swimming knows that they began learning from the shallow end as they progressed into the deep end of the swimming pool, by then feeling confident and able to swim back and forth navigating and experiencing the motions of the waves that vary across the pool. It is unnatural and very dangerous to learn

swimming in the reverse order. The latter depicts the experience of many teachers in Kenya, as a result of the COVID 19 pandemic which led to abrupt closure of schools. From the "brick and mortar" classrooms, that have been sacred comfort zones, the teachers suddenly found themselves thrown into virtual learning environments, which neither their initial training nor in-service programs had prepared them for. This was not unique to Kenya, as there were about 1.5 billion students and 63 million teachers who engaged in online teaching and learning during the COVID-19 lock down [1].

In Kenya the ministry of education encouraged schools, colleges and universities to combine use of radio and television with on online teaching as the country adhered to international and national guidelines on social distancing [2]. The International Council for Open and Distance Education also offered website, webinars and resources for teachers, but all these have not been adequate; as evidenced in issues related to course designs, content support, course assessment, learner and teacher characteristics [3, 4]. Indeed, recent research on online learning indicate gaps in accessibility of e-resources, use of online tools, management of platforms, instructional methods, and teacher development programs [1]. Teacher education programs at the university are challenged to support teacher educator' s efforts in strengthening the ICT capacities of teacher trainees, as they prepare for more technologically oriented classrooms. In this chapter the researcher explores the kind of knowledge, competences, skills and pedagogical strategies that teachers need, to teach effectively with technology.

2. Types of knowledge necessary for the 21st century teacher education

Before the outbreak of COVID 19, the Twenty First Century already presented the world with complex advancements that are marked by new scientific discoveries, globalization, information explosion, development of astronautics, digital technology and artificial intelligence- to mention a few. It was already evident that the nature of knowledge as we knew it was going to change. In fact, there is now pressing need to update content in major academic disciplines; taking into consideration the need to focus on knowledge that is most worth. To this end the question that needs to be addressed is "What type of knowledge is of worth for teachers as they move from the classroom to the virtual learning environments? especially as the pandemic continue with restrictions on face-to-face learning. Past research that focused on teacher education for the 21st century, underscored that teachers need a strong knowledge base for effective practice and also to boost their academic efficacy [3, 5].

Historically, teaching started as one dimensional art – a case in which the basic knowledge that the teacher needed was that of the subject matter. With time the method of presenting become critical. and it became necessary for the teacher to have knowledge on how to organize and present content meaningfully. During this phase the main focus of training was on pedagogy. In the next phase, it become essential for a teacher to have knowledge of the learner, therefore educational psychology was stressed in teacher education programs. Then entered phase four that stressed that students learn better when resources are used and through interaction with mass media and people. Phase five, which is the latest development, now defines the teacher's role as a facilitator of learning rather than a provider of information. With technology, information is now on the web and learners only need to be facilitated to tap into it.

Unfortunately, teacher education programs in Kenya still operate in phase one and two, with even more emphasis on knowledge transmission. Referring to the

allegory at the introduction, phase one of teacher education simulates the shallow end of the swimming pool. The level from which teachers were hurled into the deep end of learning with technological resources, depicted in phase four and five. This can be illustrated using the records of teaching online from one of the universities in Kenya (with permission). E- learning was introduced to the university in the year 2015. Up to 2018, through trainings and persuasions and resistance, only 150 courses had been launched on the university online platform. Between March and November 2020-when the pandemic struck, a total of 1470 courses had been mounted (with a panic that was evident in the sudden change in operations. The main concerns have been on how to deliver content to virtual learners. This section covers what teacher education should prioritize in terms of knowledge of the learner, the subject matter and the communication processes that contribute to effective online teaching.

2.1 Knowledge of the learner

Teacher education programs now need to give priority to the knowledge of learners and how they will learn and develop within the context of the "New Normal". For a long time, educators have relied on behavioral and cognitive theories to understand how learners learn; and this has made them believe that learners only react to and process knowledge that is presented to them. Literature on teacher education is littered with persuasion for teachers to adopt constructivist views that learners actually construct new knowledge based on their experiences. Beyond constructivism, recent research on educational technology advance transactional theory, as the model for online teaching. This theory presents teaching as a transactional business; and introduces a customer care language that teachers should adopt. Both learners and teachers form a community of inquirers, collaborating and making meaning of the learning content. In this context, it is critical to know how learner characteristics, circumstances and needs impact on the way they learn. One of the critical needs is for the learner to fit in the technologically wired world, and there is now a wider advocacy for Universal Design for Learning (UDL)- a model that stresses the use of multiple means of representation, action and expression, and engagement to cater for the needs of diverse learners [1, 6, 7].

2.2 Knowledge on content and resources

While a majority of teachers tend to rely on old notes (yellow notes) which were probably passed on from their own teachers or those they made in the yester years, technology has ushered in an age of information explosion. This requires the teacher to have a thorough understanding of how content in his/her subject matter is developing, in terms of goals and disciplinary demands. A famous educator Heidi Hayes in his book 21st Century Curriculum, emphasizes that a time has come when we need to update the content that is taught in educational programs or else we risk teaching obsolete knowledge. This is because we live in an age of knowledge explosion, a time that requires us to continuously upgrade knowledge- choosing on what knowledge to add or subtract in any given discipline. Teachers, particularly, need to have knowledge on changes in general [8].

As it is, the nature of teaching requires, the teacher not only to be grounded in his subject, but to be able to relate the content of that subject with the socio-economic, political and technological realities. All these come in as new knowledge that forms the core of interdisciplinary themes that need to be in cooperated in the teacher education program. These themes include knowledge that does not necessarily belong to a particular discipline. Examples are, climate change, family life

education, entrepreneurship and health education [9]. The 21st century require teachers to be able to utilize such interdisciplinary knowledge to help students solve complex problems of the world such as climate change and unemployment. Though recent reforms in teacher education in Kenya introduced courses such as Educational Guidance and Counselling, Entrepreneurship, and Environmental Education to capture this need, a lot more should be done to help teacher educators access online resources that can aid in the teaching of these and other content as they pass on the requisite knowledge to teacher trainees.

The WWW search engines provide a plethora of information regarding all subject matter. E-resources such as electronic books, electronic journals, dictionaries, newspapers, magazines, references, directories, and audio-visual materials are available for use [10]. Teachers should have knowledge on the different types of e-resources and how to access them. Both teacher educators and teacher trainees should be guided not just on how to access URLs that connect users to licensed digital resources, but in the understanding of the relationship between the URL and the technological infrastructure. This has become a challenge as libraries are also in a dilemma on whether to create accessibility of digital resources through library catalogues or separate databases [11]. In Kenya, the United Nations, Kenya Institute of Curriculum Development -at the Kenya Education Cloud (kec.ac.ke), together with the Kenya Broadcast Cooperation have attempted to provide resources for online teaching, particularly for basic education [12]. The teacher trainees going to teach in high school would benefit from such resources.

2.3 Knowledge on communication process

Communication is defined as a two-way process of interaction which allows people to convey information and reach, a mutual understanding. Online teaching requires effective communication, which can only be achieved if the teacher understands the communication process. This includes knowledge on how communication is transacted between human beings, and applying the same in understanding how different computer programs work. Brooks in his book "Web-Teaching: A Guide to Designing Interactive Teaching for the World Wide Web" points out that learning computer programs can be challenging- it is "almost like learning a programming language in terms of how it works and what it does". There are special programs for specific disciplines. For instance, in chemistry there is a special program for creating images of molecular structures [13].

Coming back to human communication, it is important for the teacher to master the basic process of communication which includes encoding of the message by the sender, the communication channel, noise factors, and the process of encoding of the message and feedback by the receiver. In the context of online teaching, the teacher acts a sender of information, which he passes on to the learners using appropriate channel or media; the students receive and decode -interpret the information and gives feedback to the teacher. It is the responsibility of the teacher to eliminate noise factors which presents themselves as actual noise or related factors, that can potentially act as barriers to the communication process.

3. Competencies for online teaching

Competence can be defined as an excellent capability in undertaking a given task. In this discussion, competence comprises of knowledge, skills, attitudes and experiences that will enable teachers to teach for optimum learning to take place. While Competency Based Curriculum (CBC) is trending – Kenya having adopted

CBC in 2018, a lot of teacher education programs still emphasize Content Based Curriculum; that stresses knowing and not doing. Particularly, in the era of online learning the focus should be on what the learner should be able to do with technology as he learns and operate in the "New Normal". As far as this is concerned the teacher is expected to be an effective model of competence. Ironically, students engage more in learning using open and free sources and web-based devices more than their teachers. Research further indicates that even when teachers are willing to engage with these devices, the professional development on new learning designs and delivery is slow and teachers are not as innovative. On this note, there is call to produce teachers with teaching innovations and professionally viable competencies. In online teaching, the teacher should be competent in creating, organizing and managing a course [6, 14]. The following sections analyze competencies related to these requirements.

3.1 Creating, organizing and managing an online course

In order to create and manage an online course effectively, the teacher should be familiar with Learning Management System (LMS). In Kenya only a few teachers can create, organize and manage an online course using a given type of an LMS [4]. For clarification. LMS refer to web based or cloud based software programs which help teachers to organize and manage online courses. They come in three categories as follows; (1) open source-examples are Moodle and SAKAY (2) Cloud based -such as Digital Chalk, Docebo SaaS LMS, TalentLMS, Firmwater LMS, and Litmos LMS, and (3) Proprietary Learning Management System-these are licensed by their developers under the legal rights belonging to the copyright owner (s), examples are Design2Leran, and ANGEL (property of Blackboard Inc.). Among these, Moodle is commonly used in Kenyan Universities, but many lecturers have not explored its multimedia tools which would support in the generation of content, assignments, and quizzes; as well as the features of interaction such as discussion groups and chat sessions [15].

The actual creation of a course will further require competencies in accessing and using digital media skillfully; analyzing and evaluating content in terms of its "quality, veracity, credibility, while considering potential effects and consequences of messages". Additionally, the teacher also needs to be able to create his/her own content and reflect on ethical consequences [7, p. 25-Dalton citing Hobbs].

3.2 Creating effective social climate in online classrooms

It is critical to create conducive social climates for the virtual classrooms. Education serves a social function, and borrowing from the theory of distributed Cognition and constructivism; knowledge is distributed among people and through sharing individuals construct new knowledge. This can only happen in mutually supported environments. On this note, it is important to create a conducive environment right from the beginning of an online course. This requires setting rules and etiquettes for the course and having students sign up to comply. The students should also have a slot for self-introduction and expressions of expectations. The following excerpt is shared from an online course EDTE 301 Educational Communication and Technology for illustration.

Student "A"- Saturday, 12 September 2020, 7:10 PM

My name is Masitsa Lydia, I am accessing this course from Uasin GIshu county. I am so privileged to be part of this group and I strongly believe that my desire to understand the essence of technology to education in our country today will be fulfilled here.

Student "B" - Monday, 7 September 2020, 3:48 PM

am Emmanuel Wambua a fourth year student doing bachelor degree in education from Machakos. I expect that at the end of the course I will be able to apply technology as part of communication in my teaching career.

The foregoing postings are expressions of who the students are and their expectations. They set pace for further interactions. Subsequently, as the teacher develops course materials, each topic should have a discussion forum or chats- which not only helps the teacher to assess learning progress, but also to assess the evolving attitudes of learners towards each other and the course. The class can also be divided into smaller discussion groups to boost bonding. Another social media which is useful in enhancing cohesion, and is commonly used by students in Kenya, is WhatsApp. Most learning platforms are also connected to emails through which the teacher can send private messages to students on respective assignments or issues. A research that explored MOOC as a form of professional development found that the participants liked the use of face book page and emails in supporting learning, but were not conversant with twitter; yet twitter chats are becoming an effective way of professional development-helping teachers to share their research, ideas and building positive digital foot prints. Blogs too, can be used for posting assignments, projects and networking [16–18].

The next set of competencies that are equally important have to do with professional ethics. These comprise patterns of professional behaviors, self- reflection and moral integrity. Online learning is very complex and dynamic, involving multiple players and sources of information. It calls for a high level of responsibility- according respect and maintaining confidentiality with regard to students' information. The increased use of facilities such as e-mails and other virtual communication can lead to comprises. It is however important to attach and express value and respect to all online course stake holders, particularly when using presentation tools such as Google meet, Big Blue Button, and Zoom that allow for live video conferences. During such interactions, the teacher should act professionally and also require students to exemplify the right decorum [18]. The researcher puts significance on this point because research seems to indicate that teachers and student teachers are less likely to undertake activities that involve interaction with others, and that it is hardest to teach competencies that have to do with soft skills to teachers [5].

3.3 Adherence to copy right rules

In the process of creating an online course, there is need to observe integrity with regard to copy right rules. This involves acknowledging of all sources of information that are used in the course, and where necessary asking for permission to use material as indicated by the source. In order to do this, the instructor needs to be conversant with different types of information sources, with regard to their use. We have plenty of open sources of information, while other sources have varying restrictions on use. Learners should also be educated on copy right regulations and held accountable for any violations. While there have been attempts by specialist in copyright regulations such as The National Unit of Copyright Unit of Australia to support teachers in Australia [3] those in Kenya are disadvantaged. Essentially, online learning will only be credible to the extent that the instructor will also observe ethical diligence in the quality of content, learning and assessments offered. For assessment, this does not only require competence in varying test items, but using monitoring tools during examination to ensure examination integrity.

4. Types of skills necessary for online teaching

The nature of digital resources requires that teachers must constantly acquire and implement new skills as technology advances. This is the reason why scholars who have taken interest in online learning recommend professional development as one of the pillars of sustainability of e-learning. Recent studies have revealed that even though computer literacy would improve the uptake of e-Learning in Kenyan universities both lecturers and students have limited Information and Communication Technology (ICT) skills. The scenario worsens in cases where there are differences in digital literacies between teachers and students [1, 15, 16]. In this section the researcher brings into perspective computer skills that are useful in conducting online teaching, that should be emphasized in teacher education programs.

4.1 Word processing

Some of the important features of Microsoft word that are useful in creating content for teaching include; desktop publishing, formatting, grammar check, spell checking, tables, web format; electronic spread sheet features such as spread sheets and work books, auto formatting, charting, what-if-analysis, archiving, and academic software such as games, simulations, drill and practice, and integrated learning systems. Mastering these features and their functions is essential because band width and security issues normally limit the use of WWW in many ways and a teacher may have to create his/her own instructional materials using options such as CD-ROMs; which students can access asynchronously.

Other additional skills include how to create and use the following types of multimedia; images, drawings/paintings, animations, graphs, sounds, 3D, and virtual reality. For example, how to image tag using GIF wizard, getting pictures using scanners, photo CDs, digital still cameras and using them to create simple animations; and recording voice on power points. Since students learn in multiple ways and learning is also enriched through multiple sensory input, the teacher should be skilled in presenting content and facilitating learning using a variety of multimedia. Notably, in the digital world there is also need to constantly rework and rewrite documents [19], this makes it necessary for the teacher to be skilled in using different features of Microsoft word.

4.2 Skills in management of online platforms

The teacher should be familiar with the features of different Learning Management Systems and the functions of each of the integrated tools; so that one can successfully create content for a given course and manage it throughout the semester. Most universities avail a web site for online teaching, but the management of the individual courses depend on the skills of the individual faculty. For example, in using Moodle platform, there are important features such as "edit" and "add activity". The activity can be a label, assignment, quiz, discussion forum, file, and so on. Once you click an activity like a quiz you need to be skilled in setting up the quiz, editing- meaning adding or and editing at times deleting or revising questions. While doing this, related features have to be controlled for example striking the editing button and selecting hide the quiz from students; otherwise those who are online will see the quiz/test prematurely (this has happened to some teachers). It is also important to go into review options and block students from reviewing the quiz when it is still open, because they may share answers with those still doing the quiz.

In order to promote learning the teacher should be skilled in managing meeting platforms such as Zoom, Big Blue Button; knowing how to set it up, and managing the presentation and participants by manipulating buttons such as share screen, chat, audio, and webcam. Some teachers confess that when they first use the Big Blue Button, they are not able to control the class because they do not know how to mute a few students who log in with a lot of background noises. They are not even able to use the video or share the screen. For many teachers, performing these actions is an uphill task because the initial teacher training was devoid of these requisite skills. A recent research in a Kenyan university revealed that only 25% of the faculty had been trained in management of online course, and only 20% had attended related seminars or workshops; yet students reported that course information (58%), layout (48%), announcements (38%), and reminders (35%) contributes to the effectiveness of an online learning [4]. For this reason, there should be a deliberate move to in service Teacher Educators in management of online courses so that they pass on the skill to teacher trainees as part of their training. This can be strengthened further, through virtual supervision of teaching practice- a model that some teacher training universities are already using to circumvent the restrictions of COVID 19 on face to face interactions.

5. Pedagogical strategies for online learning

A synthesis of research that spanned the period 2009–2018 revealed that the focus of research on e-learning is shifting from devices and apps towards the pedagogical process, with more emphasis on pedagogical innovation. In particular, pedagogical designs that can be adopted at university level [1, 20]. In Kenya, apart from teacher educators, most lecturers have been teaching without any pedagogical training, until the onset of online learning that necessitated sporadic trainings on how to deliver content to learners. Now there is greater need for deliberate training in a variety of strategies when integrating technology and media into a lesson. Instead of using only didactic approaches- that fitted face-to-face classroom interactions, the following dynamic approaches can be adopted (1) Presenting (2) Conducting (3) Facilitating and (4) Mentoring. The psycho-pedagogical basis of these approaches is found in the theories of social constructivism, connectivism and collaborative learning [7].

5.1 Presentation

Presenting is a teacher centered strategy that focuses on divergent thinking and embraces methods such as lecture and demonstration. In presentation the instructor disseminates information to learners, and the source of the information can be a text book, an audio tape or even a video. Students can also be made to view real or life like example of a skill or a procedure. This strategy can be used during synchronous meetings in such platforms as Zoom, google meet and Big Blue Button, but instead of having the teacher present all the time, students can be given a chance for group presentations. Some teachers who have experimented with this report that it is an interesting way to engage learners.

5.2 Conducting

This strategy is analogous to activities of a choir master, who does not sing, but guides the singers by helping them to read the notes and conducting the practice. The online tools which can be employed in this strategy are drill-and-practice; and

tutorials and gaming. In drill-and- practice learners are led through a number of exercises that enhance knowledge on specific content or a new skill, while in tutorials the teacher or a computer software poses a question to which the learner provides an answer and receives appropriate feedback. Gaming provides challenge in learning and is a great motivator, particularly for online learning.

5.3 Facilitation

Facilitation as a strategy is learner centered, process oriented, flexible and allows for divergent thinking. It is supported by transactional theory, that was discussed earlier in this chapter. It uses methods such as discussion; and question and answer. Teachers should act as facilitators of collaboration, in learning activities such as creating of digital resources, presentations and projects. Facilitation is also, most, applicable in web discussion forums where students give their views and the teacher acts as a moderator [18]. Alternatively, it can be used in chat forums where students post their ideas and views. Here is an illustration that captures a discussion forum in one online course EDTE 391 Educational Communication and Technology.

Wednesday, 2 September 2020, 11:49 AM

Number of replies: 6

The Discussion Question: Is it all that important for prospective teachers to train in the use of technology in education?

Student "A" - Thursday, 3 September 2020, 9:36 AM

This is a very important subject in teacher training considering the fact that we live in a dynamic fast-changing world. A recent example is the effect of the COVID-19 pandemic on education. Many schools are going online and who knows, that may be the new normal in various aspects in education. This implies that prospective teachers need to be equipped with knowledge in educational technology.

Student "B" - Monday, 28 September 2020, 9:45 AM

In my opinion, all prospective teachers should have a training on how to use technology in education. Technology has revolutionized how learning and teaching takes place by use of more improved media like computers and projectors. The use of software like word and power point has also increased in the recent past which necessitates the need for each prospective teacher to be able to use them among other many forms of technology like printing media and also e-learning services. This is just but an example of how much there is need for technological knowledge in teacher training.

5.4 Mentoring

Previous qualitative and quantitative research has shown that many online learning activities exist, but are less frequently performed by university students, particularly teacher trainees. These include playing educational games, using virtual environments for learning, participating in online courses, using ICT for self-assessment, and planning the learning process [1, 18, 21]. This raises the need to mentor student teachers into these activities. Mentoring is inquiry- discovery approach that promotes initiative, creative and imaginative thinking. In this strategy the teacher and the learner set forth a problem to solve and both participate in the learning process, though not on equal terms. The teacher acts as a co-investigator or a co-learner. Mentoring provides the tools and hands –on experience with which the teacher trainees need to begin their career. In Taiwan mentoring role is stressed particularly to prepare student teachers with high learning models, observation and reflection. Indeed, teacher educators should be mentors and coaches for teacher trainees, showing them how to use social media, and create resources [5, 18].

In this approach the teacher learns a lot of technological skills from the learners who already have an upper hand in this. Proponents of online learning agree that being an online learner contributes to an academician's professional development of becoming a technology-enabled designer or teacher, [17]. One teaching method that can be used in this strategy is the project method; which fits with many features of online learning. The researcher recollects an experience with the project method in teaching the course Educational Communication and Technology. In this case, the students were to identify a problem, use a topic of interest and select four types of media to solve the problem. One group focused on solving the modern problem of race by revisiting Trans-Atlantic slave trade and used power points, recorded voice, video and music for illustration. This was very interesting. The teacher offered support, only when it was necessary.

6. 5-stage model on role of E-moderator in online learning

To sum up this section on pedagogical approaches to online teaching the researcher explored the ideas of Gilly Salmon on how to design and manage online classrooms. Both her textual and video messages assert that in order for the online learning to be successful the learners have to be supported through a structured and paced program of e-tivities which offer high levels of interaction, engagement, flexibility and feedback. The role of the E-moderator is to promote interaction and communication. Processes that enable achievement of these two goals include modeling, conveying and building knowledge and skills; and mediating the online environments. This 5-stage model is developed with a focus on the learner's profile and needs; stressing the kind of support that the e-moderator (teacher) should provide to enable the learners to build expertise in learning online. The model is illustrated in **Figure 1** (used with permission).

At stage one, there has to be access to online platform and the teacher needs to welcome and encourage the learners to interact. Stage two comprises of establishment of online identity. At this stage the teacher abridges between the cultural,
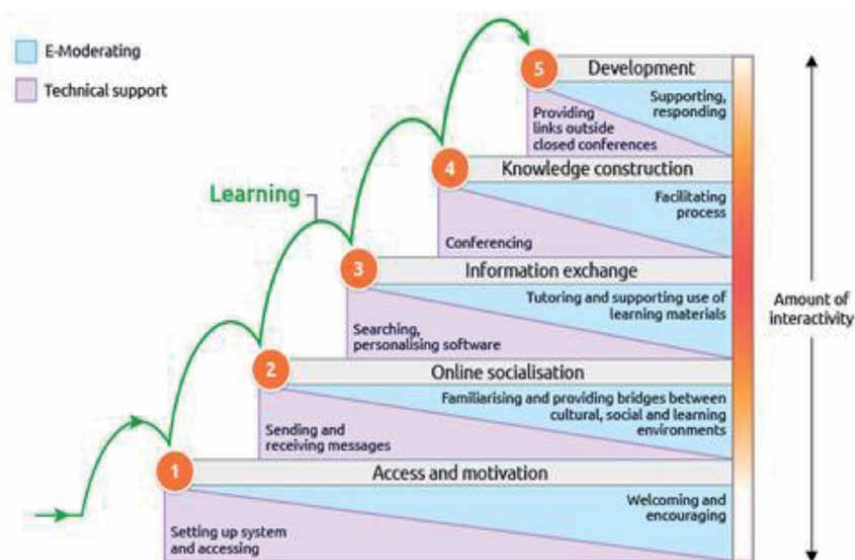
Figure 1.
[22] E-moderating: the key to teaching and learning online. 3rd edition, page 32.

social and learning environments as the learners begin to bond. Some of the important activities are sending and receiving messages. Stage three is that of information exchange. The teacher is required to scaffold the tasks by supporting students in the use of e-learning materials such as videos or text materials. Stage four involves knowledge construction, and activities such as discussions; and to be successful, collaborative interactions like conferencing are useful. The last stage is of development and requires the teacher to further support and respond to students as they realize personal goals. This can be done by providing links and integrating online learning with other modes of learning. In a study exploring MOOC as a form of professional development the participants acknowledged that the 5-step model is a positive method for guiding online learners [5, 6, 17]. This model can provide great insight, as teacher education programs in Kenya endeavor to engineer techno friendly pedagogies.

7. Conclusions and recommendations

Through exploration of literature on past research this study reveals that the teaching and learning ecosystems are changing to adapt to the realities of global changes that seem to affect all spheres of life. Thus, necessitating the need for new knowledge, skills and attitudes that will help the learners to adapt to the rapidly changing world of the 21st Century. Amidst these changes, it is significant to acknowledge the role of technology both as a trigger and vehicle by which learners and teachers can navigate through the crisis presented by the changes. Technology has brought in new knowledge into disciplines, some of which have not even been classified-yet are counted as very important in addressing problems such as global warming. The traditionally certified teacher's Knowledge, competencies, skills and pedagogies will no longer suffice in the present teaching and learning ecosystems. Lead researchers in teacher education have acknowledged the critical need for revamping teacher education, particularly, to in cooperate technology and optimize the use of digital resources and information management systems. In this case the teacher acquires a new tittle as E-Moderator; and this demands knowledge of ICT, learners and re-adjustment of pedagogical strategies. The researcher recommends that teacher education programs should strengthen the foundational, and professional courses to reflect the changing realities. There should be mentoring on online teaching across levels of teacher education programs in Kenya, and also benchmarking with successful teacher education programs outside the country. This is what Linda Darling-Hammond and John Bransford refer to as "learning about practice in practice" or "learning in and from practice" [9].

Acknowledgements

Notes

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Pedagogical Interactions and Professional Transformation

Modern Teacher Education - Supporting the Vast Landscape of 21st Century Pedagogy

Joshua C. Elliott and Craig S. Tunks

Abstract

Learners have changed; Teaching has changed; Expectations have changed. How to best support modern learners is the challenge of all educators at all grade levels. The students of today are sophisticated users of technology, they are multitasking constantly and can sometimes be more comfortable with the technology than they are interacting with teachers and peers in the real world. Marc Prensky described them as "Digital Natives" over 10 years ago implying that they are efficient users of technology. This is not always the case. While they are exposed to various technologies and can successfully use them outside the classroom their use of these same tools as learning support tools can be lacking. Digital natives have different learning styles and different concerns than previous students. Educators need to keep up with this changing landscape and need to learn, develop and innovate new ways to support todays' learners. Supporting today's learners now requires more than just educating them in a specific content area but also includes supporting them in the use of technology tools in an education setting. Supporting educators through areas of primary training such as teacher preparation programs and degree programs are one way to accomplish this but also the many credible teacher training programs that provide experience, peer support or certifications are also excellent tools. Through this chapter we will take a close look at pedagogy, learning styles, support tools, and the skills needed to be a modern educator.

Keywords: 21st Century Education, Hybrid Pedagogy, Online Pedagogy, ISTE, ISTE Standards for Educator, Online Teaching, SAMR, TPACK, Triple E, CoSN

1. Introduction

How to best support modern learners is the challenge of all educators at all grade levels. The students of today are sophisticated users of technology, they are multitasking constantly and can sometimes be more comfortable with the technology than they are interacting with teachers and peers in the real world. Marc Prensky described them as "Digital Natives" over 10 years ago implying that they are efficient users of technology. While they are exposed to various technologies and can successfully use them outside the classroom their use of these same tools as learning support tools can be lacking. Digital natives have different learning styles and different concerns than previous students. Educators need to keep up with this

changing landscape and need to learn, develop and innovate new ways to support todays' learners. Supporting today's learners now requires more than just educating them in a specific content area but also includes supporting them in the use of technology tools in an education setting. Supporting educators through areas of primary training such as teacher preparation programs and degree programs are one way to accomplish this but also the many credible teacher training programs that provide experience, peer support or certifications are also excellent tools. Through this chapter we will take a look at techniques, strategies and programs that can support both in-service and pre-service teachers in their success in 21st century pedagogy.

2. Learner definitions

For the purposes of this chapter, there are two classifications of teachers. The first is pre-service and the second is in-service. Pre-service teachers are students in teacher certification programs. They may or may not have completed a methods course or their student teaching assignment. Although they may have an idea, they do not have confirmed employment with a school district. Because of this, they do not know who their learners are or what resources they have access to. These resources include specific technologies a district uses. In some cases, this could mean which tool is used. For example, a district may choose to use Microsoft technologies while another may choose Google Apps for Education. Resources could also include tools that may or may not be found in other districts. Examples include specific subscription-based tools (Newsela, Turn It In, etc.) or 1–1 device programs.

In-service teachers are employed by a public school district or independent school. These teachers know their learners and the resources available to them and their students. However, these teachers are actively engaging with students. Their time constraints are more structured and constrained because of their professional obligations and duties. Their focus is on teaching whereas a pre-service teacher is hopefully more focused on learning.

2.1 Learning differences in pre-service and in-service programs

Active teachers (In-service) will often attend professional development as a group within their district. This has several benefits. The goals and the needs of the district can be considered in advance. What is lacking, however, is the opportunity to collaborate with others from other educational environments.

Pre-service teachers must learn how to operate in an educational community that they do not know yet. Although there are times when pre-service teachers complete an internship that transitions into a full time position.

3. Educational technology integration models

Not all pre-service or in-service teachers are strong users of technology. Technology integration happens at many levels. Technology can be an afterthought or an intimidating factor for some teachers. Even worse, learning how to use technology effectively can be one more thing added to a teacher's already busy schedule. It is more important to make educational technology approachable for teachers than it is to impress them. This opens the question of how we frame technology in a way that works for busy teachers and helps them optimize learning. Three theoretical frameworks and theories help educators approach technology in a systematic and effective manner. They are the SAMR Model, TPACK model and the Triple E Framework.

3.1 SAMR model

The SAMR model can be considered an entry point model for those educators most uncomfortable with educational technology [1]. There are four steps to the model; substitution, augmentation, modification and redefinition. Substitution describes a scenario where a teacher simply replaces one tool with another with no discernible improvement in learning. Augmentation describes a scenario where the chosen technology allows the learning task to be redesigned to somewhat improve learning. Technology serves as a direct replacement for the previous learning activity with clear improvement at the modification stage. Redefinition describes a situation in which technology allows for learning activities that would not be possible previously. Although very approachable, the linear design of the SAMR model can be simplistic in some situations.

3.2 TPACK model

This model is much more comprehensive than other models discussed. There are three main parts to the model; Technological Knowledge (Knowing how to use the technology), Content Knowledge (Knowing the content or subject matter being taught, and Pedagogical Knowledge (Knowledge of teaching) [2] (**Figure 1**).

3.3 Triple E model

Triple E is the most recent of the discussed models. This model was created by Liz Kolb in 2020 in her book, Learning First, Technology Second [3]. There are three stages to the Triple E Framework: Engagement, Enhancement, Extension. These stages can be described as follows:

- Engagement: the chosen technology allows students to focus on the assignment.
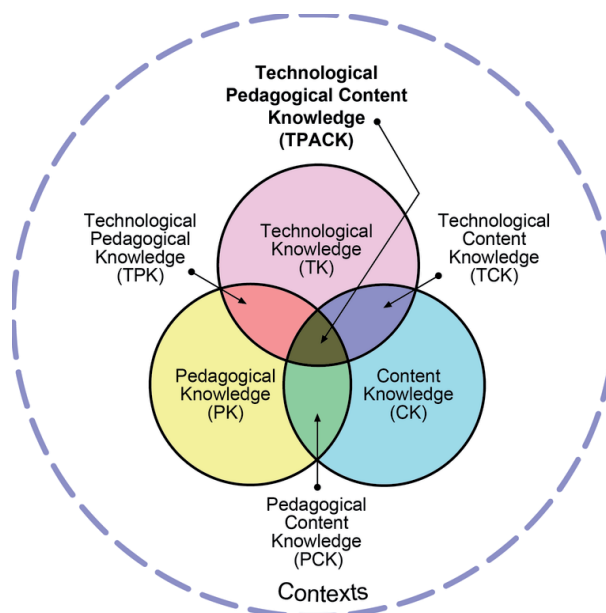
Figure 1.
TPACK framework. Retrieved from: https://commons.wikimedia.org/wiki/File:TPACK-new.png.

- Enhance: The technology allows students to gain a deeper understanding and make it easier to understand the content.

- Extend: The technology allows learning to move beyond the school day and into their own lives.

Kolb expands on her theory with a greater focus on applications in her follow up book, Learning First, Technology Second in Practice: New Strategies, Research and Tools for Student Success [4]. Kolb successfully finds a balance between research and real world applications that educators can use in their own classes.

3.4 Comparison of the three models

All three models have their own merits. The SAMR model is probably used most frequently with classroom teachers. It is fairly straightforward and easy to understand. This makes it a good fit for framing the use of technology in the classroom for new teachers. Possibly because of this, it can also be a little simplistic at times also. The TPACK model offers much more detail. However, this can make it difficult to unpack for some. The Triple E Model falls somewhere in between the SAMR and TPACK model in terms of complications and capability. It is a linear model so it is easy to follow. However, it is more approachable for teachers who are more comfortable with technology. The model focuses on learning first and on what technology to use second. All three models are excellent resources for framing the use of technology in the classroom. It is possible that deciding which model to use could be contingent who is using the model. Pre-service or in-service educators who are not entirely comfortable with educational technology may benefit most from the SAMR model. Educational technology leaders looking to do a deep dive may want to choose the TPACK model. Educators with a solid educational technology base who are looking to optimize learning will most likely want to choose the Triple E model.

3.5 Applications to teaching

The question at this point becomes how can teachers be trained to best use technology in the classroom for improved learning. This is where a new type of new variation of digital divide becomes relevant. Originally, the phrase digital divide referred to those who have access to technology and those who do not [5]. A variation of the phrase has branched off though that refers to the gap between those who know how to use technology productively and those who do not [6]. If teachers can be trained to use technology effectively, then they are better prepared to teach their students. Proper teaching of effective technology use can also serve as a model of best practices for in-service and pre-service teachers.

4. Professional growth and development

Professional Learning Communities (PLC) are a very important and popular tool in education to support all faculty and staff members. PLC are groups of educators that look to support each other through common areas of interest in a collaborative and needs-driven environment. Professional Learning Communities can be developed around topics of interest, grade levels, subject areas or other commonalities that can be supported through peer support.

When selecting or developing professional learning communities it is important to consider the following questions:

- What do you want to learn?

- How will you know that you have learned it?

- What support will you recieve while you are learning?

- What support do you need while you are learning?

Two additional areas to consider are the structure and the convenience of the various programs available. Elliott demonstrated that these are the key priority areas for both individual educators as well as administrators when selecting online professional learning [7, 8].

4.1 Developing professional learning communities

There are a variety of ways to establish and maintain professional learning communities. We will be reviewing both free and paid membership services. This wide range of services are available to both in-service teachers and pre-service teachers.

When evaluating the various Professional Learning Communities and the various services consider these areas [9]:

- **Focus on Learning** - focus and commitment to the learning of each student.

- **Collaborative Culture** -members working interdependently to achieve a common goal of learning for all.

- **Collective Inquiry** - enabling team members to develop new skills and capacities which in turn lead to new experiences and awareness.

- **Commitment to Continuous Improvement:** gathering evidence of student learning, developing strategies and building on strengths, implementation, analyzation and application.

- **Learning by Doing:** turning aspirations and visions into action

- **Results Orientation:** all efforts must be addressed on the basis of results rather than intentions

Research from Hur and Brush show five primary reasons that teachers seek to participate in online professional learning communities [10]. These include sharing emotions, utilizing the advantage of online environments, combating teacher isolation, exploring ideas, and experiencing a sense of camaraderie. These reasons clearly demonstrate the benefits and contributions that professional learning communities offer to both in-service and pre-service teachers.

Below we articulate systems that can be used for professional learning communities. Selecting the correct platform requires the individual to reflect on the areas

listed below and the benefits that can be derived from participation. While many areas are important, two areas that should not be overlooked are teacher emotional sharing and methods to strengthen teachers' self-esteem and support teachers' confidence. These areas are becoming increasingly important as technology integration can often create added stressors for teachers.

4.2 Social media

Social Media is an excellent tool for developing Professional Learning Communities both in-service and pre-service teachers can particiate in these programs. Social Media tools such as Instagram, Facebook and Twitter or platforms that support the easy sharing of user created content. Most often we consider these platforms for personal use such as communicating with family and friends and sharing photos of relatives. In recent years that have become very powerful in the ability to provide a platform for educators to collaborate across the world. The sharing of best practices on such a broad scale allows for collaboration and learning that was previously unobtainable through traditional professional development. Most social media platforms are free to use which make these types of PLC very affordable to all. But the format as explained more directly below will require the participants to be actively involved with curating the content they are interested in.

Twitter is an online social media platform that allows users to "tweet" short amounts of information including links to websites and videos. This information can be followed and sorted in multiple ways. First a user can follow a specific user. These users could be industry subject matter experts and participants can receive this knowledge and interact with the poster. In addition to following specific users Twitter uses hashtags to categorize information. There are a number of trending hashtags on Twitter to support education. These hashtags can be divided in larger buckets such as instructional practice, 21st century skills, education technology, equality, specific subject areas, specific grade levels, education policy and many more. There are many available websites and lists that show the current trending hashtags. To use this tool effectively faculty should identify hashtags and users that are relevant to areas they would like to learn more about and participate as not only knowledge consumers and knowledge constructors.

Facebook is a social media platform that allows users to create profiles, connect with family, friends and colleagues both directly and through the use of groups to share information in a wide range of media formats. The use of Facebook as a PLC is focused on the use of the groups feature. Groups which can be created by any user can be themed on specific subjects or areas of interest. Many groups related to education currently exist and offer a wide range of topics and participants. For example, a number of groups appeal to educators across the globe allowing for perspectives that would not otherwise have been available.

Instagram is a popular social media platform that is owned by Facebook. This platform focuses on the sharing of photos and videos. While Instagram is still an emerging platform interest is growing in its use for sharing professional learning opportunities. For example, many professional organizations, conferences and presenters make video streams and recordings available on the platform.

4.3 Professional organizations

There are a number of professional organizations that are available to support faculty and administrators. Two key national organizations are the International Society for Technology in Education (ISTE) and Consortium of School Networks (CoSN). Participants in these organizations open up many opportunities for

educators to participate in both virtual and physical professional learning communities.

ISTE is a nonprofit organization that supports educators who are interested in the use of technology in education. The focus of the organization is on classroom teachers and instructional leaders. ISTE offers membership for both in-service and pre-service teachers. Through membership in this organization many resources and professional learning learning communities are available. A wide range of PLCs are available including topics such as online learning, computational thinking, technology student standards and more. These PLCs are normally available online and some provide additional research based resources to those that participate.

CoSN is a nonprofit organization that supports education technology leadership. In addition to their role in professional development they also have a strong advocacy group that seeks to bring awareness to the need to support education technology and to bridge the digital divide by ensuring all students have access to high speed Internet access.

4.4 Schools and local PLCs

Very often the best professional learning communities are created from the professionals immediately around you. In-service teachers will often find commonality with their peer education. Fellow faculty and staff members in partnership with industry professionals and parent organizations can often create a knowledge base of information that can support innovation and advancement in education. These groups are often the groups that then focus on the development of professional learning opportunities in schools and school districts.

Very often these groups emerge through the collaboration of faculty with like interests. It is easy to see how this is possible for in-service teachers. But pre-service teachers are also able to take advantage of this through partnerships with fellow students. An example of this can be seen through two graduate students from Fairfield University. Through their coursework they developed a professional learning community and a free resource aimed at supporting teachers' use of technology. Tech4teachers.info is an online guide designed to help faculty provide instruction in an online or hybrid format.

4.5 Professional growth and development

Plans for professional growth and development (PGD) are important factors for in-service teachers. Pre-service teachers are guided through their educator training programs. All too often once a teacher is employed the availability of PGD becomes limited. Many factors can contribute to this depending on the school or district. One of the biggest challenges are often around financing and time. PGD time for in-service teachers can be limited. When this occurs teachers often are not able to prioritize their own learning when having to balance the needs of their students. The funding for PGD can also be a factor in the availability of professional learning. In these cases it is important for teachers to have the opportunity to use free services and social media to support their learning.

4.6 Impact on professional development on technology integration

Technology related Professional Growth and Development programs are an essential part to support both pre-service and in-service teachers. Technology training is still needed today by many teachers. Teacher training programs in technology integration is important to the implementation of technology in

classroom lessons [11]. Over the 3 years of the study, "The Infusion of Technology's Influences on Teacher's Use of Technology in the Classroom" it was clearly demonstrated that the increase in technology PGD caused a significant increase in technology infused lessons. During the first year of the study .9 percent of the lessons conducted infused technology by the conclusion of the study 5.4 percent of the lessons conducted infused technology. This showed a direct relationship between the increase in technology PGD [11].

The value of technology Professional Growth and Development and Professional Learning Communities remains an important aspect of supporting todays in-service and pre-service teachers. To ensure this school leadership should ensure that opportunities for this type of PGD is made available to faculty and staff. Additionally in-service teachers should prioritize these training to support their instruction to ensure they are introduced to current and trending technology tools.

5. Online and hybrid learning

Online and hybrid learning is an upcoming trend in education. While it has been a mode of instruction delivery at the university level for many years it is still new to the k-12 education world. The new learning and instructional delivery models have caused the need to define how teachers do things in a new way. A focus on the Community of Inquiry Framework (COI) by Michael Moore provides excellent guidelines to the best practices in the areas of online and hybrid learning. This model considers instruction delivery as an interaction between content, instructors and classmates.

5.1 Content

Interaction with content refers to intellectual engagement with course concepts that results in changes in the student's understanding, skills, or perspective. Examples of interaction with content in online courses include: watching video lectures, solving problem sets, taking notes on textbook readings, participating in a game based on course content, or completing chapter quizzes. Interaction with content is the only sort of interaction in self-regulated and on-demand courses, but most online courses include at least one more type of interaction.

5.2 Instructors

The second type of interaction identified by Michael Moore was interaction with instructors; i.e. the interaction between a student and a more expert teacher who stimulates and maintains the student's interest, motivates the student to learn, provides direct instruction, organizes the student's application of concepts and/or practice of skills, supports and encourages the student, and assesses his or her learning. Most online courses include this type of interaction. Examples include: teacher facilitation of an online discussion forum, virtual classes, ongoing journaling with students, teacher created study-guides, reflection, faculty recorded videos (Loom) and feedback on student work.

5.3 Classmates

Interaction with peers refers to student-to-student interactions among two or more members of an online class. Moore remarked that interaction with peers was something new in distance education made possible by online learning. He also

noted that it can be an extremely valuable, in some cases an essential, resource for learning. Constructivists would agree. Indeed, some scholars argue that interaction with peers and constructivist approaches are what separates online learning from distance education [10]. Examples of interaction with peers in online courses include: asynchronous discussion forums in which students link course concepts to their experiences, small group work on projects, group wikis and blogs, peer review of classmates' papers, and student led discussions.

5.4 Differentiation

Differentiation strategies center around a focus on personalizing learning in order to allow everyone an optimal learning experience. Educational programs should teach pre-service educators relevant instructional approaches, and academic-support strategies that are intended to address the distinct learning needs, interests, aspirations, or cultural backgrounds of individual students. Districts should provide similar professional development opportunities. Personalized learning is intended to facilitate the academic success of each student by first determining the learning needs, interests, and aspirations of individual students, and then providing learning experiences that are customized—to a greater or lesser extent—for each student.

5.5 Equity, diversity and inclusion

Culturally relevant teaching is a pedagogy that crosses disciplines and cultures to engage learners while respecting their cultural integrity. It should accommodate the dynamic mix of race, ethnicity, class, gender, region, religion, and family that contributes to every student's cultural identity [12].

Educational technology should incorporate a strong focus on equity as the integration of technology very quickly made equity issues centered on financial differences evident. The digital divide remains an ongoing struggle to ensure the appropriate integration of technology into instruction as well as the availability of appropriate training for in-service and pre-service teachers. Tools selection should include thinking about possible accessibility issues resulting from availability and access to devices and Internet.

5.6 Software & tool review

These areas should be a focus of software review. Software selection can have a significant impact on a student experience. Consider the following definitions when reviewing software [13]:

- Diversity - Real or perceived difference in attributes related to one's identity that influence their behaviors and relationships.

- Equity - The extent to which individuals in an organization feel safe, valued and able to express themselves authentically in the workplace.

- Inclusion - Is the implementation of fair policies, practices and procedures in a company such that resources are distributed based on individual's contributions.

It is important to consider these definitions and create appropriate questions as part of the evaluation process to ask when reviewing software and classroom

tools. Providing appropriate training in evaluation of software should be included for pre-service and in-service teachers. Questions that should be asked include:

- Does the visual representations in the software program reflect diverse individuals including those of different race, nationality, religion, etc.?

- Does the software program reflect an equality between genders and races?

- Considering the students that will be using the program will they be able to connect with the culture and representations in the program?

- Is acceptance of different genders, sexualities, races, etc. clearly represented in both the visual representations and the dialog?

These questions should be considered suggestions for a thoughtful conversation and not be considered limiting or exclusionary to any community.

5.7 Tools for the modern educator

As educators we are required to take on a number of responsibilities and roles in the classroom and for our students. We are mentors, listeners, scholars, coaches, community-builders, facilitators, communicators, learners, and helpers to just name a few. As we seek to align our instruction to today's modern learning environment and learner we should reflect on which role we are fulfilling and the tools necessary to meet that role. Teachers learn through experience these roles and how to be successful in them. Often in-service teachers through their participation in professional learning communities will identify tools and begin to use them. Pre-service teachers can receive this information through the course work they take.

There are many tools available for the modern educator. Below are a few that we have highlighted based on the reputation of the tool, feedback from training and our personal use (**Table 1**).

Tool	COI Pillar(s)	Role	Use

Flipgrid	Content Classmates Instructors	Community-builder	• Week 1 introductions
			• Student get to know you questions
			  ○ What is your favorite movie?
			  ○ What is your favorite dessert?

Padlet	Content Classmates Instructors	Community-builder	• Create shared learning experiences • Small group discussion • Engagement
e-Comments/ Google Classroom	Content Classmates Instructors	Communicator	• Provide accurate and personalized feedback. • Actionable feedback that causes students to think.
Calendly	Instructors	Communicator	• Office Hours • Streamline tutoring & mentoring

Table 1.
Example tools for the modern education.

Classmates Activities	Content Activities	Instructor Activities
• List of activities that inspire classmates to collaborate	• List of activities to have students interact with various aspects of the curriculum	• List of activities to have students interact with the instructor

Table 2.
Community of Inquiry Planning.

6. Conclusion

A review of learner definitions began our review of research, literature and a reflection on past experiences. Through this chapter, we looked at techniques, strategies and programs that can support both in-service and pre-service teachers in their success in 21st century pedagogy. We began with a focus on three education technology integration models. SAMR, TPACK and Triple E Framework are all excellent tools for encouraging the integration of technology into instruction. The three models have the same goal but vary in their approach. This allows for the appropriate approach to be adopted by program or individual teachers to create the best possible outcomes.

To enable these frameworks as well as other technology tools appropriate professional learning needs to be offered to both pre-service and in-service teachers. These opportunities can be offered through structure programs, the development of professional learning communities and social media. Evidence was reviewed on the impact of technology professional development on the integration of technology in instruction.

While the providing of professional development is important through all aspects of education we reviewed specific aspects of online and hybrid learning. Online and hybrid learning are becoming more popular throughout all of education including k-12 education. The focus of this discussion centered around the Community of Inquiry Framework (COI) by Michael Moore. Considering the three pillars from the COI Framework lesson design should include organizing activities into content-based united related to each major concept (**Table 2**).

Using this template will help both in-service and pre-service teachers to develop their instruction to ensure success, student engagement and student learning. This template easily allows integration into the Backwards Design template as described in Understanding by Design by Jay McTighe and Grant Wiggins.

Determining software and tool selection is a significant portion of instruction design. When making these selections in addition to the instructional impact there needs to be a focus on differentiation and Diversity, Equity and Inclusion (DEI). We reviewed these points and presented suggestions on reflections points for creating a software review process that includes DEI.

Lastly we suggested tools for the modern educator that connect to the various roles of educators and the COI Framework. These suggestions can present an excellent starting point for both in-service and preservice teachers to learn new tools, develop professional development and growth programs or participate in various professional learning communities.

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Chapter 7

Sustainable Teaching in an Uncertain World: Pedagogical Continuities, Un-Precedented Challenges

Rachel Farrell and Ciaran Sugrue

Abstract

Beyond the very pressing immediacy of the pace of change induced by internationalising tendencies, a world without borders, there is increasing pressure on teachers to be more adept, agile, and adaptive, particularly at incorporating new and emerging technologies into their pedagogical repertoires, while international agencies, increasingly influential in this febrile landscape, proffer reform rhetorics that are superficial at best in their appreciation or understanding of local conditions, the realities of teachers' lives and work. While an emphasis on 'what works' too has its limitations, what this chapter seeks to identify is not merely incremental contributions to often limited pedagogical repertoires, but to approach the considerable challenge from a sustainability perspective, sufficient to identify adaptive steps to possible futures that are hopeful, life enhancing, sustaining and sustainable, enriching the quality of teaching and learning, contributing to an emerging pedagogical praxis.

Keywords: pedagogical praxis, adaptive teacher repertoires, sustainable transformation, teacher professional transformation

1. Introduction

In very recent educational literature, Covid 19 is most frequently represented as a 'game changer' [1]; seriously disruptive of schooling as we have come to know and recognise it, while hastening clarion calls for reform of the status quo [2–6]. Notwithstanding the import of the word 'pandemic', throughout the twentieth century, there have been repeated cries of 'crisis' in education, 'A Nation At Risk' [7] comes to mind, pre-dated by the 'Sputnik' (1957) shock (see [8]), perhaps foreshadowing more contemporary pre-occupations with STEM, and more recent systemic tremors in the form of 'PISA shock' [9] as it impacted in Germany, and elsewhere. Perhaps, more than many other research 'Powerful Reforms and Shallow Roots' [10] captures the manner in which repeated efforts at systemic reform have failed to ignite the radical change that was envisaged [11]. Rather, such efforts, frequently flounder on the rocks of school realities, while repeatedly re-learning that attempting 'teacher proof' curricula as a means of bypassing teacher competence and capacities, thus providing a short cut to 'school improvement' seeks to downplay or

ignore the recurring lesson that 'teachers matter' [12], and are most likely to be central to educational processes into the future. There are compelling reasons for this that provide solid ground on which to build the argument presented in this chapter.

First, the pandemic (still with us) has very definitely reinforced the message that 'home schooling' when combined with 'working from home' is not a sustainable 'bargain' between the public and the state; schooling in various forms will need to be sustained into the future. Thus, while flexible working from home arrangements are likely to continue after various vaccines ride to the rescue, respect for teachers, and what schooling in general manages to achieve, has been enhanced in the eyes of parents and public, and maybe even policy-makers. Second, while versions of 'lockdown' necessitated that schools go online, with varying degrees of success, in general, teachers have had to get to grips with technologies to an unprecedented extent, extended by higher education institutions that provide professional support to the profession online, thus 'alien' technologies have become familiar to many; a benefit that provides experience on calibrating the use and effectiveness of various platforms for student engagement, teaching, learning and leading—spawning ongoing reflection and debate. Yet, these actual and potential benefits have made all concerned yearn for face-to-face interactions, formal and informal, as the lifeblood of communication, community, and holistic education. Third, these recent experiences have increased awareness of inequalities due to concern regarding access to: hardware, software, as well as quiet spaces for work and learning, providing further evidence of the necessity for schools as 'safe havens' of challenge, respect and caring. Fourth, such considerations have accentuated the necessity to revisit schooling as a 'public good' [13], something to which Governments need to be committed, providing sustained and adequate resources and in the process, preventing those who see the potential of technologies for profit and the privatisation of teaching and learning, thus exacerbating rather than diminishing inequalities that, in recent years, have been shown repeatedly to have increased [14]. While we readily recognise that, at a time of rapid change, predicting the future has never been more precarious, it is essential to salvage from past and present 'bricolage' [15] as the building blocks of possible futures. Thus, we ask: What pedagogical repertoires provide the most likely prospect of achieving and sustaining educational development goals?

2. Analytical lens

Two eminent economists recently stated that "a healthy society is a vast web of cooperative activity sustained by mutual kindness and obligations" [16]. After decades of neoliberalism, some strains more virulent than others, there has been a considerable rise in *'possessive individualism'* and *'market fundamentalism'* [16] that privilege human competitiveness at the expense of our capacity to collaborate constructively. Such dispositions cultivate a mindset: "the more we view ourselves as self-made and self-sufficient the less likely we are to care for the fate of those less fortunate than ourselves" [17]. From an educational perspective this thinking promotes "learning as acquisitiveness, an individual pursuit, essentially that market mechanisms are the primary instruments for achieving the public good" [17]. The consequences are massive erosion of trust, decline in solidarity and a general retreat from public or common good, and these conditions make their way directly and indirectly into public schooling. Such pressures give rise to two languages and attendant logics—that of accountability and professional responsibility, as indicated in **Table 1** below.

Responsibility	Accountability
• based in professional mandate	• defined by current governance
• situated judgement	• standardised by contract
• trust	• control
• moral rationale	• economic/legal rationale
• internal evaluation	• external auditing
• negotiated standards	• predetermined indicators
• implicit language	• transparent language
• framed by professions	• framed by political goals
• relative autonomy and personally inescapable	• compliance with employers'/ politicians' decisions
• proactive	• reactive

Table 1.
The types of logic and implications of professional responsibility and accountability [18].

This categorisation recognises that accountability language and logic espouses the market assumptions and norms, whereas the language and logic of responsibility include degrees of relative autonomy and professional judgement. As part of our value stance in dealing with the tensions created by these competing and contradictory logics we recognise that it is possible to be accountable while not behaving in a professionally responsible manner; there is a moral dimension to the latter that, for an individual and a member of a profession, is inescapable. Additionally, while asserting that public good should prevail over private gain, from a professional responsibility perspective, it is necessary to recognise that "decision-by-rulebook intentionally eliminates judgement based on tacit knowledge", something that is part of the lifeblood of the teacher-learner encounter [16]. We are obliged to be accountable, this is inescapable, while behaving in a professionally responsible manner is a choice, an inescapable responsibility as professionals. Sustainable futures, even pedagogical futures, depend upon it. Sustainable development necessitates doing things differently to avoid the inadequacies of previous initiatives, while remaining open to the possibilities of what sustainable futures may look like. Moreover, education for sustainable development (ESD) is an approach to education that requires changes in knowledge, skills, values and attitudes to enable a more just and sustainable society for all [19].

3. Methodology

National educational policies are part of a wider international framework which requires states to respond to the challenges of the 21st century. Obligations arise from the United Nations Framework Convention on Climate Change (UNFCCC) that was established in 1994 and the adoption of the Sustainable Development Goals (SDGs) by 193 United Nations (UN) member states in 2015 [20]. Education for sustainable development is also supported by international policy initiatives such as the Organisation for Economic Co-operation and Development's (OECD) *Global Competence Framework* [21] and the United Nations Education, Scientific and Cultural Organisation's (UNESCO) publications on *Global Citizenship Education* [22] and *Education for Sustainable Development* [23]. Such initiatives have

been heavily critiqued from an educational perspective as lacking the transformative intent required to challenge the economic growth models which continue to drive climate change [24]. Nevertheless, in some contexts they have triggered educational reform efforts at national levels [25]. OECD reports on the Program for International Student Assessment (PISA) have also become increasingly influential in education on a global scale [9].

For the purposes of this chapter, we draw on qualitative research that involved a content analysis of the education policies of the OECD and UNESCO since 2014, the year that marked a decade of education for sustainable development [19], while also drawing on international literature and other related empirical work of the authors [13, 26]. This provided a backdrop to the evidence-based recommendations on the future of education by such think tanks as the World Economic Forum [27], the World Bank [28] and the Economists Intelligence Unit, [29]. While the aforementioned are all economic agencies, pre-occupied with preparation for the world of work, rather than providing a 'good' education they are influencing education policy on a global scale by publishing recommendations on pedagogical approaches required for 21st century schooling. Themes discussed below have emerged from a meta-analysis of documents selected from searches undertaken using various combinations of key words such as: trends facing education, education for sustainable development, 21st century skills, digital technology in education and 21st century teacher competencies. The most prominent of these documents are summarised in

Year	Organisation	Title	Reference
2014	UNESCO	Shaping the Future We Want - UN Decade of Education for Sustainable Development	[19]
2015	United Nations	Transforming Our World: The 2030 Agenda for Sustainable Development	[20]
2015	UNESCO	Global Citizenship Education	[22]
2015	OECD	Students, computers and learning: Making the connection	[30]
2015	OECD	Education policy outlook 2015: making reforms happen	[31]
2017	OECD	Education for Sustainable Development	[23]
2018	OECD	Global Competency for an Inclusive World	[21]
2018	OECD	Education 2030: The future of education and skills	[32]
2018	UNESCO	ICT Competency Framework for Teachers V03	[33]
2019	OECD	Trends Shaping Education	[34]
2019	UNESCO	Education for Sustainable Development. A roadmap	[35]
2019	OECD	TALIS 2018 Results (Volume I): Teachers and School Leaders as Lifelong Learners	[36]
2019	World Bank	World Development Report 2019: The Changing Nature of Work	[28]
2019	The Economist Intelligence Unit	Worldwide Educating for the Future Index 2019: From policy to practice	[29]
2020	OECD	PISA 2018 Results (Volume VI): Are Students Ready to Thrive in an Interconnected World?	[37]
2020	World Economic Forum	The Future of Jobs Report	[27]

Table 2.
Chronology of salient policies analysed as part of this study.

Table 2 and are included in the reference list. A systematic examination of these policy documents revealed a number of recurring considerations as pivotal triggers for change in education and the expectations regarding teachers' capacity and competencies within this reform agenda.

Using inductive analysis, three main pedagogical themes emerged from the research, teachers' capacity for: a) adaptive expertise and collaborative practice; b) technology enhanced learning and c) the fostering of 21st century skills, while these are considered through the lens of accountability-professional responsibility and sustainable development. Analysis here gains in significance by providing in-depth scrutiny of policy content, not for the purposes of generalisation, but rather to influence future deliberations on policy and practice as a contribution to shaping possible futures, in an open-ended rather than a prescriptive manner, leaving room for other voices as to how such policy items may be tailored to particular needs, while seeking to build and expand pedagogical repertoires through practical know how, thus sustaining development.

4. Teachers' capacity and competence for adaptive expertise and collaborative practice

There are many 'trends' shaping education including: increasing global population climate change, pressure on living space for humans, increased risks of pandemics, income inequality, globalisation, and increased pervasiveness of technology in our lives all of which demand a systemic and rapid response from education systems all around the world [34]. UNESCO is entrusted to lead and coordinate the *Education 2030 Agenda* [35], which is part of a global movement to eradicate poverty through 17 Sustainable Development Goals by 2030. Education, essential to achieve all of these goals, has its own dedicated Goal 4, which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The OECD's *Education 2030* aims to help education systems determine the knowledge, skills, attitudes and values students need to thrive in and shape their future and "contributes to the UN 2030 Global Goals for Sustainable Development (SDGs), aiming to ensure the sustainability of people, profit, planet and peace, through partnership" [32]. The OECD [34] assert that in a complex and rapidly changing world, the discernible role of education in supporting the SDGs might necessitate the restructuring of formal and informal learning environments, and reimagining education content and delivery. Moreover, as knowledge of human development and learning is expanding exponentially the potential to shape more effective educational practices as suggested by Darling Hammond et al. [38] has also increased (see **Table 3**. below).

Making the most of these advances, however, requires assimilating insights across multiple fields and connecting them to knowledge of successful approaches that are emerging in education [38]. Enabling teachers to acquire 'adaptive expertise' or 'adaptive competence" required to apply meaningfully learned knowledge and skills flexibly and creatively across different contexts in a globalised society [39] is important and will require teachers to work with other stakeholders. This is not a new concept however, and there is a considerable literature that recognises the importance of 'improvisation' as an integral dimension of the teaching-learning encounter [40]. More than a century ago, Dewey [41, 42] not only re-conceived the way that learning should happen, but also the role that the teacher should play in the process of learning [43, 44]. For Dewey, it is not enough for the classroom teacher to be a lifelong learner of the techniques and subject-matter of education; they must aspire to share what they know with others in their learning community [45].

I. Supportive Environment		
Structures of Effective Caring	**Classroom Learning Communities**	**Connections among staff and families**
• Small schools • Small class size • Advisories • Block scheduling • Looping • Teaching teams • Longer grade spans	• Intentional community building • Cultural competence • Identity safety • Consistent Routines	• Relational trust • Staff collaboration • Home visits • Regular parent conferences • Authentic family engagement
II. Productive Instructional Strategies		
Student-centred Instruction	Conceptual Understanding and Motivation	Learning how to learn
• Building on prior experience • Teaching to readiness • Personalisation • Collaborative learning • Cognitive supports	• Conceptual map of the domain • Inquiry & explicit instruction • Motivating tasks with skilful scaffolding • Interest driven learning	• Teaching metacognition and learning strategies • Formative feedback, practice & revision • Mastery-oriented performance assessment
III. Social and Emotional Development		
Integration of Social Emotional Skills	Development of Habits and Mindsets	Educative and Restorative Behavioural Supports
• Teach intra- and inter-personal skills, empathy, conflict resolution, collaboration, responsibility • Integrate and practice skills throughout the day	• Teach executive functions • Develop growth mindset, self-efficacy, sense of belonging • Use mindfulness tools for stress management	• Teach students behavioural skills & responsibility • Culminate community contributions • Repair harm by making amends
IV. System of Supports		
Multi-tiered systems of support (MTSS)	Coordinated access to integrated services	Extended learning opportunities
• Tier 1: Use universal designs for learning & knowledge of child development • Tier 2: Diagnostically identify additional services needed • Tier 3: Provide intensive interventions	• Wraparound health, mental health, and social services • Community partnerships • Family and community engagement	• Before and after school enrich-ment, mentoring and academic support • Summer learning opportunities • Tutoring

Table 3.
Practices aligned with the science of learning and development. Adapted from [38].

Freire [46], like Dewey, believed that each student should play an active role in their own learning, instead of being the passive recipients of knowledge. Consequently, both authors are in agreement that the ideal teacher would be open-minded and confident—confident in their competence while also open-minded to sharing and learning from his or her students [47]. A recent study by Farrell and Marshall [26] in the context of initial teacher education (ITE) found that some student teachers' use of digital pedagogy toppled the typical co-operating teacher/student teacher

hierarchy, placing the student teacher as mentor to the co-operating teacher. This was particularly true of the recent move to remote learning as a result of Covid 19. The pandemic is also a powerful reminder that education plays a significant role in facilitating not just academic learning, but also in supporting physical, social and emotional well-being. The key, in these instances, is a willingness to collaborate for mutual gain, thus building pedagogical capacity, as well as enhancing pedagogical repertoires through adapting technologies.

Balancing traditional forms of education and learning with wider social and personal development means new roles for all involved in education while seeking simultaneously to provide a holistic education, frequently against the grain of external policies more pre-occupied with preparation for the world of work. Such challenges necessitate melding the old with new, a multi-disciplinary approach to education and requiring "Democratic Pedagogical Partnership" whereby "formal but flexible arrangement between teacher educators and stakeholders who engage in 'collaborative professionalism' improve learning for all students in a variety of contexts through effective pedagogy and practice" [48]. One of the four Common European Principles for Teacher Competences and Qualifications [49] is that teaching is a 'profession based on partnership: institutions providing teacher education should organise their work collaboratively in partnership with schools, local work environments, work-based training providers and other stakeholders" In further recognition of the role of partnerships in education, the Council of the European Union [50] observes that:

> Teacher education programmes should draw on teachers' own experience and seek to foster cross disciplinary and collaborative approaches, so that education institutions and teachers regard it as part of their task to work in cooperation with relevant stakeholders such as colleagues, parents and employers.

In support of this, the OECD [31] advocates that partnerships are central to the fostering of innovative teaching and learning-communities in which there is a bridge between theory and practice and between practitioners and those engaged in academic research. Making this rhetoric a reality will be a challenge even in the most advanced economies. Culture and context matter along with access to the continuing professional development of teachers [36]. Therefore, if governments are to harness the potential of education to have a positive impact on sustainable development, they need to invest in cultivating the most accomplished aspects of pedagogy that exists and can be enhanced by the transformative digital technology increasingly at our disposal. It will be difficult to achieve, and, in the first instance, it will be necessary for the research and policy communities, even in the most advanced economies, to address why pedagogical reform failure, reform fatigue or overload, are getting in the way of more sustainable transformations, more rooted in teacher-learner engagement, and the efforts necessary to overcome such challenges.

5. Teachers' capacity and competence for technology enhanced learning

As indicated above, the Covid 19 pandemic has lent renewed urgency to being adaptive, while also extending pedagogical repertoires to embrace the potential offered by various technologies. More generally, the rapid pace of change and challenges facing the 21st century provides opportunities "and a window for action, as evidenced by the power of digitalisation to transform, connect and empower" [34]. Digital technology is playing a pivotal role in the development of modern economies and societies. This has profound implications for education, both because

digital technology can enable new forms of learning and because it has become important for young people to master digital technology in preparation for adult life [37]. While schools are key sites for the building of adaptive competences [51], including the competences to embed digital technology in teaching, learning and assessment [33], a recent OECD report [30] notes that "the reality in our schools lags considerably behind the promise of technology." While there is an expectation that teachers are proficient in the use of digital technology, in teaching, learning and assessment, the reality is that this is not always the case [52]. Provision of continuing professional development for teacher educators [53] is fundamental to developing digital competence, as is collaboration with leading experts including those from industry [54].

In order to develop a coherent professional learning plan for teachers, it is import to establish an agreed framework for digital competences that teachers need in order to harness the potential of digital technology in teaching, learning and assessment. However, given the pace of development of evolving technologies, this too is a tall order. McGarr and McDonagh [55] synthesised digital learning frameworks from around the world into a four-part model encompassing Technical skills, Pedagogical skills, Cyber-ethics and Attitudes (PEAT) (see **Figure 1** below).

Their model encapsulates the necessary technical, pedagogical and ethical competencies that are required for teacher education in the 21st century. According to Brox [57] there is currently a narrow utilitarian adoption of technology by teachers and she argues that "teacher education should encourage a deeper understanding of technology, in which both human and technological agency are explored and problematized". Tsvetkova and Kiryukhin [58] assert that there is.

> ...a triad of digital competencies that create a stable structure for their development including: Vital (custom) digital competencies that enable teachers to keep up with the world of digital devices and services; profile and professional competencies that will determine the adaptability and success in the conditions of digitalization of professions and social digital competence of citizens that will help to preserve our delicate world on the principles of humanism and creative development of our children, to avoid atomisation of digital society.

Digital enhanced learning is an ambitious agenda and in the absence of time, resources and continuing professional development teachers are in danger of becoming scapegoats for lack of progress in this regard. Additionally, by focusing on a more technicist approach to skills, there is an underlying assumption that these
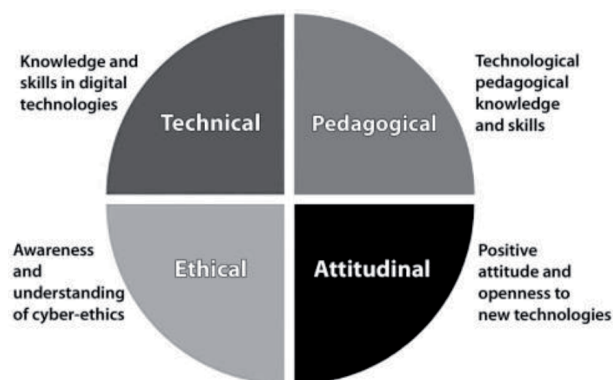
Figure 1.
Synthesised model of teachers' digital competence – The PEAT model [56].

are easily grafted on to teachers' existing pedagogical repertoires, when there are more fundamental epistemic and identity considerations in play that take time to ferment as part of transforming not only the knowledge base of teaching that is crucial also forging 21st century teacher identities.

Another aspect of this challenge is equality of access to adequate infrastructure to support digital enhanced pedagogy. There is a case to be made for broadband to be made a public good if all education stakeholders are to have parity of access to digital enhanced learning opportunities. A further concern is the influence of the corporate sector that is currently filling the gap in continuing professional development by providing free online courses to teachers who wish to increase their level of competence in the area. However, creative and constructive engagement with the best forms of adaptive pedagogy, in whatever shape or form, has the potential to provide a sense of optimism for building a better future. Enthusiasm for promoting technologies for the benefit of already wealthy technology entrepreneurs is no substitute for sustained engagement that recognises the complexities of teaching and learning.

6. 21st century skills and global competences – the challenge of continuity and change

The Worldwide Educating for the Future Index [29] offers evidence of a consensus that education systems urgently need to prepare students for the challenges that await them in work and society. For several decades, there has been an expressed urgency on the part of policy-makers to shape the future, but with modest success, as evidenced by what McLaughlin refers to as 'misery research' [59, 60]. Throughout the period of these calls to transform the experience of schooling, what has emerged, and research has consolidated, is a broad agreement on the vital role that critical thinking, creativity, communication, entrepreneurship and other future-oriented skills, including digital capabilities, have potential to play in helping students meet those challenges [27, 28]. This so-called list of 21st century skills [61] emerged from a splurge of initiatives and frameworks driven by corporate and government partnerships over the past decade [62] such as Partnership 21 (P21) and Assessment and Teaching of 21st Century Skills (ATC21S). More recently the OECD [21] introduced the notion of *Global Competencies for an Inclusive World* where "Globally competent individuals can examine local, global and intercultural issues, understand and appreciate different perspectives and world views, interact successfully and respectfully with others, and take responsible action toward sustainability and collective well-being". While such policy rhetorics may be aspirationally laudable, there is a sense also that saving the planet, a major challenge in itself, is being grated onto existing reform initiatives and challenges to systems of schooling. It is not that schools do not have a potentially significant part to play in reversing the worst features of climate change, but that cultivating the voices of students and harnessing their agency for transformation can only be effective in tandem with political leadership, will and adequate allocation of resources. Too often in the past, too much is left to systems of schooling, and too great a burden placed on teachers alone to bring about desired reforms. Thus in the absence of adequate professional support, holding the profession accountable for such a significant agenda, becomes an unjust burden rather than a professional challenge, worthy of a responsible response.

The rhetoric of 21st century skills orients toward the world of work at a time when we also need an emphasis on the promotion of education to foster broader objectives such preparing young people for "a rapidly changing, uncertain, risky

and possibly dangerous future" [63]. Moreover, a predominantly economic focus on education has inherent contradictions [64] regarding teachers' vital role in promoting the necessary "transformative shifts in how we think and act" [65] that are required for the changes in human behaviour essential for sustainable living. The capacity for transformative models of education to take root is dependent on a range of factors including preparedness of schools and teachers to embrace such approaches [66].

Education systems around the world are responding to the changing economic, environment, social and political global landscape by reviewing their curricula to include key skills and competencies. Thijs and van den Akker's [67] description of curricular strata, where the supra level begins with transnational discourses about education, leading to the macro level of national level policy intentions and on to the meso level of policy guidance and facilitation to the micro level of school-level curricular practices and finally to the nano level of classroom interactions, demonstrates the complexities of implementing changes in the education sphere. While such a tiered approach to policy framing may well be necessary and appropriate, such a trickle down approach to trans-formation needs to give considerably more recognition to 'continuous adaptation' [68], thus also, considerably more dependent on micro capacities to extend the knowledge base of teaching, from a content and pedagogical perspective.

Lehtonen et al. [69] concur that the educational space is both complex and contested, presenting educators with the challenge of addressing difficult knowledge in a politicised and, at times, divisive context. The ability of teachers to critically form their responses to challenging and intricate situations, activating prior experience to move between repertoires for action in the light of reflection on alternative futures will be very varied across different contexts [70]. At the core of this dilemma is the concept of professional agency, whereby practitioners have the capacity to act in particular circumstances making sense of policies and of the multiple nuanced factors that influence the process by which these policies are realised. Agency and professional responsibility are not fixed capacities but rather an achievement resulting from the interplay of individual efforts and capabilities within contextual and structural factors in concrete situations [71], while responsibility implicitly contains a moral dimension. Thus, cultivating professional agency and responsibility in the teaching profession is central to understanding how educational policies are translated into contextually relevant teaching practices [72]. Important and all as teacher agency and professional responsibility may be, the days of 'heroic' performance are long since passed, thus there needs to be a significantly stronger sense of collective agency, collaborative professionalism, that takes professional responsibility seriously, while this too entails calling out systemic failures and inadequacies in terms of necessary and sustained support for teacher learning, and ongoing tailored 21st century 'formation' [73].

Another important factor in building sustainable teacher capacity is teacher professional identity and how it is inextricably linked to their chosen disciplines. The attempts by policy makers around the globe to progress the skills and competency agenda has been thwarted in some respects due to the lack of connection to subject discipline and pedagogical content knowledge (PCK) [74]. Skills cannot be learned in a content free zone. If teachers are to build their pedagogical repertoire for 21st century education they need to be supported and encouraged to broaden their horizons sufficiently to merge skill development and PCK in their practice [75]. However, if the rate of educational change persists without adequate resourcing and support, there is a serious danger of teacher burnout and attrition from the profession. We must learn from the sins of the past where rapid and radical reform did not achieve their intended outcomes [59]. There needs to be a systemic recognition

by policy makers that we do not have to invent the future out of nothing, as well as increasing power asymmetries due to the expansion in influence of international agencies with their own agendas. Furthermore, teachers who are at the coal face of reform need to challenge the rhetoric surrounding the novelty of 21st century skills and competences. Seminal thinkers like Dewey and Freire have espoused the educational virtues of democratic and citizenship education, critical thinking and collaboration for decades. There is no denying that teacher capacity and competency to foster these skills are important agenda items. If we are to succeed in building this capacity and embedding these skills across the continuum of education, we need to approach it differently than heretofore in an incremental and non-threatening way that is achievable and sustainable. Slowing the process of change sufficiently to enable capacity to be enhanced incrementally is necessary; capacity building can only occur from where teachers' expertise is rather than where it ought to be. There needs to be recognition also that the intellectual capacities of teachers vary considerably also from one jurisdiction to another, while this is already reflected in PISA results—particularly in Finland and Signapore [76]. While public partnerships have considerable potential to enhance teacher capacities, vigilance too is necessary in order to maintain schooling as a public good, a state responsibility that eschews profit in favour of society. Maintaining education as a public good to avoid the for profit sector dominating the agenda is essential. Moreover, making structural changes to the school year is also essential for educational reform to be more than a mere aspiration. Elongating the school year to facilitate sustained teacher learning at the site of the practice [77] and during the working day is a possible solution that, though a challenge to the profession will be necessary to consider.

Assessment is probably one of the most important aspects of the education process and has often been described as "the tail that wags the curriculum dog" [78]. Any attempts to embed key skills and competencies across the continuum of education must include a more holistic approach to assessment. This is easier said than done. Approaches to the assessment of skills and competencies will require more teacher and school-based assessment and less dependence on high stakes terminal exams. However, the controversy surrounding the examination process in many developed countries during COVID-19 crisis demonstrates the complex nature of assessment and the tension between transparency and fairness on the one hand and teacher autonomy and professional judgement on the other.

7. Conclusion

It is abundantly evident from the brief analysis and foray into aspects of building teacher capacity that the agenda is ambitious. As indicated in the introduction, even in the most developed economies, past experience indicates that this is an enormous challenge. When viewed from the perspective of cultures and contexts that continue to struggle with 'basic' education, the challenges appear as Sisyphean, and serves to disenfranchise, and demoralise rather than enhance teachers sense of agency and responsibility, and the quality of teaching and learning. Such a considerable educational change agenda is open to the accusation of policy elites talking among themselves. Unless and until the voices of teachers, learners, their parents and communities become part of that reform conversation in a meaningful and sustained manner, hope will drain away. There is no Valhalla, no 'promised land' to which teachers and their learners may easily migrate. Rather, they have to build and pave the way to that future. Without the support and resources necessary to match the ambition, professional agency, and professional responsibility are likely to decline rather than enjoy enhancement, and pedagogical repertoires more likely to

become retrenched as Governments exert pressures to improve performance, resulting in impoverishment of teaching and learning, expanding disparities in learning outcomes, sustainability agendas shredded, to the detriment of the attractiveness of the teaching profession in many context where it is critically necessary. Policy-makers too have a responsibility to do more than merely enunciate lofty ambitions. These need to be matched by transformation strategies that are tailored to evident needs with resources that are equal to the challenge if even partial sustainability is to be achieved, the teaching profession enhanced, and the quality of teaching and learning improved. For too long, educational 'change agents' have been content to settle for less. While the influence of international agencies, their policy rhetorics, have grown more numerous, and demanding, no matter how laudable their advocacy, this does little for the capacities of teachers *per se*. Unless more effective means of bridging the worlds of policy makers and practitioners are crafted, sustainable reforms will continue to remain aspirations, more likely to frustrate teacher morale and self-efficacy rather than enhance their sense of responsibility and capacities to transform the teaching learning process.

Conflict of interest

The authors declare no conflict of interest.

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Connecting Pedagogical Interactions in the Twenty-First Century Classrooms: The Role of the Learners' Perspective in Knowledge Production in the Curriculum Transformation in South Africa

Mamsi Ethel Khuzwayo and Kwanele Booi

"Education is what survives when what has been learnt has been forgotten"

Abstract

This chapter presents the analysis of the interactions in the context of knowledge acquisition and learning. Despite the different contesting approaches to knowledge acquisition, this chapter unveils the confusion prevailing in classrooms concerning the gaps and questions arising from knowledge that is asserted to be empirically verified. The observation sheets and notes were the primary sources of data gathered from the evaluation of lesson presentations conducted in classrooms, with the focus being on teacher-learner-interaction. Learners' reflections, questions, comments as well as feedback from teachers were analysed through qualitative procedures. The results and the findings highlighted that the preparation of the lessons by the teachers have unforeseen gaps, blind spots, and undesired learning outcomes. This work concluded that teachers are experiencing challenges and difficulties in addressing the cognitive and intellectual needs of the twenty-first generation learners in classrooms. This study recommends the review of factual knowledge by school subject curriculum experts, and teacher educators in the faculties.

Keywords: pedagogical, interactions, knowledge, productions, perspectives

1. Introduction

The changes and advancement in the socio-economic and cultural systems globally, indicate the need for rethinking knowledge construction in schools as well as teacher education and training. The transformation of the mindset of knowledge recipients to knowledge constructors in teachers should be the main focus in the teachers' education and training. This work contests the view of the

perennial and essential philosophy to reproduce knowledge of discoveries, inventions and construction which does not inspire and challenge those who receive it. The assertion of [1] about education raises questions about education as a concept and the phenomenon thereof. If education was indeed about knowledge creation and not reproduction of knowledge, what has been learnt could not been forgotten. The Phenomenologist Psychologist describes learning as the process of creating lived experiences, from the environment and one's surroundings. The knowledge therefore becomes part and parcel of one's being, and the lived experiences are the basis for any further knowledge creation. If learning is about mental, emotional, and physical development, firstly, the person acquiring knowledge will have the understanding of; what knowledge, why knowledge and how knowledge? The explorations, inquiry and search for suitable and relevant information is driven by the inquest to solve problems experienced from the real-life environment, not about idealised situations. It is this sense that this work conceptualises B.F Skinner's assertion about education. The other issue that is linked to Skinner's assertion about education is viewed in this work to be the compartmentalised knowledge into the abstract realities, which are delinked from the real-life experience. According to [2], knowledge that is brought into the classroom as reported reality, is more relative than the actual lived experience, which is authentic practical experience and the reality of the process and results of problem solving, exploration and inquiry. The post-school education and training cannot be the continuation of the approach to knowledge acquisition at a school level. Research has highlighted that the conformist approaches to knowledge acquisition in South Africa and globally had deprived teachers the opportunity for lifelong learning, reflective thinking, and subsequently teachers have become technicians [3–5]. This work supports the trajectory of scholarship, which promotes the descriptions of educational practices as a process of engagement with the reality and surrounding environment for the purpose of creating knowledge and developing essential cognitive, affective, and psychomotor skills. According to the educational psychology, the mental growth and development is the results of the process of becoming, meaning that adaptation in the environment demands problem solving, exploration and inquiry. These are therefore cognitive skills, or the functions performed by the mind for the purpose of enabling the individuals to master the demands and challenges posed by the environment. The mind alone cannot complete the function of adaptation and mastery of the environment and surroundings, but the affective skills also play a role, for example, the decision-making processes are based on; a willingness to participate, the choice to respond or to receive, and interest. The aspect of psychomotor skills is the physical actions or movement driven by the affective and cognitive abilities to address the desire to adapt to the environment and to master the realities in the surroundings.

The argument on the necessity and importance of the learners' perspective in knowledge construction in teacher education and training is informed by the data collected from lesson observations. The desire that manifested from teacher-learners' interaction regarding factual knowledge, confirmed the ideas advocated by constructivist, humanist, cognitive and phenomenologist approaches, which identify the nature of the learners to rely on their interest, familiarity with context and experiences to conceptualise knowledge [6]. The findings presented in this work are the extension of this narrative, that promotes the contestations and debates in the classroom to allow learners to express their opinions, interests and experiences of what is presented to them. In addition, the findings from the data influenced this work to firstly assert that factual knowledge presented to learners in the field of Natural Science and Social Science in grade nine is irrelevant to the learners' interests, familiar contexts and real-life experiences. Secondly, learners have no confidence in the textbook knowledge and in the teachers' abilities to transverse knowledge and

general outlooks to real-life world experiences, to assist learners to develop an in-depth understanding of scientific phenomena. The lack of opportunities for debates and reflective argumentation in Natural Science and Social Science classrooms, is perceived in this work to be incongruent with the assertion that "education is what survives when what has been learnt has been forgotten" [1]. The assimilation of raw facts deprives learners in the Natural Science and Social Sciences classes the opportunities to explore, discover, and investigate facts through deductive reasoning and logical thinking, hence learners were not complaisant with the explanations from the teachers and the textbooks in the observed lessons for this chapter.

2. Background

The educational and curriculum transformation in South Africa reflects ideas and perceptions that had been advocated by international research. With regards to knowledge production, the Department of Education established the National Qualification Framework, to articulate phases in the educational system, and curriculum design and organisation. The restructuring of knowledge in the national school curriculum encapsulated ideas of the so-called mode two knowledge; the clustering of compartmentalised knowledge in a broader field of study [7, 8]. The first curriculum introduced by the new education ministry for the democratic South Africa was called, Curriculum for the 21st century, and this curriculum introduced a concept of 'Learning Areas', to replace subjects in the national curriculum for schools, for example, Life Sciences in a school curriculum encapsulated knowledge regarding aspects of life and sciences and it was for this reason that it changed from being a subject to being called a 'Learning Area'.

The curriculum transformation in South Africa from 1997 to 2010 has been criticised in the works of academics and researchers [9, 10] for being vague and too broad, in the sense that the adopted design for Curriculum 2005 or Curriculum for the 21st century did not take the capacity of the current cohort of teacher into account. The criticisms were justified by the revelations and findings in the report of the ministerial task team appointed by the Department of Education to investigate the challenges and difficulties which findings are highlighted in the works of [11, 12]. According to [13] the main focus of the investigation covered; the field testing, teacher orientation and follow up training, professional support services provided within provincial systems, classroom practices, the quality, quantity, use of learning support materials in support of the Curriculum for 21st century, and the level of understanding of outcomes- based education. The findings highlighted by the task team from its review provided this work with the understanding of the background and the process that resulted in the current educational and pedagogical practices of teachers in schools. This background provides a clue about the views and the purpose of the designers of the curriculum for the 21st century concerning the transformation of a paradigm of knowledge production and pedagogy suitable for equipping citizens with skills, abilities, and knowledge of global standards. According to the task team's report the decline in the levels of abilities and skills to read, write and to understand and perform numerical calculation in mathematics was of great concern, the levels of incapacity of teachers to comprehend the philosophical and theoretical principles and ideas underpinning the curriculum changes resulted in chaos in the learning environment. Teachers were struggling to understand and to implement curriculum guidelines due to the inability to conceptualise the new terminologies and concepts that were introduced in the Curriculum for 21st century. According to the curriculum guidelines teachers were expected to create a knowledge structure by integrating conceptual knowledge to

in order to promote correlations within the Learning Area (related subjects), for example Natural Science, which is a cluster of physical science and life sciences in the General Education and training phase of the National Qualification Framework. The systemic evaluations conducted by the department in the subsequent years through the annual assessment (ANA) highlighted that curriculum transformation in spite of all various interventions by the department, implementation of the purposes and intentions of the curriculum designers were not attained in South Africa. Despite the recommendations and proposal to the department based on the continuous reviews of the curriculum to; adjust the curriculum by scrapping the new terminologies and concepts and reversing 'Learning Areas' in favour of subject content knowledge, supply schools with textbooks, allow teachers to utilise the traditional ways of teaching and learning, which they are familiar with, and assess learning of knowledge as they have been professionally trained to do. The reversal of the changes introduced in the Curriculum for 21st century in South African terms was aimed at getting education "back to basics" and this implied the perpetuation of traditional practices based on the absolutist and perennial view of knowledge, conceptualisation of learning and traditional behaviourist pedagogical content knowledge. This study finds it interesting that the recommendations referred to in this work were from the ministerial team whom the minister considered to be a skilled, prominent South African educationist-curriculum and evaluation specialists, school-based practitioners and department-based policy makers [13].

The recommendations of the 2000 and 2008 ministerial task teams persuaded the ministers of education to consider revising the school curriculum and indeed, in 2005 the National Revised Curriculum (NRCS) and NCS were the version of the streamlined curriculum changes, and later in 2008 the curriculum became the Curriculum and Assessment Policy Statement (CAPS). The education ministers in the education department proclaimed that the revisions in the curriculum statement for the 21st are still based on the principles of constructivism and outcome [14].

3. Literature review

This section presents the conceptual framework drawn from the synthesis and analysis of the contesting perspectives concerning the conceptualisation of knowledge structure and knowing. Literature points to the emerging perspective advocated in the works of [15–19] which contest the classification of knowledge into heterogeneous subject or discipline content. Researchers who pursue the narrative of knowledge integration [20, 21] had proposed different approaches to hybridism of heterogeneous knowledge structure and those are: interdisciplinary, multidisciplinary and cross-disciplinary. [22], in the same vein suggested that an outcomes-based curriculum model is an appropriate tool for promoting an integrated knowledge structure in the school subject curriculum. In pursuit of the relevant curriculum design for implementing hybridisation of knowledge [23, 24] proposed the consideration of two approaches to curriculum designs; first is the subject-based designs which entails: broad fields curriculum that merge several disciplines into interdisciplinary subject areas, this curriculum allows more correlation, integration, and holism, for example, Natural Sciences, Social Studies or Sciences and humanities etc. Second, is integrated the curriculum design, which encourages integration of concepts across, within and to future knowledge [25].

The opinions and ideas from the works of [26–28] informed this study regarding alternative ways to knowledge production that are recommendable for a lifelong-long process. These researchers share similar views of knowledge as a social

construct; its production reflects elements of engagement of humans with reality in a specific time and context, interaction between human and environment as well as real-life problems. The understanding of knowledge established from this perspective highlights that knowledge is time and context specific and therefore knowledge is fallible and not everlasting. Similarly, the constructivism and progressive philosophical ideas support the view of knowledge as a process, which is driven by socio-economic needs and demands [29, 30]. The issue of knowledge in the classroom should be assessed in terms of relevance to the current socio-economic needs of the nation or society, worthiness to provide solutions to the current and future problems in the society. By the same token, [31, 32] argue that subject content knowledge in textbooks present the narrow and linear programmed or structured factual knowledge, which is mostly based on the unilateral world view of the author. Ideas drawn from ([31], 16) affirm the importance of questions that lead to the construction of a new set of connections and fresh perspective of knowledge structure. ([33], 5) also, alluded to composition of knowledge structure, to be both a social construct and real, while [27, 34] pointed out that knowledge comprises of commonsense, assumptions, conclusions, and hypothesis, therefore the validating and verifying of knowledge is an ongoing process. [14] supports the notion of knowledge as a fallible product and argued that knowledge is neither universal nor absolute because its production is regulated by contexts in terms of time, socio-cultural and economic advancements.

In the context of a school curriculum, [35] stated that subject content knowledge should not be confined to textbooks, instead learners and teachers should focus on current and future realities and current phenomena that affect the society. [19], extended the rhetoric of classroom-based knowledge construction when expressing the recognition and acknowledgement of learners' perspectives of world outlooks in the process of curriculum development. [25], supports the promotion of contemporary ideas and knowledge when pointing out that the view that knowledge is generated through senses meaning, the sense of sight, hearing, touch, taste and smell. The constructivist such as John Dewey posits that knowledge is both tacit or implicit and explicit; the tacit knowledge is the collective noun for ideas, views, experiences and opinions constructed as individuals interact with reality and the environment, whereas the explicit knowledge is the expressions of the tacit knowledge, in other words the experiences and ideas an individual prefers to share with other individuals.

The opinions and ideas drawn from [24, 27] reveal contestations surrounding the philosophical and theoretical paradigms of knowledge production, which are empiricism or analytic, interpretive or hermeneutics, praxis or critical pedagogy. The empiricism paradigm pursues the scientific methods and procedures to produce knowledge, hence the countenance of knowledge is based on verification and validation of facts through scientific methods. According to [2, 13] subject content taught in classrooms is the product of scientific procedures conducted far away from the place of learning. The argument expressed by these researchers is that the main aim and the core for learning the subject content is the knowledge of the process of production rather than receiving the product. [19], also pointed out that the subject content curriculum that promotes perennial philosophical views of knowledge emphasises an absolute and universal approach to knowledge acquisition; memorisation and acceptance of facts without reflections and argumentative debates.

The discussion of different paradigms and philosophical underpinning are of importance to this work, because the main focus is on the issue of worthwhile, truthfulness and relevance of knowledge or information taught in the Natural Sciences and Social Sciences to school learners. The problem statement was to

investigate the perspective of knowledge from the manner in which learners view knowledge that is taught, teachers' perspectives of knowledge and the engagement of teachers and learners during knowledge acquisition. [28], argued that knowing is not only limited to empirical or scientific knowledge, but other ways such as intuition, revelations, reasoning, and logic, are recognised ways of knowledge construction. The data collected from classroom practices of pre-service teachers and the challenges they encounter in reproducing the traditional facts of the ancient times pointed to outdated facts and pedagogical content knowledge of the teachers.

4. Theoretical framework

This work draws theoretical ideas and views from constructivist, progressive and phenomenologist theories. The advocates of the constructivist theory assert that learners have their points of view and perspectives to life and reality resulting from the process of adaptation in their environment [35]. To the constructivist theory, learning is a process of becoming and it is through mastery of abilities, knowledge, and skills that the learners attain self-realisation, meaning that the learner seeks to find answers to the questions and solutions to the real-life problems [14, 24, 29, 32, 33] in the same viewpoint assert that it is in the nature of the learner to ask questions about their surroundings, and the relationships between entities that constitute their world. The researchers in theory recommend that learners should be exposed to real-world problems rather that abstract realities, for them to construct their knowledge by means of explorations, investigating, problem-solving, trial and error, and experimentation [18, 29]. In the same narrative, ([27], 7) argues that the nature of knowledge and characteristics in a progressive and pragmatic context, meaning knowledge that reflects the past, present and projecting the future possibilities are; engaging, existential, expressive, evolving, experimental, anti-entropy, and entertaining. These six aspects or characteristics provide guidelines. The constructivist theory supports the learner-centred strategies to teaching and learning; allowing learners to ask questions or identify problems that they want to solve. [32, 33, 36, 37] point out that, learners could enjoy the freedom to explore and construct their own world view if the curriculum designers perceive knowledge as a process or means to an end, not as infallible and indisputable facts. Similarly, the phenomenologist theory echoes the sentiment of the consideration of individuals' interests, emotional and cognitive needs, freedom of choice, and their experiences, as fundamental aspects of the process of knowledge acquisition and construction [24, 25]. The recent researchers of the learning revolution [38] advise that learning for the future advancements in human life, should account for the demands of the changing times in human cultural development, and shift from the traditions of handling learners as empty vessels to be filled with insignificant and outdated factual knowledge. These researchers recommend the recognition of talents and imaginative abilities as essential meta-cognitive and intellectual abilities which are innate in learners.

This work also drew ideas from [22, 35, 39] about quality teaching and learning, as he asserted the importance of the three interactions. First is the learner-knowledge interaction, second, teacher-knowledge interaction and third, the teacher-learner interaction. The conceptualised interactions demonstrated in the diagram, indicate the worlds or dimensions from which the participants create their own meaning of the content knowledge. According to constructivist and phenomenologists' theories, the teacher should allow learners to engage with the content knowledge and to build up new understandings, and if learners are to construct their own understanding of the content knowledge, teachers should capitalise on the learners' prior knowledge and imaginations [18, 19, 29]. ([35], 49) proposes ways in which teachers could support

and encourage learners to interact with knowledge for an in-depth understanding and creation of new knowledge, and this should be done through asking simple questions, for example, 'How did you know about that? Did anyone approach this problem in a different way? Is there anyone with the similar view of knowledge? [35] is of the view that teachers should always establish the patterns of thoughts of the learners, be aware of and accept learners' perspectives and to organise concepts and ideas such that learners are able to discern for themselves issues or knowledge that require more exploration and investigations.
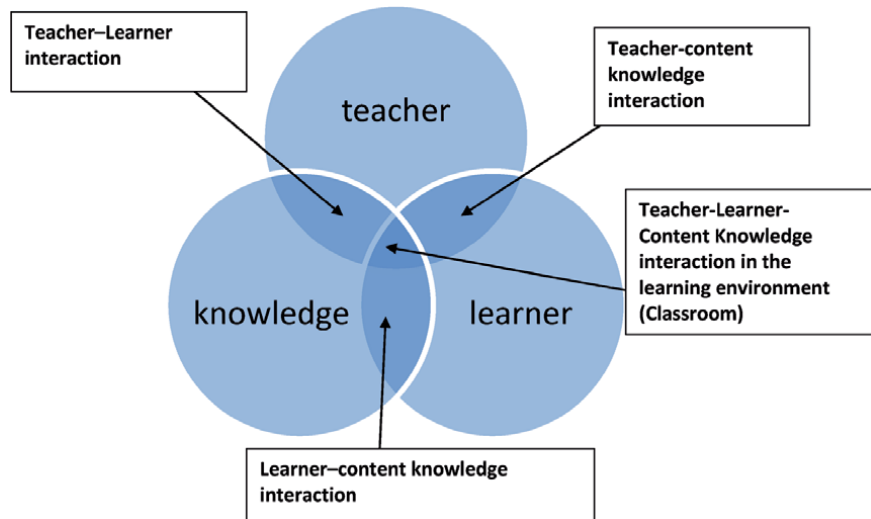
The three interactions are the focus of this work used during the analysis of the three scenarios or case studies with the purpose of understanding the perspective of knowledge, its relevance to their cognitive abilities, emotional development, and construction of their own outlook to reality and world views. In this work the problem statement is the perennial knowledge structure promoted by the current curriculum design and its relevance to the transformation of South African learners' world outlook. The question linked to this problem statement is: How do learners perceive school knowledge and the problem and challenges in real world systems?

The constructivist theory warns that imposing knowledge to learners as fallible and conclusive deprives learners the opportunities to develop intellectual skills; logic, evaluation, critical thinking, hypothesising and creative thinking [7, 23, 29, 33]. The Piaget theory on human cognitive development revealed that at a formal operational stage, children can think hypothetically and critically about things around them, therefore an exposition of knowledge that acts against this principle is viewed in this work to be oppressive and manipulative to the young generation.

5. Research method

This research is guided by the views and opinions of the critical study to expose the manipulation and oppressive approaches to knowledge acquisition in South African schools, and the purpose is to evoke a rethinking of the approach to knowledge structuring that is suitable for liberating learners' minds in the 21st century. According to ([40], 471) critical study is a qualitative research in which the researcher is committed to exposing social manipulation and changing oppressive social structures for the purpose of finding the discourse to the current practices.

The case study design was chosen for the study and the rationale was that the researchers intended to utilise interviews and observations of the interactions in the teaching and learning processes in the classrooms. In this vein ([41], 41) refers to the case as the situation selected by the researcher in which a phenomenon is described by participants' meanings of the process or events. The second connotation of the case study refers to the research design which enables the researcher to apply qualitative procedures and techniques to obtain an in-depth understanding of the phenomenon. In this study the first connotations describe the focus, which in this case is the interaction between learners and subject content knowledge interaction in the broad field curriculum for the 21st century in South Africa; Social Sciences and Natural Sciences.

The participants in the research were selected from the group of in-service teachers in their post-graduate teacher qualification. The purposive sampling strategy was used to select students with the highest qualifications in the knowledge of the disciplines, for example, Social Sciences students who specialised in Geography and History, and for Natural Sciences, students who specialised in Physical Science and Chemistry or Life Sciences.

The research ethics were considered during the selection of participants and the application of research instruments. Firstly, students were informed about their rights which were: to participate voluntarily, to opt out if they wish to do so, they will not be coerced to answer or provide information which they feel is confidential; their identity and personal details were to be kept anonymous. The learners were informed that the information gathered is not about them, but the observations focussed on the process of learning and teaching.

6. Sample

The selection of the participants in the study adopted a snowball sampling strategy. Snowball sampling is about recruiting participants from the larger sample [40, 41]. The participants in the focus group consisted of sixteen grade nine learners and two teachers who taught Natural Sciences and Social Sciences. The criteria used to recruit participants were: active participation in the class discussions, and a willingness to share opinions and ideas during the lesson.

7. Data collection and its analysis

The primary sources of data were notes developed during the observation of lessons focussed on the learner-knowledge interaction, teacher-knowledge interaction, and teacher-learner interaction. The second set of data was obtained from interview transcripts developed from the students' reflections during face-to-face discussions after the lesson observations.

The study utilised an observation schedule focussing on the four areas of pedagogical interactions, which are learner-teacher interaction, learner-content knowledge interaction, teacher-content knowledge interaction, and teacher-learner-subject content knowledge interaction in the teaching and learning environment. The capturing and analysis of data focussed on learners' perceptions of subject content knowledge and opinions about how best the subject content knowledge could be taught more meaningfully to them. The second set of data focussed on the appropriateness and adequacy of feedback and explanations of the teachers to learners' questions and opinions.

> *"Researcher needs to live in classrooms, to see the complex forms of interaction that occur in classrooms. In this way, more accurate pictures can be got of which particular kind of students get what particular kind of knowledge and dispositions, one can also see how knowledge is actually created and used in classroom settings" ([32], 15).*

The qualitative data analysis procedures were followed; first the data recorded in the observation schedule was given codes. According to [42] a code is a descriptive name for the topic of subject of a data segment. Second, the codes were organised into units focussing on the learners' reflections, questions and comments and the category for this data was learner-knowledge interactions. The codes that highlighted teachers' comments, explanations and feedback comprise the category of teacher- knowledge interaction and the last category was formed by actions and behaviour indicating satisfaction, doubts and confusion, and all these were classified under teacher-learner interaction.

8. Data presentation or results

Data coded and classified under learner-knowledge interaction were questions asked by learners during the conclusion of the Social Sciences (Geography) lesson and comments made by learners comprise the data summarised in the table.

9. Clarity seeking questions directed to the Geography teacher A

Learner X asked: "Is earth moving or revolving from the east to the west?"
Learner T asked: "Does the sun rise and set or is it the earth rises?
Learner C asked: "Why does the teacher say the sun rises from the east and sets on the west? Is there such a thing?
Learner R: "Sir, there is something that worries me about the shape of the earth. The globe shows that earth is round, but on the chart the earth is flat. If the earth is like that globe what makes water in the oceans and rivers change position as the earth rotates?"

10. Comments made by Learners

Learners G: "Sir, I have learned from the Natural Science textbook that the sun does not move, only the earth and other planets rotate around the sun."
Learner K: "It is wrong to say the sun rises from the east and sets on the west. There is no rising and setting of the sun here."
Learner F: "And then….. (*Throwing hands in the air),* what is the truth sir?"
Learner J: "I believe the earth is flat, no earth round rather I can say it is round and flat."
Learner L: "Why are [we] learning this because the Natural Science books and the teacher say something different and the Social Science books and the teacher teach us another thing. What is the truth?"

11. Clarity seeking questions addressed to the teacher during Natural Sciences lessons

Learner N asked; "Madam, is the ocean water a soluble or solution?"

Learner Z asked; "What makes ocean water taste so much salty because there is no salt?"

Learner P asked; "Is it true, teacher that all human beings were apes, long-long ago? This information is in the Natural Science textbook."

Learner S asked; "Who saw these changes and why are we learning about this? How is this information preparing us for jobs?"

12. Comments of learners on knowledge

Learners commented:

Learner C, "Learning about these things is boring to me and I see no need of knowing anything about apes and this evolution."

Learner E, "I like to know more about cars and aeroplanes, not the apes and soluble and solvents. At home I spend time reading about cars and drawing cars."

Learner J: "School is boring because we sit in class, listen to all these lies from the books, writing notes from the book and writing tests."

Learner M "I am sick and tired of knowledge that does not help us to know how cell phones are made, televisions and music."

13. Findings from the learner-knowledge interaction

The importance of the data from the questions asked by the learners and comments in this work, as highlighted under the section of data analysis, was to establish the holistic perspective of learners concerning firstly, their interpretation of reality and the environment, and relating knowledge that is an abstract form with their common-sense knowledge, and prior knowledge. Secondly, the comments revealed the perceptions of knowledge learned from the subjects or broad fields in the school curriculum in relation to learners' feelings, interests, experiences, and views on the relevance of information to their actual life beyond the school. The data from the comments and questions pointed to the criteria used by learners to evaluate knowledge, teaching and learning. The data highlighted that the main premise for logic and reasoning in the learner-knowledge interaction are: (i) relevance, (ii) truthfulness, (iii) worthiness, (iv) evidence and (v) context for the content knowledge. The question asked seeking relevance was for example, "How is this information preparing us for jobs?" Whereas comments that expressed the similar sentiment were: "I am sick and tired of knowledge that does not help us to know how cell phones are made, televisions and music". According to [2, 14], highlighted in their work, that meaningful knowledge is not just information, but its essence is in the process of production, because the process of production encapsulates the relevance in terms of time and environment contexts. These researchers contended that the only choice in knowledge production currently is between positivism, absolutist, and constructivist relativism, and this trajectory limits the insight into the multifaceted, evolving, and dialogic nature of content knowledge.

14. Learners' perception of the prescribed subject content knowledge

Learners distanced themselves from the confusion they identified in the information presented in the textbooks. The contradiction presented in what had been taught for so many years in the subject as factual knowledge, was considered by

learners as fallible because it does not provide sense to their questions. To emphasise the importance of knowledge and knowing [10, 11] cited Maton's legitimating theory, to reveal that knowledge structure had a knower structure, this assertion, is in congruence with the evidence highlighted in the learners' propensities expressed in their comments and questions, for example, "school is boring because we sit in class listen to all these lies from the books, writing notes from the book and writing tests", "I am sick and tired of knowledge that does not help us to know how cell phones are made, televisions and music." These comments highlight that the current generation of learners are not the knower structure for the knowledge structure that is prepared for them. The perspective of the school and classroom being "boring", was interpreted in this study to mean an oppressive and manipulative environment, because of the comparison drawn between the content knowledge and the expectations, interest and desires for the future, which are not taken care of in the knowledge structure. The argument, about the knowledge structure and knower in the works of ([32], 15) is, in whose interest is certain knowledge (facts, skills, propensities and dispositions) taught in the school curriculum? The concerns of the learners indicate blind spots in the selection and organisation of knowledge in the textbooks and in the school curriculum at large. The dimension of the learner in the selection and sequencing of learning content, from the learners' perspective does not consider relevance, interest, future plans and desires of the learners, who are the consumers of the product. Instead, knowledge is packaged for the sake of keeping busy in the classroom, which in their view was just a waste of their time and opportunities. The definition of the term 'education' by the international researchers and the theorist, B.F Skinner is confirmed in the findings on learner-knowledge interaction, there are specific aspects pointed in the definition "education is what survives when what has been learnt has been forgotten." The findings provided evidence to the definition of education in the quotation, which implies meaningless and contradictory factual knowledge taught in classroom, the survival implies awareness of the contradictory and meaningless factual knowledge, recall of factual knowledge for the purposes of marks and to obtain a certificate. The conceptualisation of the phrase, "what has been learnt has been forgotten" insinuates that some of the knowledge will be for the short while, which could be for the purposes of test and exams. The learners' comments and questions made it clear that content knowledge that does not have value to their present and future is a waste of time at the expense of what is of significant to them. The imposed worthless knowledge to them in the school curriculum creates negative perceptions about schooling and knowledge. The phenomenologist and constructivist principles about the learner, learning and knowledge, recommends that learners should be viewed and treated as active participants in knowledge production or construction; learners have their own desires, interests and perceptions about knowledge, and skills that are learnt; learners should not be treated as empty vessels [7, 33]. Concerning knowledge and meaningful learning, [8, 22, 35] emphasise the importance of context and content, the context is the authentic world of knowledge production and its application, whereas content is the collective of conceptual, practical, procedural domains of knowledge about real life phenomena. In the context of the finding highlighting the rejection of content knowledge about the positions of the earth and the sun, the main issue was that learners wanted the practical and procedural understanding of the positions, for them to be convinced. The debate and contradictions contributed to the rejection of the factual knowledge due to the lack of evidence from practical and procedural knowledge from the authentic context where the knowledge is produced.

15. Ability of learners to integrate knowledge across subject domains

The ability to connect factual knowledge from Natural Sciences and Social Sciences highlighted in the data provided confirmed the Piaget theory of cognitive development, which states that learners at the age of ten and up, are able to think at an abstract level and generate hypotheses. The critical thinking and evaluation skills on the truthfulness and worthiness of scientific facts in the Natural Science and Social sciences about the positions of the sun and the earth was to learners a theme with contradictions in both fields of knowledge production.

16. Learners' perception of the ability of teachers to relate subject content knowledge to real life contexts

Researcher into teachers' professional development push the rhetoric of high-quality instruction for quality learning in classrooms [12–14, 20, 35]. The clarity seeking questions asked by the learners highlighted the deep inquest for knowledge that is not provided in the textbooks. The learners' questions exposed the limitations in the teacher's competence to think beyond the textbook knowledge, and as a result learners demonstrated their dissatisfaction and loss of hope and trust in their teachers. The data highlighted that teachers in the two classrooms relied on the perennial approach to knowledge and teaching strategies, which do not take heed of learners' perspective or viewpoints, hence teachers were caught off guard when confronted by questions requiring in-depth explanation of scientific knowledge. [24, 25] highlighted that a perennial view of knowledge promotes reproduction and transmission of factual knowledge, and does not provide room for contestations, however, the behaviour demonstrated by learners confirmed John Dewey's counter view on knowledge, which pointed out that learners are interested in knowledge that relates to their daily life experiences. The attitude of the teacher to learners' questions dented the trust in the teacher-learner relationship, which according to [19, 28, 32] is fundamental to effective learning. The learner-knowledge interaction revealed that teachers lacked the ability to relate content knowledge to the real-life situations and context. This research exposed that learners think beyond the book's factual knowledge and were able to challenge the teacher-knowledge interaction, which proved to be meaningless to the learners' search for in-depth understanding.

17. Data from teacher-knowledge interaction

Reflections on the lesson, according to the evaluation form, the teacher was expected to allow learners to ask questions for clarity purposes. The data presented in two columns show the learner-teacher interaction about the plane earth and the positions of the sun, east and west.

18. The comments and reflections of the teachers on the learning content and expositions

"Yes, the sun rises from the east, read your Social Science textbook".

"The earth is round and revolves around the sun".

"The earth is the circumference, with imaginary lines".

"The sun is the source of energy for the biosphere".

"The sun is static, meaning that it does not move".

"Yes, I know it, I am a graduate meaning I have a degree in Geography".

"The forces of nature make the sun to rise up from the east and set on the west. When you wake up in the morning you can see this for yourself."

"Yes, the sun moves up from the east and move down in the afternoon and sets in the west".

"I do get your point, but you should not worry about this for now".

"The textbook is written by expects and scientists they have conducted experiments".

"This means that what they say is true and you should believe it".

"All what you should know is that the sun rises from the east. East is the direction on the compass".

"In Natural Science, yes we know that the sun does not move".

"There is only one sun. Do not be confused by these two".

"There scientist in the Natural Science have tested this and discovered that it to be true, that the sun does not move only the planets rotates around the sun".

19. Teachers' adherence to transmission factual knowledge

Despite the proposals of the Department of Higher Education in the renewal curriculum policy guidelines, to ensure that pre-service and in-service teachers are equipped with the competence to master theoretical knowledge as well as contexts and conditions under which knowledge is produced in the field or discipline. This work revealed that teachers' knowledge interaction lacked evidence of epistemological principles highlighted by ([33], 25) and [27] which include: logical thinking; the application of deductive reasoning or syllogism that consists of premises. The first premise is called a major premise that comprises generalised perceptions of the reality, second is, the minor premise; the particular perceptions, and third is the conclusion. The questions asked by learners about the rising and setting of the sun were based on the generally accepted fact, which was confirmed by the subject teacher and the authors of the textbooks for Social Sciences for grade nine, on the other hand learners turned the fact into a hypothesis to be verified. The teacher–learner interaction was viewed by learners to be an opportunity to test the hypothesis to verify the truthfulness of the fact about the rising and setting of the sun. The teacher was unable to assist learners to understand the scientific procedures which led to the conclusion presented in the textbook. Instead, the teacher forced learners to accept the facts as presented in the textbooks. The disposition revealed that the role of the teacher in classroom is to perpetuate traditional practices in learning that promote regurgitation and memorisation of facts, and these traditional practices applied by teachers are in contradiction to the constructivist principles

underpinning the curriculum, knowledge integration and contextual construction of knowledge.

The questions from learner-knowledge interaction confirmed the view expressed by [29, 31] that priori or common sense is the basis of knowledge production. Learners' priori exposed the dimension which the teachers were not aware of and had never expected from grade nine learners; hence the teachers were unable to address those questions.

20. Disregard of learners' perspective in knowledge construction

The findings highlighted in the teachers-knowledge interaction and teacher-learner interaction pointed out that those teachers in the Social Science and Natural Science lesson show no interests in how learners internalise knowledge. Instead of adjusting the teaching techniques to acknowledge and accommodate learners' queries and concerns, teachers defended the content knowledge, and cautioned learners about questioning knowledge generated by experts and the teachers' knowledge of the subjects. According to [18, 20, 28, 29], the tendency to suppress learners' points of view to knowledge and their perspectives is detrimental to meaningful and effective knowledge acquisition and learning. The learners expressed their discontent about the contradictions in the scientific knowledge presented in the textbooks and the views of the teachers. According to [27, 34] warned that the knowledge structure in textbooks is not authentic knowledge because it does not engage learners in the procedure through which that factual knowledge was produced. In the same vein, [35] expressed that factual knowledge without understanding of procedural processes involved in the production of knowledge is worthless to learners. The data presenting learners' disgruntled dispositions confirms that learners were not satisfied with the knowledge of facts, the common interests were on how such facts were generated, and beyond that, they wanted the contradictions in the factual knowledge to be addressed.

21. Discussion of the findings

The findings presented in this work pointed to the limitations in the development of the Natural Sciences and Social Sciences subject content knowledge. The first limitation is the promotion of the absolutist view of knowledge and traditional pedagogy. The reflections and learners' perspectives of reality are not considered as part of knowledge interaction in the teaching and learning. According to [37, 39] constructivism, pedagogy and learner-centred teaching and learning provides learners with opportunities to engage critically with abstract reality by asking questions and developing hypotheses, to seek concrete examples that facilitate understanding of the facts. The second limitation was the teacher knowledge interaction, which pointed to the adherence of teachers to the textbook knowledge and lack of ability to relate abstract knowledge to reality. The findings of the study revealed that learners were frustrated by the teachers' feedback and comments which indicated that teachers were unable to address the intellectual and cognitive needs of the learners. The questions asked by learners in the Natural Sciences and Social Science lessons pointed to the desire of learners to link abstract and factual knowledge presented by teachers and the textbook with the perceptual knowledge which forms learners general or prior knowledge. According to [21] prior knowledge or general knowledge forms the foundations for meaningful learning since learners use what they perceive from their surroundings to understand abstract factual knowledge.

The other limitation highlighted by the findings was the lack of research and investigating skills for science teachers, for example, questions asked by learners based on the use of the globe to teach a lesson about the structure of the earth should have been considered by the teacher as a hypothesis for investigating and research instead of suppressing the intellectual seeking questions. [8, 25, 31, 43] argued that scientific discoveries are not infallible, however, in their empirical nature, the space for further questions and hypothesis are inevitable.

22. Conclusion and recommendations

This work concluded that the teacher-knowledge interaction promoted regurgitation and reproduction of factual knowledge whilst learner-knowledge interaction demanded interpretation, reasoning, deductive thinking and logic about subject content knowledge. The interpretation of this contrast is considered in this work to be an obstacle to the principles of the learner-centred approach underpinning the curriculum of the 21st century education in South Africa. According to [5, 12] teachers should encourage active learner participation of learners in the learning process, and the strategies recommended to teaching and learning are: investigation, research project, exploration, and experimentation, instead of memorisation and reproduction of knowledge. This work also concluded that learners' intellectual capacity was suppressed by the beliefs of teachers about knowledge production, which was rigid and confined to textbook knowledge. The limitations in the teachers' abilities to relate factual knowledge to everyday life reality, subsequently developed negative attitudes in learners towards the subject content knowledge.

The questions which this work raises for future research are: what qualities do prospective teachers require to engage learners in the process of knowledge production? Second, how is the principle of a learner-centred approach being conceptualised in the structuring of knowledge to benefit learners' interests above those of the curriculum developers? Thirdly, how could knowledge structuring cater for differentiated interests and aspirations about life beyond the school? [14, 19, 23, 28] argue that learning and knowledge should not be confined within classroom frameworks, but it should empower learners with ideas and skills to adapt in the world beyond the school.

This work recommends the review of the knowledge structure, on the basis of findings from the comments of the learners which indicated that textbook knowledge is worthless and valueless in terms of helping them to achieve their goals. The narrative in this work serves to motivate for the recognition and acknowledgement of the importance of learners' perspectives of subject content knowledge, and intellectual and cognitive needs of learners as well by teachers, teacher educators and national school curriculum developers. Education for the liberation of the mind can begin by equipping teachers with the competences of mastering knowledge production. In Scientific Studies knowledge production implies knowing and understanding procedures and scientific processes involved in scientific discoveries, verification of scientific knowledge, for example, investigations, experimentations, creation of hypotheses and methods of testing hypotheses, reasoning and logical thinking. Twenty-first century learners are more technologically inclined, and therefore the use of technology, as learner V indicated, that their interest as young citizens is to be knowledgeable about technology so that they can be part of the technological discoveries of the twenty-first century. The learners expressed views which indicated that they regard themselves capable or achieving their goals should they be allowed to explore their areas of interests using knowledge of modern technology. This work considered this determination and enthusiasm demonstrated by

learners in the study, as an opportunity to be explored through alternative strategies to knowledge structuring, which will incorporate or apply learners' perspective as a threshold to curriculum design, development, and implementation in practice.

The argument presented by this work confirms the definition of education in Skinner (1964) that, "education is what remains after all which has been learnt has been forgotten." Teacher educators should think critically about this definition and begin to change the perceptions about learning and learners.

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Chapter 9

Self-Study Research: Challenges and Opportunities in Teacher Education

Kåre Hauge

Abstract

This article aims to describe what self-study research is, why self-study can be a good approach to teacher educators' professional development and improvements in practice and highlight some challenges and opportunities in this research approach. In addition, the article will shed light on some methodological aspects related to self-study. Self-study refers to teacher educators who in an intentionally and systematically way examine their practice to improve it, based on a deeper understanding of practice, as well as the context practice takes place. In the article, I argue that engaging in self-study is a learning and development process and an approach to developing personal professionalism, collective professionalism and improvements in practice.

Keywords: self-study, pedagogy in teacher education, professional identity, teaching about teaching

1. Introduction

The professionalization of teachers´, teachers´ learning and teaching has been high on the political agenda in many countries, both in Europe and in large part of the world [1–5]. In the last 40 years, the discourse around teachers'professional learning and development has largely been linked to various forms of practitioner research. That is, research where teachers actively initiate innovations and research their own practice to improve their understanding of practice, and as a consequence, improve their teaching and professional actions [6–9].

A closely related approach to practice-oriented research related to professional learning and development is also found in the *self-study research*, which is explicitly related to teacher educators [9, 10]. The professionalization of teacher's and teacher educators has both emerged from and been influenced by a range of approaches and has built on the work of fields such as reflective practice (e.g [11–14]), action research (e.g [15–17]), teacher research (e.g [6]) and other forms for practitioners'reseach (for a more detailed overview, see [18]). Self-study is the study of oneself and one's own practice and involves a moral commitment to improving practice [19]. According to Bullough and Pinnegar [20], self-study is used in relation to teaching and research on practice with the intention of better understanding of both oneself (in the different roles one holds as teacher educator), instruction, teaching and learning; and the development of knowledge related to these factors. Self-study refers to teacher educators who in an intentionally and

systematic way examine their practice in order to improve it, based on a deeper understanding of the practices, as well as the contexts practice is taken place [9]. With such an understanding of self-study, self-study is characterized as a specific form of action research, and corresponds to Pinnegar and Hamilton's [19] definition which describe self-study as something more comprehensive than just applying the study of oneself:

> *"it is not the self but the self and the others in practice that is most of interest ...*
> *the self seeks to explore the gap between who I am and who I would like to be in*
> *my practice and studies that self and the others involved as the self takes action to*
> *reduce or alter that gap" (p. 12).*

This means that self-study should not only be of significance to the person who conducting the study, but also of importance for creating meaning and contribute to increased understanding and knowledge for other teacher educators. Self-study research is an approach to understand one's own practice and one's self-concept, means that teacher educators look critically at their own professional values [21], work towards a better self-understanding [22], and have a moral purpose [23].

In this article, it will first be an elaboration of what self-study is about, before it is elucidated why self-study can be a useful approach for development in teacher education and various purposes related to self-studies. Then follows a discussion of methodological aspects associated with self-studies, before a presentation of some methodological approaches from self-studies that have been completed. Finally, some challenges and opportunities related to self-study research will be highlighted. The conclusion is: 1) that teacher educators have a professional responsibility for continuous professional development that contributes to better understanding for teaching and students learning- and development processes, 2) engaging in self-study is a learning and development process and approach to develop personal professionalism, collective professionalism and improvements in practice.

2. Self-study: core characteristics and aspects

Self-study is largely about becoming better informed, gaining expanded understanding, and an effort to improve oneself as a professional educator and one's own practice. As mentioned, self-study are closely related to action research, teacher research and reflective practice, and all these approaches share the assumption that the quality of education is "hinged" on the practitioner's (teacher's / teacher educators) knowledgeability (ability to; communicate with students, teach, create development processes, facilitate teaching, facilitate meaningful processes etc.), and that practitioner's actively studying their own practice and teaching is a valuable approach to enhance these abilities [24]. An important aspect of self-study is to search for the "gap" (distance) and contradictions between personal theory, own beliefs, thoughts, ideas, and how own teaching is actually conducted [25, 26]. This means to discover and acknowledge the differences between own normative beliefs and aspirations of teaching on the one hand, and the actual teaching practice on the other hand. This is what Whitehead [27] describes as the notion of experiencing oneself as a "living contradiction". To put it simply: we think, means and say one thing but we do something else in action.

A key characteristic of self-study is that it is initiated and carried out by practitioners whose practice is studied [28]. Nilsson and Loughran [28] emphasizes and argues that it is teacher educators themselves who must have control over the development and knowledge generation of teaching about teaching in teacher

education, and how to facilitate teacher students´ development, understanding and learning processes. This implies that it is the practitioners (teacher educators) who are responsible and must take responsibility for investigating, describing and articulating the relationship between the given teaching and the students´ development, understanding and learning. Smith [29] uses the term "teacher educators´ agency" about this responsibility. This is about teacher educators´ taking control of their own professional practice by researching it with the intention of developing and improving both oneself and practice and aiming to create new research-based knowledge. One important aspect here is also about being critical of the existing knowledge, traditions, institutional ways of thinking and acting, and institutional and political leadership related to teacher education [29]. Agency acts to the extent that the professional practitioners, teacher educators´, exploits the opportunities and freedom of the professional room in a responsible manner [30]. In that way, self-studies that lead to changes and improvements are the practice of agency.

An important aspect of self-study which is crucial in understanding the methodology is embedded in the desire of teacher educators to better align their teaching intents with their teaching actions [31]. It is unavoidable that the nature of practice itself, with its inherent contradictions and tensions, affects the manner in which the practice is researched. Accordring to Loughran [10], it will also be unavoidable for researchers and teacher educators who engage in self-study that the study of; themselves – their thinking – their actions – their teaching, does not affect or is applicable in their own practice. Another important aspect of self-study is about discovering and becoming aware of the complexities associated with teaching and educating. There are many challenging operations that take place simultaneously, and a teacher have a responsibility for everyone to support and facilitate both understanding and development, and for processes and actions to create meaning as well as challenging students. Zeichner [32] state that research related to self-study has managed to bring out some of the complexities associated with educating teachers and contributed to a certain dignity and to highlight the important, yet underestimated work of teacher education institutes and teacher educators. According to Zeichner [32], self-study may be the approach to research within teacher education that has contributed most to important developments in the field. Although an attempt has been made to briefly describe what self-study is about, it is according to Bullough and Pinnegar [20] difficult to fully understand what it is and what it is not. In addition, they also emphasized that self-study is not a recipe or procedure that is slavishly followed, but rather a methodology for exploring and researching own practice, one's self and own teaching about teaching. In the following, it will be elucidated why self-study can be a good approach to learning and development and what the purposes are for self-study.

3. The relevance of self-study in teacher education

Teacher educators who engage in self-study often share a broad motivation to improve; teacher education both individually and institutionally, goal of building new knowledge and understanding that can be brought into the field, increase the knowledge and understanding of teaching about teaching by researching and improving their own practice [33]. Whitehead [34] articulates this motivation to improve practice through some questions such as: "How do I help / support my students improve the quality of their learning and development?", "How do I live my values more fully in my practice?" and "How do I improve my practice?" ([33], p. 1308). Other questions that can be asked regarding to own practice can be:

- What challenges do I have in my practice and how to investigate, work with and understand these?

- How can I encourage / make students more aware of having a more reflective attitude to experiences from practice periods they have in schools?

- How can I be more informed about and aware of problematic aspects in practice that are usually hidden from my understanding and reflection? (in teaching, there are many problems that are obvious, and we can discover, but we have an understanding, experiences, thoughts and perspectives that make some problems hidden from us – so how to discover these?)

- How can I support my students to raise the quality of their learing and development towards becoming a teacher?

- How to facilitate thorough and meaningful deliberative dialogs?

- How to get students more involved and active in seminar groups?

These are just a few examples of what questions teacher educators can ask related to their own teaching and practice. One of the problems in teaching is that teachers tend to act before they know how things are related or evolved, or that teachers act from past experiences and habits, without knowing they do it [35, 36]. In Dewey's theory of learning and development, which is one of the sources of inspiration for self-study, he makes a clear distinction between actions based on habits and actions based on knowledge [11]. He claims that in situations where we have control, overview and know what it takes to solve the task, we do it based on our habits and learned ways of doing things. In such situations, thinking is unnecessary. It is when challenges or problems arise that cannot be solved with habits and learned methods that we must apply our ability to think and do something with our habits, methods and actions. Dewey [11] describes this as changing habits and actions from being unintelligent to becoming intelligent habits and actions. Based on this theoretical framework, Keltchermans and Hamilton [37] point out that one of the purposes of self-study is that self-studies can help teachers to look beyond technical and mechanical reductionism, i.e. from the perspective of "knowing how" to the perspective of "knowing why", and "becoming some-one-who – for students". This mean: for teachers and teacher educators to live up to society's demands for high-quality education in the 21st century, teachers must be more than professional and educational experts [38]. This in turn means that teaching involves a moral obligation, a moral dimension of one's knowledge that includes personal attributes such as vulnerability, honesty, integrity and credibility that are important in the work of teacher and teacher educators [37]. Here we are talking about a deeper understanding and knowledge that we also can understand considering Schön's concept of single and double loop learning [13]. Where single-loop learning confines itself to focusing on the instrumental, technical, mechanical actions, while double-loop learning goes beyond the actions itself, and to the underlying beliefs, values and attitude to the individual and institutional. When there are tensions and contradictions between how practice actually is carried out and our beliefs and values, it is not enough to just fine-tune actions. Then we must go beyond them and back to the sustaining factors to see what changes and improvements can be made so that the teaching can reflect our beliefs and values. An essential purpose in addition to developing practice is to develop one's own moral awareness related to teaching and being a teacher educator. Focusing on self-study for understanding

own practice and self-esteem means that teacher educators critically examine their own personal values [21], work towards better self-understanding [22] and positive changes in identity and practice [39], and, have a moral purpose [23].

Another purpose of self-study is to "model" something for the students. The concept of "modeling" in an educational context can easily be misunderstood, and in some cases the perception of modeling may be to imitate, do the same, model or template for reproduction, or some form of indoctrination. Despite the potential for misunderstandings, the term is widely used in education, but through self-study research the language, intensions and results of modeling are understood differently [10]. In self-study research, modeling is understood as i.e.: 1) a way to illustrate something, 2) a way to process and operationalize something, 3) a way to experiment with something, 4) a perspective and approach how to investigate something, and 5) modeling becomes viewed as a starting point for professional growth and development.

An essential purpose of self-study is also linked to the need to ask critical questions about teaching, learning, development and knowledge, and to articulate the silent knowledge and understanding about the practices of teacher educators. This is also about clarifying pedagogical reasoning and pedagogical argumentation and justification. In other words, making teacher educators thinking, actions, concerns, challenges and professional development more explicit and accessible to other teacher educators [19, 31, 40]. If the result of self-study really intended to influence the work within teacher education beyond the individual, the studies must demonstrate scholarship and knowledge generation that may be central to teacher education and the research field more generally. Self-studies must be made available for public criticism, critical review and evaluations from other teacher educators, so that others can use, build on, develop, adapt and adjust the work in meaningful ways that suit their own teaching context and own level of knowledge. Bullough and Pinnegar [41] emphasize that the question "so what?" is a critical reference for the quality of self-study. In other words: What is the significance of the study for others? What meaning does the study give to others? Is the study transferable to other contexts? If questions like these remains unanswered, the self-study may become a navel-gazing study that others in the field will not benefit from or contribute to knowledge generation [24]. Considering that the methodology in self-study can be perceived as a bit diffuse, it will further be elucidated some methodological aspects related to self-study research.

4. Methodology of self-study

As previously mentioned, Bullough and Pinnegar [20] point out that self-study is not a recipe or a procedure, but rather a methodology. Pinnegar [42] highlights the fact that self-study is a methodology for studying the professional practices of teacher educators, and that there is no particular method or correct way to conduct self-study. Rather, what determines how a self-study is conducted depends on which focus area of practice that is wanted to be better understood and developed. Pinnegar [42] offers a way to understand the methodological when she states:

> *"while the methods and methodologies of self-study are not much different from other research methods, self-study is methodologically unique ... self-studies involves a different philosophical and political stance ... researchers who embrace self-study through the simple act of choosing to study their own practice, present an alternative representation of the relationship of the researcher and the researched ... as they explore the development of understanding practice"* (p. 31–32).

Therefore, it is crucial when considering how to approach the self-study to be aware of the continuous interplay between research and practice in the practice context [31]. This means i.e., as the research unfolds, learning and development through research will affect the practice, and because the practitioner is the researcher, the practice will inevitably change as a result of this interaction and thus affect what is being researched. According to Feldman [43] and Loughran [44], a persistent criticism related to self-study is the lack of methodological rigor and transparency. LaBoskey [45] presents insightful perspectives into the methodology of self-study, outlining what she sees as four integrated aspects.

The first aspect is that self-study aims to create changes and improvements, both at the individual, the collective and at the institutional level. In addition, one of the purposes of self-study is to bring in new knowledge and development related to the education of teachers. Therefore, it is necessary that self-study thoroughly elucidates and justifies choices made, and studies should point to changes or new structures in thinking, learning- and development processes and actions. It is also important in the studies to highlight how and why changes and improvements occurred. The second aspect is about the interactivity in self-study. Interactivity is connected to interaction with colleagues, with students, with literature and research in the field and the interaction with our own previous practice. According to Zeichner [46], there is an especially important link between the researcher and the students. Students are important participants and must be actively involved in self-studies. Students will be the researcher's "mirror" of what happens in the processes of information, feedback and advice related to teaching and processes, development, learning and their understanding. Pinnegar and Quiles-Fernández [47] point out the importance of building good relationships between researchers in self-studies that takes place in a research collaboration with other researchers. Hauge [35] emphasize that relationships between researchers and teachers based on trust, respect and equality contribute to; delve deeper into the topics being investigated, dare to ask the difficult questions and being critical, creates a lower threshold for trying out and experimenting with new approaches, and this enables them to have a deeper understanding of what is being studied.

The third aspect is that self-study uses several, primarily qualitative methods. Some of these methods are often used in educational research and intervention research, while some methods may have a more innovative character. An essential purpose of methods of an innovative character, or what Engeström and Sannino describe as expansive learning, is about thinking new, experimenting, trying new approaches, and, it is an opportunity to develop "something that is not yet there" ([48], p. 2). The methodological aspect is, as mentioned, a controversial area within self-study (both by researchers who have completed self-study and others who are more critical), and although there has been development, refinement and demarcation in the field, the one correct way or template for self-studies has not emerged. Rather, self-study tends to be methodologically framed through questions, challenges, problems and desires related to areas in practice which should be changed and developed, and where the method most appropriate for examining and collecting data is used according to the study's intent. The fourth aspect is about the need to formalize the work and make it available to the professional community (i.e other researchers in self-study and teacher education research). For self-study to be examples of the development of knowledge and practice, they must be intelligible to other researchers in self-study / teacher education research and to teacher educators, reflective over the human actions, and they must be socially and contextually situated. In addition, the researcher who completed the study must engage and guide the reader into examining aspects of the study related to teaching and learning by elucidating experiences and situations, and the research (text)

must involve the researcher, the author's "self". This means that the researcher must show who he / she is in this landscape by illuminating thoughts, opinions, interpretations, actions, development, and it must involve the construction of meaning and knowledge. In other words: a self-study should not only describe the development of meaning and knowledge, but the moral dimension that involves the researcher's "self" must be brought into the research. Together, these four aspects demonstrate an expectation that learning and knowledge development from self-studies will not only be informative to the individual who completed the study, but also meaningful and useful for other researchers and teacher educators in their practice.

4.1 Methods for self-study in practice

A basic starting point in all empirical research is to choose the research design and the methods that are best suited to illuminate and answer the research questions [49]. It is thus the research questions that lay the foundation for the choice of design and methods for the research. To map, reconstruct, explore, analyze, develop and represent the study to a wider audience, self-study researchers use "whatever methods will provide the needed evidence and context for understanding their practice" ([50], p. 240). To show that self-studies borrows its repertoire of research methods and strategies from empirical-analytical and/or qualitative-interpretive research, some examples of self-study is presented below. The methodological approaches are highlighted in italics.

There are many teacher educators who are concerned about the impact of specific pedagogical interventions have on teacher students´ learning and development, and there can be various reasons to investigate one's own practice. To initiate discussions and reflections among students related to her methods in mathematics teaching, Brandenburg [51] organized short weekly *Round Table Reflection* sessions. The intention was to improve the students´ reflective thinking and to investigate whether her teaching created meaning and understanding, and whether the methods were good approaches for these students. A study conducted by Dourneen and Matthewman [52] analyzed how two student teachers´ transformed an education course on ICT in their internship lessons in a school through *videotaping the lessons*. The purpose was to identify what the students emphasized in their teaching, and how the teacher educators´ didactic approach affected the students and to create a focus for their ongoing improvements in practice with teacher students. In a study of Dinkelman [53], the starting point was an incident in his classroom where a student stated that she did not feel safe or could speak freely in this classroom. To investigate what this was about, a number of *individual interviews* with students´ in the class were conducted. In the interviews, several students appeared who felt insecure and lacked openness to speak freely in class, and the students pointed out that the reason was largely about the teacher's facial expression was perceived by some as judgmental. Although open classroom discourse were an important goal and a personal value in his teaching, there was something in his demeanor and behavior that placed restrictions on its implementation. This is what Whitehaed [27] describes as perceiving oneself as a "living contradiction", which in this case is about valuing one thing but showing something else. Dinkleman's study also show that those who complete a self-study must be able to cope with and handle what is revealed in the study.

Berry and Forgasz [40] have conducted a study based on Clandinin and Connelly's [54] metaphor of "professional knowledge landscape" as a support for conceptualizing teachers' professional knowledge. This "landscape" consists of two fundamentally different places: one is in the classroom with students, and the other is in professional places with others (colleagues, administrators, etc.). At the

intersection of these rooms, *the secret lived stories of practice*, teachers can learn to both tell and live their professional knowledge, while at the same time having the opportunity to reconstruct and adjust their professional knowledge. The broader landscape of teachers' professional knowledge, on the other hand, is full of imposed prescriptions on teaching, *the sacred stories*. Sacred stories are "pulled down" to teachers by a number of seemingly undeniable external authorities, including researchers and policy makers. By disseminating their *secret lived stories*, it was a goal for Berry and Forgasz [40] to find out how articulation and disclosure of own *secret stories* of teaching to colleagues could contribute to a broader and more pedagogical understanding of teacher education practices and at the same time be critical of the *sacred stories* of teaching.

In a study by Vanassche and Keltchermans [24], six teacher educators worked with their professional development in a two-year period where they had monthly meetings. Vanassche and Keltchermans facilitated the study and the monthly meetings, and the six participants made their own research questions related to focus in their professional development. The study was a formative intervention study based on a research collaboration between researchers and participants, where the goal was to create development and understanding of the teacher educators´ practice for both parties, both the facilitators and the teacher educators. The intention of formative intervention research is to carry out interventions to promote change and improvement, and development and research take place in parallel [48], which means that research is carried out on the ongoing development processes while the study is in progress. In order to bring out tensions and contradictions between the teacher educators´ practices and their normative beliefs, *"mirror data"* was collected as a basis for systematic discussions and reflections. According to Cole and Engeström [55], "mirror data" will act as a collective mirror on the participants practice, and the data literally "hold up the mirror". The mirror data included: *video-recordings of lessons with student-teachers´, teacher educators´ staff meetings, observations of teaching and internship evaluation reports.*

Smith and Krumsvik [56] conducted a self-study in teacher education where they searched for weak points in their own pedagogy teaching. An essential part of the study was the teacher educators´ reflection processes. The methods used to collect data for the reflection processes were video recordings of lectures with many students present and seminars with a small group of students. In addition, the teacher educators´ log notes were part of the data base. The video recording became the empirical basis for searching for weak points in the teaching. Based on the video recordings and log notes, the reflection processes were first carried out on an individual level, then they reflected together, before showing the video recordings and discussing the reflections with all the other colleagues in the department of pedagogy. In this study, *video recordings* and *log notes* are used for thorough *individual reflections, reflections in pairs*, and to invite an ever-expanding audience to participate in the reflection processes related to the two teacher educators´ learning process.

An important point that large parts of the literature in self-study agree on is the need for self-study to be a collaborative process (e.g. multiple chapters in the *International handbook of self-study of teaching and teacher education practices*: [10, 20, 45]). Freese [57] conducted a two years self-study collaborating with one student teacher aiming at a better understanding of the complexities of learning to teach, and which specific tasks and activities could contribute to teacher students´ growth and development. Another goal of this study was to discover "oneself" as a teacher through reflection and an inquiry approach in collaboration. In this study, *discussions and reflections* (*audio-recorded*) related to growth and development for both parties, in addition to finding themselves as teachers` were essential methods.

Koster and van den Berg [58] have conducted a study that focuses on how teachers who participated in a Master's degree study of learning and innovation can explore their professional identity. One of the methods used in this study was a *biographical* approach [59]. There are different approaches to a biographical approach, but here a constructivist approach was used where the students actively constructed their career experiences into a story that became meaningful to them.

What emerges in these different examples from different self-studies is that it does not involve following a recipe or a fixed procedure, but that there are many different methodological approaches. What determines which methodological measures self-study the researcher should take depends on the focus of the study, what is to be investigated and what is the goal and purpose of the study [42]. Until now, it has been tried to illuminate and describe what self-studies is and what makes self-studies special in terms of methodological approaches. In the following, some challenges and opportunities related to self-study will be highlighted in order to study and develop own practice.

5. Challenges and opportunities

5.1 Challenges

The discussion related to challenges in self-study research could have been an article in itself, but here three challenges will be highlighted: 1) the challenge of the self-critical nature of one's own work and practice, 2) the requirement for quality, and 3) the tensions between efficiency and understanding.

Being able to ask "serious" critical questions about own actions and existing interpretations and assumptions is difficult when exploring and investigating own practice and experiences [31, 60]. There is a risk that the learning that comes out of a self-study just becomes a pseudonym for rationalization or self-justification. One of the core elements of self-study is about being informed to a greater extent about and developing own practice through adopting a reflective attitude towards own teaching. A vital feature of reflective teaching involves having a critical view on practice and a critical look at existing assumed assumptions related to various aspects of the educational process. In the field of teacher education there is a widespread agreement that there is a strong relationship between what a teacher believes and how teaching occurs in the classroom [45]. Thus, in order to influence practice, teachers´ thinking about teaching must be transformed and critical questions must be asked about what is being done [45]. But, for various reasons this is easier said than done. Firstly, this is due to the fact that our beliefs, values and knowledge about teaching are derived from our experiences and our personal history which is necessarily limited. Secondly, many of these assumptions are implicit, which means they have never been articulated, not even for us self [61]. It is also a fact that some of these ideas and beliefs about teaching are deeply ingrained in us and intimately connected to our identities as teachers and teacher educators [45]. For these reasons, it can therefore be challenging to ask critical and constructive questions related to one's own teaching and practice.

Another challenge, according to Vanassche and Keltchermans [24] is related to the tensions between the relevance of self-study and methodological rigor. In other words, a question of quality and what requirements are placed on quality for a self-study. Self-studies are inevitable in this field of tensions and it is a direct consequence of its dual research agenda. One the one hand, the requirements to contribute to professional development and improvements in practice, and on the other hand the development of a public and accessible knowledge base in teacher

education. Moving too much towards relevance can produce a solipsistic study, which may result in a study in which the person conducting the study becomes the only one that exist in the text. In other words, a navel-gazing study that will not necessarily have transfer value to other teacher educators. Such studies will probably raise awareness and open up new understandings to the person who completed the study, but the value may not extend beyond the local individual context. On this side of the scale, the study will manifest itself as a study about oneself – of oneself – and for oneself, and the question about "so what", what does this mean for others in the field of teacher education which is a critical reference for quality in self-studies will remain unanswered. On the other hand, moving too much towards rigor and requirements that emphasize methodological concerns to justify a generalization of the study's findings could result in an increased methodological focus and reduced conceptualization in order to allow proper measurements [24, 62, 63]. By reducing the conceptualization, there will be less focus on describing actions and models that integrates ideas and concepts about what is done, why it is done and how the researcher came to this. The problem with such an approach is that there is a danger of less focus on the researcher's actions and behavior in the study, which is an essential part of self-study. The question is on which side of this continuum will the study be located and focused, and what is considered most valuable for moving both the individual / local professional knowledge and the public knowledge base on teacher education going forward in a developing direction.

The final challenge is the tension between efficiency and understanding that is described by several as a demanding balance [24, 64, 65]. Although the framework and mindset within self-study has an agenda among other things to adopt a critical view to education policy that in many countries has promoted a rather narrow and instrumentalist view of practice, learning and knowledge development in teacher education and in schools [66], there are examples of self-studies presenting suggestions for quick solutions to problems and increased efficiency of own practice. In other words, find quick and short-terms solutions to complex problems so that students´ learning can take place effectively, in less time and preferably less resources. Such a technical-instrumentalist approach to self-study as research on teaching and learning has great legitimacy among many policy-makers who want clear evidence of "what works" [64]. Whether researchers in self-studies or other research approaches are put under pressure and made responsible by pointing to evidence of "what works" and how pedagogy should be in teacher education an in schools, it is hardly surprising that reseachers´ may be tempted to limit the research agenda to the question of "what works" [67]. Such an approach will limit the value of self-study to its functional, self-oriented and problem-solving nature which is characteristic of self-study. By doing so, self-study risks being cut off from potential inherent in the opportunities to develop a significant critical-political, educational, and epistemological understanding of the complexities of teacher education and teaching in general. Self-studies should articulate the researcher's understanding of what, why and how the study led to understanding, and the study should uncover tensions in a specific course of action such as why one type of action was chosen over others. This is about offering a conceptualization of how the researcher arrived at what he did and what knowledge was generated, which raised it to a more general level that allows the work to be a contribution to the public knowledge base on teacher education [24].

5.2 Opportunities

Although some challenges related to self-study have been described, there are also several opportunities for development and knowledge building in this research and development approach. Korthagen and Lunenberg [68] have presented some

opportunities and gains from engaging in self-study. Firstly, they believed that it is a personal gain to engage in self-study that is about their own professional development as a teacher educator. This is further supported by Clandinin and Connelly [69] and Berry and Forgasz [40] who claims that self-study research is in a particularly good position to influence the teacher education field and develop its knowledgebase. This is because the self-study approach potentially involves changes in the "self", and this is where changes are least likely, but in self-study most suitable to occur. Secondly, Korthagen and Lunenberg [68] believe that there are opportunities to reshape and develop institutions` teacher education in terms of teaching, syllabus, programs and courses. Thirdly, they believed that there are opportunities to lay a foundation for a growing international community for teacher educators who engage in self-studies (or in general teacher education), and who benefit from the ongoing interaction between studies, researchers / teacher educators and the sharing of insight.

In a self-study approach, there are opportunities that more traditional approaches to research are probably not as thoroughly able to encapsulate. In particular, this is about examining features of being a "living contradiction" [27], which i.e. means we think and say one thing but do something else in action. It may also be about the fact that as teachers we feel that we are required to practice a practice that goes across our beliefs, values and attitudes. Such contradictions are challenging and demanding to detect, and it is difficult to stop, take a step back from personal experiences and examine these in a free and detached way. An essential characteristic and factor in self-study, is about making some stops to create an overview of own practice and take the important step back to find out what this is really about, take a meta-perspective [70]. Another possibility with self-study is that it is an effort for teacher educators to better understand how to handle, deal with and decide meaningful actions to dilemmas, challenges and problems, rather than seeking the correct answer to these. By seeing dilemmas, challenges and problems from such a perspective, one will, according to Shulman [71], create opportunities that help to shed light on how the reality of what is being examined actually is. Shulman also says that it makes a qualitative difference when it is the practitioner who defines the challenge instead of being introduced or imposed by external obeservers, decision makers or others, whose work is at distance from the teacher educator.

A self-study research approach can also be a good way to create meaningful processes to become more aware of who you are as a teacher educator and to develop your teacher educator identity. Koster and van den Berg [58] emphasizes that by engaging in self-study, teacher educators can become more aware of who they are- and find their core values as teacher educators. This is about raising awareness of who you are, what you stand for, what are your core values and how to convey these as a teacher educator. The research approach to self-study is closely related to the constructivist approach within the pragmatic paradigm [11]. A key point of Dewey [11] when it comes to learning and knowledge development is that it occurs when people face challenges or problems. Learning and knowledge development lies in dealing with such situations by exploring and engaging in them, working systematically and transforming it into something we understand and master. The new knowledge will then be able to help us change and improve our thinking and actions. When the goal is to create development and generate new knowledge that is important for the practitioner's practice of the profession and to support the teacher students learning, or what Engeström and Sannino [48] describe as developing "something that is not yet there" (p. 2), is testing and experimentation with new approaches to teaching and learning processes a significant factor. Self-study is an appropriate and good approach for experimentation, trying out methods, moving out into the unknown and out of the comfort zone. One of the reasons for this is

the requirement for interactivity with students, colleagues, literature and research in the field and with own previous practice. In collective processes, creativity and innovation are more likely to emerge than if we work individually, and the implementation of the "new approach" takes place in an environment where the participants have collaborated on the changes [72]. When changes to be implemented are a result of collaboration, it is a factor that also makes it a little safer to try out new approaches [73]. Takahashi [5] says that an important factor for teachers´ development and learning is the necessity of moving out of the comfort zone, and says that's the place where exiting, unpredictable and evolving situations arise. Testing and experimenting is probably something all teachers and teacher educators do to a greater or lesser degree, but it does not mean that the testing and experimentation is studied and has a research approach. Through self-study, teacher educators can research and study this testing and experimentation, go deeper into what they are doing, use students actively in the development of new methodological approaches and construct good and meaningful processes that make sense to students and suit the teacher educator's way of thinking and how to facilitate development- and learning processes. In these exploration and testing processes, Takahashi [5] believes that many teachers are afraid of failing or that it does not work as they had intended, and that this fear of not succeeding can be a hinderance for development and learning. According to Dewey [11], we should not be afraid of making mistakes or that the scheme does not go as planned, because a mistake is not just a mistake. Dewey sees mistakes as a starting point and a potential source for developing new knowledge and further development by looking at mistakes as something instructive.

According to Loughran [31], there is little doubt that teacher educators who explore their own practice through the use of self-study methodology, are serious about seeking a better understanding and execution of their own practice.

6. Conclusion

Self-study is a meaningful approach and tool that can be employed to serve several purposes in the preparation of teacher educators. Through self-study, teacher educators can to a greater extend be able to capture, unpack and portray the complexity of teaching that can lead to a deeper understanding of both practice and students´ learning processes. In this chapter, self-study as research is thoroughly described, and the possible positive influence in teacher educators´ development and practice are illuminated. At the same time, it is important to point out that self-study can be challenging, and it places some demands on teacher educators. It requires from teacher educators the courage to be open, willing to examine their own pedagogical thinking, actions and practice and to be vulnerable. As interactivity is an essential methodological aspect in self-study [45], openness to other views, perspectives and critical remarks from colleagues and students is an essential part. Openness is also about being open to and having the courage to try, test and experiment with new tasks, activities and actions in teaching. In addition, openness is about daring to move out of the comfort zone and into a creative and innovative landscape.

For teacher educators´ who enter self-study, it is of great importance that they are willing to examine their own pedagogical thinking and actions. When teacher educators´ are willing to do this, there is also an inherent desire and goal to make changes and improvements in their practice [35]. A starting point for examining one's own thinking, actions and practice can be based on perceived challenges in teaching situations. By examining own practice and searching for new approach

and understandings related to challenges, teacher educators´ can make a transformation from being knowledge consumers to being knowledge producers. When teacher educators perceive themselves as producers of knowledge, it also has an impact on their self-confidence, the development of their identity and the development of a personal pedagogy of teacher education [29, 30].

Finally, the importance of having the courage to be vulnerable. Once teacher educators´ frame their research as a self-study, they enter the field of research with a different approach, a personal approach. They enter the field with themselves and about themselves. It requires them to put themselves, their assumptions, their preconceptions, their beliefs and their ideologies of teaching under scrutiny. How one teaches is a product of who one is and what one considers to be one's own beliefs and truths related to teaching (Austin & Senese [74]. An important influence of self-study is that it is a research approach that facilitates to find out who you are as a teacher educator and to dig a little into your own beliefs and truths with the aim of acquiring a better understanding of practice and reconstructing your beliefs, which in turn can lead to improvements in teaching practice and the strengthening of teacher education.

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Building Pre-Service Teacher Capabilities through Remote and Flexible Placement - A New Narrative

Ondine Jayne Bradbury, Tatainia Stewart, Anabelle Barker and Jessica Rowe

Abstract

Within practical placements, Australian pre-service teachers acquire a range of skills and strategies. This is in addition to linking the theory that they acquire at university to that in the classroom context. In 2020, to ensure that the pre-service teachers in education courses continue this practical component of their degree, remote and flexible placements were negotiated between the schools and the university. These changes were embedded in order for pre-service teachers to work with schools, students and mentors and they did so from within their homes. This chapter focuses on the experiences from three pre-service teachers during their time on practicum in remote and flexible contexts. A case study approach was applied to analyse each individual's experiences. The case studies highlight the commonalities in experiences for each individual pre-service teacher. Upon analysis of these case studies, these commonalities included implications around how these capabilities were being formed and developed throughout the placement. These capabilities included inference, deduction, pivoting and empathy. These common capabilities across the pre-service teacher's experiences, during their remote and flexible placement, highlight the need for a new narrative around the emerging skills, strategies and capabilities for teacher education in the 21st Century.

Keywords: reflection, noticing, pre-service teacher, teacher education

1. Introduction

Online learning is a commonly used term within some higher education providers, this was not a commonly used term in most Government schools in Australia. Before 2020, remote and flexible learning for Australian schools [1] was a notion that was not as commonly applied. The traditional form of face-to-face teaching was more the norm, particularly for Australian pre-service teachers that have analysed their practice within this chapter. The emergence of COVID-19 saw the closure of many Australian and global schooling face-to-face contexts. This closure had an impact on the higher education setting as pre-service teacher placements were often postponed or cancelled [2]. In many schooling contexts, and for Australian pre-service teachers, placements transformed into an online mode of instruction. Within this chapter, the

online mode will be referred to as remote and flexible teaching, remote and flexible approach or remote and flexible contexts. For the three Australian pre-service teachers that have co-authored this chapter, the remote and flexible approach to their final placement was to be part of a new norm. The classes that they were a part of were delivered via remote and flexible contexts on an array of learning management system platforms in various modes. This included WebEx and Zoom digital platforms. The students that the pre-service teachers taught within their remote and flexible contexts had irregular attendance and they often were not able to 'see' the students due to their video cameras being switched off. Participating in a practical placement within this radically different way displayed to the pre-service teachers that there was a necessity for a change in their approach to teaching. They observed this not only for themselves but also in what they saw modelled by the in-service teachers who were their mentors. The nature of practical placements, including remote and flexible placements, allows for pre-service teachers to develop their application of theory in a practical mode. This opportunity in a remote and flexible placement also highlighted the emergent capabilities, teaching skills and strategies that were a by-product of this unfamiliar context for all three pre-service teachers.

Known by a number of terms, capabilities, attributes, dispositions; the notion of what makes good, quality teachers has been widely contested across policy and theoretical constructs [3]. These capabilities can also be interpreted as being attributed to academic-based or non-academic capabilities. Recent recommendations around the selection of entrants into Initial Teaching Education courses from the Australian Institute of Teaching and School Leadership [4] included a non-exhaustive list of non-academic capabilities (see **Table 1**) drawn from various educational literature. For the purpose of this chapter, the emergent attributes identified in the reflective journals and subsequent case studies will be referred to as 'non-academic capabilities'.

This chapter does not seek out to measure these non-academic capabilities in relation to teacher effectiveness, nor does this chapter provide a non-negotiable list of preferred non-academic capabilities. Rather, this chapter seeks to highlight one set of identified capabilities and the formative, non-static nature of pre-service teacher capabilities that have been identified through this research. Additionally, we discuss how these capabilities can evolve in a significantly different way within the experience of remote and flexible contexts. We argue that teacher capabilities are continually building and that are influenced by a myriad of experiences. This has never been as true as in the current context where teachers have emerged as first adopters of new pedagogical approaches and modes of teaching and learning. Through this research we also highlight the importance of pre-service teachers developing their reflective practice, in particular, their ability to notice in action. The research question that has guided the data analysis in this chapter is: What

Non-academic capabilities [1]	Case study linked non-academic capabilities (Bradbury, Stewart, Barker & Rowe)
Motivation to teach	Inference
Interpersonal and communication skills	Empathy
Willingness to learn	Creativity
Self-efficacy	Deduction
Conscientiousness	Adaptability
Organisational and planning skills	Pivoting

Table 1.
Non-academic capabilities.

emergent 21st Century capabilities were evident for pre-service teachers in times of change?

2. Research design

The intent of qualitative studies such as this is to allow for the emergence of rich, 'thick' descriptions of the phenomena being experienced [5]. Case study methodology was applied in order to represent the experiences throughout remote and flexible placements of three pre-service teachers: Tatainia, Anabelle and Jessica. Reflective journals were kept throughout their placement and contained first–hand accounts from each pre-service teacher. This was a regular practice for all three pre-service teachers during placement and for the purpose of this research, was a way to record perceptions and actions in their individual settings [6]. Qualitative research is applicable in this study as written language in the form of reflective journaling forms the base of the data. The data drawing from journaling will be about the researchers themselves and the events that have influenced and affected them. Tatainia, Anabelle and Jessica kept reflective journals from the beginning through to the end of their placement, dated all entries and used themes from their journal to provide a "final account of the research" [7].

Although there were many pages of journal entries, only certain excerpts will be drawn upon that highlight the themes that link back to the research question. The journal entries were then analysed as a whole document where an inductive approach was applied to uncover the emergent themes. An inductive approach includes the aspects of language; meanings, worldviews and perspectives are taken into consideration and culminate in the theoretical understanding of the people(s) that are being studied. These perspectives create the pre-service teachers' social world and will allow for the "theoretical ideas to emerge" [8] out of the data. The data collection also included un-structured reflective conversations during and after the placement concluded. The combination of the journals and the un-structured conversations were then analysed in order to construct three separate detailed examinations of the author's experiences in the form of case studies. All four authors were involved in the discussions around the reflective journals. Group and paired conversations focusing on themes and patterns in their reflections in order to construct the three case studies. The case studies were written and then reviewed by each of the pre-service teachers in order to provide feedback around content accuracy. Contributions were then made to the analysis and identification of broad themes and sub-themes within the data. A thematic analysis approach provided a framework for thinking about the emergent themes in a data set and has been applied to the analysis of a variety of qualitative data [8]. Broader themes were identified and recorded in the style of a word table [9]. These themes were analysed and recorded by all authors and directed by the research question.

3. Literature outline

3.1 Practical placement experiences – identifying non-academic capabilities through reflection and noticing

The complexity of teaching cannot be underestimated and within a range of educational research, there is not a single agreed upon set of attributes, capabilities or behaviours that is universally agreed upon in relation to what makes a quality teacher [9–11]. There are often overt considerations related to the academic

capabilities of pre-service teachers on placements due to the measurement via the Australian Graduate Professional Standards for Teachers [4]. Intrinsic or less apparent are the non-academic or non-cognitive [11] attributes or capabilities. These capabilities are often seen as the personal or 'soft' applications that encompass "motivation, attitudes, dispositions and personality" [11]. In relation to the types of attributes that constitute teacher quality, measurement and evaluation are problematic and no one set of behaviours can be linked to overall teacher effectiveness for all students [12]. The discussion and subsequent analysis of these capabilities does not [13]. On the contrary, the juxtaposition of these capabilities to a teacher's academic qualifications is an essential combination when discussing teacher effectiveness rather than academic qualifications alone [12].

Post-placement discussions centred on the reflective journals and were constructed with discussions around *noticing*. As pre-service teachers in a new and often unfamiliar context, the professional practice of noticing may not come as second nature. This approach to reflective practice, noticing, allows the professional to make informed choices and considered approaches to how to act in different situations [10, 14]. Naturally, noticing for even the most seasoned professional requires disciplined application. Underpinning professional practices, but when applied systematically, noticing can develop into "the Discipline of Noticing" [10]. Explicit noticing is critical for change in individuals as the lack of noticing can result in perpetuating practice [15]. While completing placement in a remote and flexible context, it is evident that the pre-service teachers were able to continue to reflect on their academic and non-academic capabilities. This noticing of strategies enabled Anabelle, Tatainia and Jessica to adapt to either adapt to the needs of their students in the moment, or to reflect and consider a variant approach in future contexts.

3.2 Adapting to a new space in remote and flexible placements

Amongst the varied opportunities practical placements present for pre-service teachers, one major benefit is that they allow for authentic applications of teaching experiences in classroom contexts [16]. In traditional contexts, this would allow for theory that was learned within the higher education contexts units to then be observed or applied once the pre-service teachers entered the classroom. As the nature of what constituted the classroom had evolved in remote and flexible contexts, often referred to as online learning [13], both in-service teacher mentors and pre-service teachers were applying adaptive teaching approaches and strategies to an unfamiliar teaching environment. Adaptive teaching research takes into account the classroom environments that are ever changing and dynamic [14]. Arguably, the change in teaching contexts that can be seen within this chapter are displaying what Gibson and Ross [14] refer to as microadaptive teaching approaches. This is apparent while Tatainia, Anabelle and Jessica were moving between remote and flexible contexts and then back to traditional face-to-face classroom contexts. These microadaptive approaches are informal and responsive to teaching in order to "overcome impediments to learning" [14]. The impediments in relation to the evidence in the case studies were the new pedagogies of teaching in an online mode, in addition to engaging learners in this new environment. Additionally, all three pre-service teachers conducted microadaptations to their teaching in "direct *observation*" [14] of the responses of their students and looked at these teaching strategies as an opportunity and growth [14].

Within traditional practicum placements, the mentors of pre-service teachers play an important role and guide for the pre-service teacher during the placement journey [17]. Mentors and pre-service teachers work closely together to develop the skills, strategies and capabilities that emergent professionals will require to graduate

and into their first graduate teaching year. Hobson et al. [18] found in their review of literature that mentoring is a highly important and effective support system for pre-service teacher development. They found that positive impacts on pre-service teachers within effective mentor and mentee relationships include increased confidence and self-esteem, decreased feelings of isolation, and an increased capacity to reflect and problem-solve. In addition to the development of pre-service teacher capabilities during placement and with the mentor support, mentors themselves tend to observe their own development in their position as mentor. Hobson et al. [18] argued that the mentor mentee relationship can also be positive for the mentor resulting in the mentor building their self and critical reflection, having their ideas validated, learning from their mentee(s) and aiding in career planning and progression. This reciprocal professional learning relationship became increasingly important in the remote and flexible context as both in-service teacher mentor and pre-service teacher adapted to their new ways of engaging students within their approaches to teaching and learning.

4. Analysing the case studies

This section of the chapter provides each individual pre-service teacher's reflection within the form of case studies. All of the case studies were constructed from the outline of Tatainia, Anabelle and Jessica's experiences as noted in their reflective journals. The contexts of the case studies include remote and flexible placements and then the experiences of moving back to traditional forms of face-to-face teaching.

4.1 Tatainia's experiences

During her final practicum Tatainia's approach to pivoting in this space took many forms. Remote placements hindered the provision of feedback from teachers to students. As written feedback was commonplace, it often targeted certain areas of learning for students in a personalised way. Although provided for each student, it was often not read. This was obvious from the follow-on lessons. Tatainia was aware of the changes in the students during remote and flexible contexts. Tatainia juxtaposed this with the face-to-face context where providing feedback allowed for a follow-up conversations and clarifications. As remote and flexible teaching and learning continued, discussions stemming from probing questions and other ICT games like Kahoot were beginning to be less engaged with. The mindset of going back to school overtook the drive to participate online. Tatainia noticed that students who had usually engaged were no longer taking part in their usual way. Student owned checklists were being ticked but the work was not getting done. Tatainia felt disappointed by this and grappled with how to analyse and interpret the reasoning behind these occurrences. Rather than fixate on the negative feelings around this occurance, she compartmentalised this in order to follow-up once back into the face-to-face setting. Although much of the time teaching remotely without seeing the student's faces, "You could tell" how the students were feeling. Tatainia use the notion of inference and deduction when moving through this process of planning for the students in her care. Voice and choice were emphasised throughout the remote and flexible teaching. Selections of resources to inject fun and engagement elicited engagement and discussion. These were often digital games and fun activities accessed through digital sources. Tatainia felt a sense of pride with the selections of these activities. This was in addition to considerations around the health and wellbeing of the students once they returned to face-to-face contexts.

Once back in face-to-face contexts, the students discussed and socialised more than in the remote and flexible contexts. Tatainia was experiencing the first time in the classroom with the students face-to-face since remote and flexible learning. The teaching schedule became "less structured than what it would normally have been" and a focus was placed on wellbeing for the students and. From the stories and experiences that Tatainia heard from the students, she empathised with how each of them were feeling now that they were together in the classroom again. She returned to approaches of modelling responses and examples from her own experiences. This compelled others in the room to also support the peers needed it in the classroom.

4.2 Anabelle's experiences

Anabelle had experienced most of her placement during 2020 in a remote and flexible context. Upon returning to face-to-face teaching Anabelle had learned a lot about herself. She had learned that teaching could be successful in a structured and supportive way when in remote and flexible contexts. She started to consider how this style of teaching could be embedded more regularly in a face-to-face context, as it seemed viable for "real learning opportunities". Some challenges within the remote and flexible context stemmed from the teaching of specific subject content that was impeded by not being face-to-face. This was evident when teaching a novel with "intense themes". Anabelle noted that when teaching this novel in the physical classroom, the ways in which the students responded were "written all over their face". Online, it was less noticeable due to the lack of "videos on" and other documents open at once. In remote and flexible contexts, it was more difficult for her to "read the room" and notice when students were feeling uncomfortable around the content. This was mitigated through the use of chat functions and more surface level engagement, but the richness in discussion was lacking due to not being physically with the students. Being aware of the content herself enabled to enhance her understanding of whether the students might be feeling certain emotions around the text. This "feeling the sense" that others will feel the same way which Anabelle termed as empathy as you would in an approach that was applied in this context. Working with her mentor and the teaching team in remote and flexible contexts was a highlight for Anabelle. Overall, the relationships that she had forged with the teaching team were positive. She felt a level of comfort in both the face-to-face and remote and flexible contexts. Contributing to planning was not as easy remotely as it was in face-to-face contexts. Anabelle was aware that her supportive teachers had faced a large challenge of transitioning back to face-to-face contexts. Knowing this, Anabelle was "reading the vibe" and conscious of the feelings of the other teachers and her mentor before she would suggest any changes or provide insights to the planning that was already in progress. Once back to face-to-face contexts, Anabelle noticed that certain remote and flexible aspects had remained. School assemblies were conducted online and the team of teachers that she had worked with welcomed this. Anabelle had noted that there were enduring elements of remote and flexible learning and identified that this flexibility in design and delivery on-site was something that many of the teachers wanted to keep.

4.3 Jessica's experiences

Jessica's context was the only secondary sector and she taught in the English method. Her teaching context held many students from challenging backgrounds. Already being faced with dynamic demographics, in remote and flexible contexts, engaging students with the content was a real challenge. Jessica took on a lot of personal responsibility to engage her students effectively in the remote and flexible

context. The challenges in engaging students in discussions from remote and flexible contexts included that the students have the agency to disengage. Jessica found that this was significantly different to the face-to-face context in relation to how she could engage them once they were dis-engaged. As a result, Jessica was conscious of the health and wellbeing of her students. This pastoral approach was emphasised through Jessica's reflections. As her method area was English, she also added a layer of relevance to their contexts and lining to real-world applications. A percentage of students in Jessica's class came from multi-cultural backgrounds. She chose to view this as a positive aspect as her students were bringing their life experiences and background journeys into the classroom. She celebrated the fact that her students were from varying backgrounds and honoured this in her approach to designing and delivering content. Jessica had a community approach to creating the culture in her classroom both remote and flexible and face-to-face. This included a sense of agency providing students with voice, opportunities to share and compelling them to engage with the content. Jessica found this experience as being an opportunity to "re-invent herself". With each placement and each cohort that she was teaching, she had to adapt and become "tech savvy" fluid with technology and quickly pick up things in relation to knowing her students. When back in a face-to-face context, this required change again to "thinking like a professional teacher" and begin to get to know the students in a professional manner. She learned many approaches to engaging with specific contexts from her mentor including the ways to speak to parents in a sensitive and empathetic way. When reflecting on the remote and flexible experience, Jessica thought that if a blended approach to teaching was to continue, she would set her expectations, norms and culture earlier and foster the community aspect of the context more efficiently and effectively. Jessica noted that she felt that impacts on health and wellbeing might be an enduring issue for her students once returning from remote and flexible teaching and learning. She noted that the break of consistency had affected more students than others, but she was concerned about some enduring disengagement while getting back into the "art of school" again.

5. Findings

5.1 Case study analysis

As stated in previous sections of this chapter, detailed discussions around themes that were identified within each reflective journal and subsequent case study highlighted non-academic capabilities. This was supported not so much around a theory of reflection, but more so on applying the notion of noticing. The non-academic capabilities that were identified when analysed included inference, empathy, creativity, deduction, adaptability and pivoting (see **Table 1**). As each capability was outlined, it is important to note that as they may work independently of one another within this chapter. The authors acknowledge that the capabilities also intertwine and in practice, can emerge as occurring in parallel to other capabilities.

5.1.1 Inference

Observable commonalities and differences across the three reflections were revealed when discussing the pattern of experiences regarding social disengagement in remote and flexible learning. Within Tatainia's reflections, despite the distance between herself and the students, there was an awareness of the disengagement of her students where she notes: "you could tell" when they were a disconnect in the teaching

and learning. In contrast to Tatainia's experiences, Jessica states how difficult it was to "read the room" online. This is an interesting difference between the two pre-service teacher's reflections. The reflections highlight the ongoing struggle to engage with the students and the subsequent reflection on how to augment practice so that the next lesson would ensure a higher likelihood of success. Engagement and understanding are often judged through diagnostic discussions or conversations with students, but as the lack of engagement was increasing common across the pre-service teachers' experiences. The emergent capabilities of inference can be seen here when each pre-service teacher began assessing the lack of engagement and learning. Although, as the case studies suggest, this is commonly identified in a face-to-face context, identification of disengagement was difficult to distinguish in the remote and flexible context.

5.1.2 Empathy

Each of the three case studies demonstrated the aspect of teacher conscientiousness around the ways in which students were engaging, responding and feeling in a remote and flexible context and within the face-to-face learning environment. Tatainia, Anabelle and Jessica had all emphasised their concern around the impact that health and wellbeing was having on the student's development of content knowledge, engagement and understanding. They empathised with the emotional needs of the learners and this became a key component of each of the pre-service teachers planning considerations.

Each pre-service teacher found themselves again using the capabilities of inference in relation to the emotional state as a class, reflecting on their planning and pivoting the approach to their teaching. This was to further accommodate for student engagement and counterbalance the increased levels of student stress and anxiety during the time of remote and flexible learning. When teaching in remote and flexible contexts and moving back to face-to-face contexts, Tatainia, Anabelle and Jessica empathised with the ways in which students were transitioning. They focused particularly on the wellbeing of the students in both contexts and have considered that these needs will exist as they move into their first year of graduate teaching.

5.1.3 Creativity

As remote and flexible teaching occurred in an online environment, there is also the capability of creativity with the use of information communications technology (ICT) and the engagement with digital learning approaches. This became apparent through the ways in which Tatainia, Anabelle and Jessica all used these technologies to engage students through and can be located within each of the case studies. This creative approach to embedding ICT and upskilling in this space became a deeply embedded pedagogical approach within remote and flexible contexts. All three case studies reflected upon the importance of understanding and embedding digital technologies and ICT. Collectively, Tatainia, Anabelle and Jessica have shared the difficulty around not only maintaining engagement but also in gauging how the students were being able to take in the content around the topic. The approach to this engagement highlights the creative and critical capabilities within these pre-service teachers and illustrates that as teacher professionals, we must consistently find new ways to reach our students when the traditional modes of teaching are augmented, changed or completely abandoned.

5.1.4 Deduction

Additionally, commonalities within the three experiences showed an increased application of creativity when using digital technologies. Use of digital platforms

required the adaptation to this form of teaching, however, the use of activities, games and was each pre-service teacher expressed, interactive and engaging tasks were often drawn from digital websites and resources. Considerations around the engagement and enjoyment of the students was heightened particularly in remote and flexible contexts. Capabilities emerged as Tatainia, Anabelle and Jessica could not always be 'with' their students, they used methods of deduction and inference with their decisions around planning and teaching.

An increased awareness of the students as individuals and collectively, their cultural and social backgrounds were of high importance to Tatainia, Anabelle and Jessica. Throughout each case study, it was the students that were central to each pre-service teacher's decisions in planning and developing their teaching approaches. This was evident within remote and face-to-face teaching contexts. Student voice and choice appeared paramount for all three pre-service teachers. The relationship building and collaboration was commonly associated with their mentors and other teaching staff. Although there was not always opportunities to work alongside one another, engagement occurred through online methods and modes. Their abilities within the online space was seen as a benefit and all three pre-service teachers were able to contribute in a meaningful way to the teaching of students in both contexts.

5.1.5 Adaptability

Adaptability during remote learning was a key theme throughout the remote teaching context as preservice teachers had to judge, reflect and alter their perceptions and approaches to current styles of teaching. This led to the pre-service teachers redefining their perceptions of their roles within the context. All three pre-service teachers had to learn to adapt their practice in both remote and flexible contexts and face-to-face contexts. It was noticed that the practices of all three pre-service teachers were undertaking included "teaching as more than talking" largely due to the mode in which they were teaching which did not allow for the teacher to apply this approach. The case study accounts from all three pre-service teachers shows the confronting nature of student wellbeing challenges. For Anabelle, when identifying the patterns in her case study, she reflected upon the notion of upskilling herself through professional development in order to adapt for a potential future teaching focus of student health and wellbeing. One example of this for Anabelle would be seeking out and attend mental health first aide courses will be an imperative for the post-COVID world.

5.1.6 Pivoting

What we have explored in this chapter has been the changes in practice in response to the online teaching mode for Anabelle, Tatainia and Jessica in this time of remote and flexible learning. From the shared analysis of their case studies and subsequent discussions between the authors, this has been termed as pivoting. When moving through the aforementioned emergent capabilities, each pre-service teacher could be seen to pivot their practice in order to further support their students, their planning and teaching practice and in supporting their in-service teacher peers.

6. Conclusion

The context in which Australian pre-service teachers were exposed to practical placement during the year 2020 was varied and diverse. As their practical

placement settings changed from remote and flexible contexts back to face-to-face settings, this contextual duality brought with it an enduring change in their teaching practice. What emerged was an opportunity for an in-depth analysis of the formative acquisition of capabilities for pre-service teachers who were exposed to new pedagogical instruction throughout immense change. Although evidence-based measures and evaluation in the form of the Australian Professional Standards for Teachers remained for these pre-service teachers, it was the development of non-academic capabilities that Tatainia, Anabelle and Jessica began to notice throughout their reflective journaling. Key non-academic capabilities to their approaches in their teaching were exceeding the measurement of academic capabilities due to the COVID-19 impacts on teaching and learning. It was as a result of this remote and flexible teaching experience that they were able to identify a new narrative around these non-academic capabilities and as seen in the case studies, this new narrative was impactful and enduring in their development as teachers.

The pre-service teacher's in-service teacher mentors worked alongside them throughout this experience. What emerged within these contexts was a new form of collaboration and collegiality from a remote setting that uncovered even more attributes for these pre-service teachers. This research brings to light the question of whether there is a need for exhaustive approaches to measurement and evaluation of teacher capabilities or qualities. This research instead brings to the surface a conversation around pre-service teacher empowerment in noticing, reflection and identification of capabilities that are, we argue, formatively emerging over time. It is the hope that this chapter inspires other pre-service teachers to develop their ability to notice through reflection and to continue this practice throughout their degree and beyond so that with this practice, linking context to experiences, an awareness of individual needs as teachers can become self-actualised and personalised for pre-service teachers. For the pre-service teachers within this chapter, it was through the action of noticing moments that they experienced throughout the analysis and discussion of their own and the reflective journals of their peers that allowed for their capabilities to be identified. As the teaching profession shifts into the post-COVID world with the focus on rebuilding student personal and social capabilities, in turn, a light may also be shone on noticing the ever-evolving new narratives of teacher capabilities.

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Section 3

Citizenship Education, Managing Conflicts and Sustainable Development

How Philosophizing the Dialogos Way Can Promote Education for Sustainable Development

Eirik Hæreid Marcussen, Michael Weiss and Guro Hansen Helskog

Abstract

This paper is an inquiry into an action research process in which staff from a combined vocational and academic upper secondary school philosophized "The Dialogos Way" together, as part of ongoing curriculum reforms in Norway. Some teachers were also trained in facilitating such dialogs with their students. Since sustainable development is one of three interdisciplinary topics now supposed to run through all subjects at all educational levels, our chosen action inquiry research question in this paper reads as follows: How can training teachers in philosophizing the Dialogos Way promote attitudes and skills required for dialogic learning-and-teaching, and how can this form of learning-and-teaching support education for sustainable development? Using teachers' and students' meta-reflection notes as data, the authors find that the Dialogos approach offers a fruitful way of integrating sustainable development issues in the curriculum.

Keywords: dialogic learning-and-teaching, philosophical practice, sustainable development, philosophizing the Dialogos way, philosophical dialog, dialog facilitation, dialogical schooling

1. Introduction

In august 2020 a new national curriculum for education was implemented in Norway. The new curriculum is putting increased emphasis on the values enshrined in §1 in the Education Act of Norway [1]. Respect for human dignity and nature, intellectual freedom, charity, forgiveness, equality, solidarity, democracy, scientific thinking and insight into cultural diversity are among the values highlighted in this education act. These values are supposed to run through education at all levels. Furthermore, three interdisciplinary themes are supposed to be in the focus throughout all school subjects and school levels, from primary through upper secondary education. These are respectively *public health and life skills*, *democratic citizenship* and *sustainable development* [2].

When it comes to teaching practice, one of the challenges is *how* these values and themes can be taught and focused on in practice at schools. Is it enough to teach content the traditional way, whether digital or book-based, where the teacher is the one who knows, while the students are not-knowing? In such traditional didactics the young are supposed to learn through lectures, reading

and written tasks. Or do we, at least to some extent, need to rethink the relationship between teaching and learning, and thus the relationship between teachers and students if we are to enhance the learning and practice of values in schools? In this article, we assume that the values and practices involved for instance in the interdisciplinary theme *sustainable development* can only to a certain extent be taught through traditional didactics. More important, teachers and teacher students need to learn how to facilitate dialogs in such a way that their students can explore such topics themselves, and through this, learn how to view issues from multiple perspectives, including the perspectives of their peers. Learning to listen to and consider the perspectives of others, are important skills, which also involve the ability for the self to critically examine one's own beliefs and practices.

By holding this stance, we position ourselves within the classical Greek tradition, with Socrates in the Platonic dialogs as a key-figure. Unlike the sophists, who taught people the art of persuasion, which they (mis)understood as the art of teaching and argumentation, Socrates was rather concerned with existential and ethical reflections. He was questioning what was assumed to be knowledge. He did so through the practice of philosophical dialog, and it seems to be this kind of practice that is of significant relevance when it comes to integrating and practicing the values and themes which are now at the centre of the new national curriculum in Norway.

Teaching values and complex themes like life skills, democracy and sustainable development, appears be doomed to fail when done by means of traditional top-down didactics (the teacher knows while the students are ignorant) and monological teaching methods (the teachers didactically organizing or transmitting the "right" knowledge to students). Rather, it needs to be done in such a way that both teacher and students can shake up their more or less shallow opinions and start searching for wisdom together, and thus gradually "come to consciousness". Instead of top-down didactics, a dialogical "bottom-up" pedagogy needs to be developed. But how?

This is the question that we have explored in an action learning and research project leading up to this article. More concretely, we have tried out the Dialogos approach to pedagogical philosophical practice (see [3, 4]) when training teachers at a combined academic and vocational upper secondary school in facilitating philosophical dialogs with their students. A part of this project was studied by Marcussen in his master thesis [5]. Our collaboration in the project forms the basis for this article.

1.1 Research question and further structure of the article

The action learning and research project, which will be ongoing until June 2022, has centrally involved philosophizing about several of the values and themes included in the curriculum reform, such as charity, life skills and sustainable development. However, in this article, we have limited our scope on the part of the project that explicitly dealt with sustainable development issues. Our overarching action inquiry research question reads as follows:

How can training teachers in philosophizing the Dialogos Way promote dialogic learning-and-teaching, and support education for sustainable development?

First, we discuss some political, theoretical and practical perspectives on education for sustainable development, before we present the Dialogos approach to wisdom oriented pedagogy (see [3]). We discuss what dialogic teaching might mean in more general terms. After the methodology section, we use excerpts from a longitudinal action learning and research project to investigate how philosophizing the Dialogos way might promote sustainable development in education. More concretely, we briefly describe three dialogs in which teachers philosophized together by means of the Dialogos approach. Based on teachers' self-reported experiences,

we discuss the teachers' development of attitudes and skills in relation to the approaches presented in the introduction section. We conclude that training teachers in philosophizing the Dialogos Way might be a fruitful way to promote dialog facilitation skills among teachers, as well as awareness of sustainable development issues. This again, appears to be a prerequisite for sustainable action.

1.2 Education for sustainable development

The vastness and complexity of the theme sustainable development comes to the fore in the 17 United Nations goals for sustainable development adopted by all UN Member States in 2015. The goals are to be understood as a "call for action by all countries – poor, rich and middle-income – to promote prosperity while protecting the planet" [6]. The call includes the goals to:

- end poverty, hunger and inequality

- promote good health and education, gender equality and womens' empowerment

- provide water, sanitation and (sustainable) energy, economic growth, infrastructure and industrialization

- develop sustainable cities and sustainable consumption and production

- cope with climate change, protect oceans, biodiversity and forests, stop desertification, promote peace, justice and strong institutions, and develop international partnerships

Thus, when sustainable development is enshrined as an interdisciplinary theme in the new national curriculum in Norway, it can be understood as an attempt to answer the UN call to action. Education for sustainable development is broadly defined by the Norwegian government as enhancing understanding of the relationships between social, economical and environmental conditions [7]. Literature about education for sustainable development is based on the same broad definition, revealing a complex and multifaceted field (see i.e. [8]). Thus, there is no consensus about what an education for sustainable development should look like ([9], p. 36), and teachers are insecure as to how they should teach this complex theme [10, 11]. Several researchers argue for a so-called "whole-school approach" [12–15]. This implies that all staff are included in developmental work aimed at promoting sustainable ways of living.

Norwegian philosopher Arne Næss [16] is considered one of the founders of the *deep ecological movement*. The movement is based on the belief that the environmental problems today are symptoms of deeper problems in our societies [17]. The aim of deep ecology is a radical social, political and ideological reorientation for a more sustainable society, as opposed to a shallow ecology ([18], p. 22). The latter lacks philosophical grounding, and works towards short term and limited goals without breaking with dominant ways of life. As part of deep ecology philosophy, Næss argues that animism (the view that everything in nature has soul) is a more realistic approach to the world than modern technical views promoted by the natural sciences. He states that fundamentally speaking, "life as a phenomena is one" ([16], p. 325). A core idea is that diversity increases the potential for survival ([16], p. 282). Thus, we need to awaken the openness to diversity also in people. This can lead individuals to support radical ecological measures, even though they might threaten

material standards of living, Næss states ([16], p. 386). One way to do this, is, as already mentioned, for people to formulate their life philosophies of diversity and how things are connected, and then let others formulate theirs ([18], p. 31).

Based on the early work of Næss and others, Norwegian educational theorists Bjørndal and Lieberg [19] argued that education needs to give students thorough insight into the interplay between human beings and their (cultural and natural) surroundings. This is also in line with deep ecologist Richard Kahn [20], who argues that the focus on processes and interrelations instead of on singular aspects of human action requires dialogical pedagogical approaches. He describes dialog as a critical and self-critical practice in which our self-understanding, discourses and practices are questioned:

> *For instance, caring, dialogical, and transformative social relations in critical learning situations would promote civic cooperation, democracy, and positive cultural values, as well as fulfill human needs for communication, esteem, and being politically free with one another ([20], p. 77).*

Kahn has argued that eco-pedagogy in the long run will promote an ideal of education (in the form of danning/Bildung/Paideia) that will foster "a world of philosophers" ([20], p. 58). Hence, there is a link between what we can call the ideas of education for sustainable development as suggested by the referred philosophers and researchers, and the Dialogos approach to practical philosophy, which will be explained in the following.

1.3 Philosophizing the Dialogos way – a wisdom-oriented pedagogy

The Dialogos approach to pedagogical philosophical practice was initially developed by Guro Hansen Helskog from the mid-1990's on (see [3]). It involves encouraging people to begin formulating their life philosophies, and it invites people to analyze important topics through dialogical thinking and collaboration. Like other philosophical practices, as depicted for instance in Weiss' anthology "The Socratic Handbook" [21], the Dialogos approach is oriented towards developing wisdom. What characterizes the Dialogos approach is, among other things, the following (see [3]):

1. It is mainly developed for pedagogical philosophical and dialogical work in groups.

2. It has *will to wisdom*, which extends Frankl's *will to meaning* [22], as a core idea and intends what philosophy literally means, namely philo-sophia - the love of wisdom.

3. It focuses on long term open-ended processes that gradually will lead to personal growth and expansion of consciousness and wisdom in multiple dimensions and directions: Existential-emotional, relational-communicative, cultural-historical, practical-ethical, critical-analytical and spiritual-ideal.

4. A Dialogos process might include or be inspired by a variety of different philosophical exercise- and dialog formats, such as Philosophy for Children (P4C)-inspired philosophizing [23], Socratic dialog-inspired philosophizing [24–26], contemplative philosophy [27], Daimonic Dialogs [28], Oscar Brenifier-inspired philosophizing [29], or comparative experiential dialogs [3].

5. However, regardless of the dialog format, the essence of philosophizing the Dialogos Way is the profound encounter between participants when engaging in *heart to heart dialogs* with each other about shared subject matter. Hence, the fostering of dialogical relationships *between* students or participants is essential. This requires that teachers have an open "I-Thou" attitude towards the students, to use the expression of Buber [30].

As described in Helskog [3], subject matter can be part of traditional school subjects and academic disciplines, and by connecting the content to personal life and vice versa, the edifying process is enhanced. When working with the topic sustainable development, questions concerning one's personal responsibility, and the limitations of this, could for instance be extracted, formulated, argued and reflected upon.

By this, connections are made between content and concept, the personal and the global, the concrete and the abstract, and the private and the public, while students can gradually see how their lives are intertwined in complex social, cultural and historical structures. Thus, aspects of participants' personal lives can be connected with the content of school subjects in profound ways.

1.3.1 Basic attitudes and skills of the teacher as a dialog facilitator

When the Dialogos approach is practiced in classroom, the role of the teacher will be

> *"that of a facilitator of collaborative thinking through dialogue, rather than that of a transmitter of pre-existing knowledge. Questioning content and exploring different perspectives is here more important than reaching final answers and conclusions. Rather, both the students and the teacher are left in the open, free to integrate divergent perspectives into more unified stances"* ([3], p. 2).

In short, a teacher's main task in this form of pedagogy is to pose questions rather than giving answers. This requires an open-minded attitude not only towards the students, but also towards the content. The role of the students is to act as collaborative "wisdom searchers", so to speak. Together with the teacher as a questioning guide, they openly, reflectively and dialogically explore topics from multiple perspectives together with their classmates. Since the dialog process itself is open in the sense that no one can predict its outcomes and results in advance, the teacher must not guide the students in a specific direction or have a hidden educational agenda that would only be known by him or her (see [3, 4].

As emphasized by [3] this form of philosophical and dialogical pedagogy cannot and should not substitute traditional forms of teaching. Rather, it should be a supplement to, or better, an *integrated aspect of* traditional disciplinary lectures and discussions, literature studies and written assignments. Instead of thinking in terms of learning outcomes and aims, the teacher acknowledges that he or she can only prepare an educational framework or setting, so that the long-term Dialogos process will eventually result in self-formation and the development of certain skills and insights. However, as it is with other educational settings, there is never a guarantee that this really will take place. For example the insight that we all are a part of nature and that we all need to take part if we are to promote sustainable development on this planet, is to be *gained* by the students and cannot be *given* by the teacher. This brings us to the topic which constitutes the content of our example in this article, namely education for sustainable development.

The Dialogos approach can be understood as an eclectic approach when it comes to dialog formats [3]. That is, it makes use of different dialog formats in order to promote a development process towards self-formation with the participants. Thus, having insight in- and experience with a wide range of dialog models or formats is an advantage, in order to be able to choose between them, pick from them, or combine them.

However, essential to the Dialogos approach is reflection upon personal experiences. For this reason, dialogs inspired by the Socratic dialog (SD) approach has a special standing in philosophizing the Dialogos Way. The Dialogos process with the teachers involved in this project began with such dialogs.

1.3.2 Dialog format: Socratic dialog (SD)

The Socratic Dialog format was initially developed by Nelson [24] and Heckman [25]. A "proper" Socratic Dialog takes at least a day, preferably three days to a week, working on only one question. A 1,5–2 hour philosophical dialog is of course much more superficial, yet in a Dialogos process, even a mini-Socratic Dialogs have proven to have great impact on participants. A Socratic Dialog (SD) has the following features and facilitation principles, in comparison to a SD inspired dialog in a Dialogos process:

1. The facilitator has prepared a question beforehand, also reading philosophical literature is an advantage, some that gives multiple and contradictory perspectives on the topic chosen. In this way the teacher becomes more able to recognize when the perspectives in line with the literature are actualized by participants. As a consequence, it is easier for the teacher to facilitate the dialog from there. In a short SD-inspired dialog based on questions that are formulated on the spot, such preparations in advance are of course not possible. However, the advantage with questions that are formulated on the spot, is that students have an ownership of the question. The dialog becomes more of an open dialog in which the facilitator has no choice but to let go of his or her preconceptions of the topic under investigation, and be open to the participants.

2. The participants formulate an example drawn from their own personal lives, formulated in accordance with the following instructions:

   a. It should be a concrete example that has happened once upon a time

   b. It should have a beginning and an end

   c. It should be emotionally closed

3. Examples are told, and one example is chosen to be explored more deeply

4. The example giver is asked questions on the details of the example by the other group members

5. The group members philosophize more generally upon the example. This is where Heckman's six pedagogical measures become important [25]. They are as follows:

Measure 1: Content impartiality: The facilitator should not influence the content of the dialog, for instance by posing rhetorical questions.

Measure 2: Working from the concrete by constantly guiding students to stay on the concrete example and investigating the student's experience.

Measure 3: Expressing thoughts clearly and focusing on understanding the thoughts of the other.

Measure 4: Focus on the current question by keeping the group on track to clarify the question fully and ensure that the group is aware what question is being discussed.

Measure 5: Striving for consensus by seeking out what reasons we have for our statements, while at the same time knowing that consensus has a provisional character.

Measure 6: Facilitator interventions should seek to protect the dialog from unguided discussion, focus on observing the dialog, ensure that significant questions are tackled and take up fruitful contributions.

The work of the facilitator of a SD is to patiently assist the students in their effort to reach insights. In the process, Heckman advises facilitators to use a blackboard to have precisely formulated thoughts in view. When closing the SD, there should be a meta-dialog afterwards to close the experience for students.

1.3.3 Dialog format: Philo Café

Another dialog format that was used in the following study is the so-called Philo Café (see i.e. ([21], p. 323f)). It was mainly developed by Marc Sautet in the early 1990's in Paris where he frequently held philosophical dialogs in coffee houses, often with up to 100 participants ([21], p. 323f). In the following, this dialog format is presented in a more descriptive way, so that other teachers can eventually try it out in their classrooms:

- **Group size**: A Philo Café can be done in groups between 5–100 people.

- **Seating arrangement**: If the group size allows for it, it is recommended to sit in a circle.

- **No philosophical pre-knowledge required**: The participants do not need any philosophical pre-knowledge, they are supposed to philosophize based on their own life experience and their personal thoughts.

- **Purpose**: The main purpose is to learn about other people's thoughts, experiences and perspectives on a specific topic in order to get a deeper understanding of the latter. Therefore, there are no wrong ideas or perspectives in such a dialog, since each individual perspective contributes to a bigger picture about the topic under investigation.

- **Choosing the topic**: The topic of a Philo Cafè can be chosen in advance by the dialog facilitator or it can be decided ad hoc by the participants.

- **Key-note speech**: Prior to the Philo Café it is possible to have a key-note speech in which the topic of the dialog is outlined. Based on that key-note, the participants can then further investigate the topic.

- **No specific steps in the dialog**: The dialog format as such represents an open dialog, that means that there are no specific steps or a certain structure that has to be followed. Everything that happens in such a dialog, happens more or less spontaneously, with the participants responding to each others' statements.

Since there are no predefined steps, the dialog process as such relies strongly on improvisation and none of the participants nor the facilitator would know in advance where they would end up in the dialog.

- **The facilitator's role**: The role of the dialog facilitator mainly is to remember the order of the participants who raised their hand to make a statement, to pose follow-up questions and to summarize every now and then what has been said in the course of the dialog so far. In a metaphorical sense the facilitator can be seen like a music DJ who mixes all the different tunes and sounds (that is, the statements of the participants) together to a meaningful whole.

- **A dialog, not a discussion**: When responding to each other's statements, the participants might be tempted to let the dialog go over into a discussion. This has to be avoided by the dialog facilitator, who in this case has to point out that different perspectives, opinions and views are important in order to get a deeper understanding of the topic and putting up arguments against each other would jeopardize this purpose.

- **Duration**: From our experience we can say that the ideal length of such a dialog might be about 1 hour, but it is up to each facilitator to sense when it is about time to round up.

- **No conclusion required**: Since the purpose of a Philo Cafè is to investigate a topic in order to get a deeper understanding of it, it can easily be that the dialog ends without a specific conclusion. And that is no problem, since finding a conclusion was not the purpose.

1.3.4 Dialog format: philosophy for children (P4C)

The third dialog format that was put into practice in the following study was the philosophy for children format (P4C) as developed by Lipman (see [23]). This dialog format consists of several steps, which are presented below and in a way, so that other teachers can try it out in their own classrooms too:

1. Sit in a circle together with your students.

2. The students read a philosophical text, often an excerpt of one of Lipma's novels. Here the students can read one sentence each, one after another.

3. The students have time to think and note associations that come to mind intuitively.

4. The students can pose a question, based on what they just read. Each question is written on the blackboard, with the name of the author behind it.

5. The students are given the chance to vote for as many questions as they like. The dialog starts with the question which received the most votes.

6. During the dialog, the students are asked to relate to what the former speaker said, for instance by saying "I agree with … , because …." or "I disagree with ….because …"

7. The teacher leads the dialog by posing questions like "How does what you say now relate to what … (name of the student) said?", "What is the difference between what you just said and what he said a minute ago?"

8. The dialog goes on until there is no more time, or until the students have no more to say.

9. If the latter is the case, then the next question on the list is explored in the same way. If there is no more time, the dialog ends with a meta-reflection round where students express their thoughts about how the dialog went.

2. Project design and research methodology

The action inquiry research project discussed here was initiated due to inspiration from an earlier action inquiry research project designed by Helskog. The project had involved 13 secondary schools in a municipality in Norway [4]. After presentation and preparation meetings between Helskog and the upper secondary school's leader group during spring and summer 2019, the leader group decided that they want to develop a similar project in their upper secondary school consisting of around 100 teachers (teaching both vocational and academic programs) and 650 students, focusing on the new curriculum and the previously mentioned "value lift".

Thus, development of what we might call a value sensitive, attitude- and virtue-based practice was a core purpose of the project. With this in mind, we named the project "Value lift and the edifying mission of education".[1] Helskog asked the leader group for permission to include the other authors of this paper, Marcussen and Weiss, the first as a master student and the second as a research colleague and co-facilitator.

2.1 Collaborative action inquiry

Concretely, the project was planned as a series of action research cycles, while the content "emerged" as the project developed, so to speak, until interrupted by the COVID-19 outbreak and lockdowns. Three so-called pilot groups consisting of approximately 10 teachers were supposed to be given two full day training sessions each. First, they would start with a training session, then try out the Dialogos approach with their students as well as with groups of 10 teachers each during a 1,5 hour session, and then meet up for a new full day training session. This session would include the sharing of experiences as well as trying out new ways of philosophizing. In this way, the whole school would be involved in the project, even though not all participated in the direct training sessions. However, due to the corona situation, we only got started with the second pilot group before the project was put on hold. The project was rounded up with a half day online workshop with lecture in the last week of school, while deciding to continue the project at least one more year. The purpose is to let more teachers learn how to facilitate in-depth philosophical dialogs on sustainable development together with their students, using the Dialogos approach.

Being two researchers and a master student collaborating is a strength in itself, since it has been possible for us to discuss the project along the way. The whole

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[1] In Norwegian: Verdiløft og skolens danningsoppdrag.

process can thus be compared to the developmental action inquiry of William Torbert and colleagues [31]. Torbert distinguishes between first-person action inquiry, second-person action inquiry and third-person action inquiry, also making distinctions between the subjective first-person voice, the intersubjective second-person voice and the objectivity-seeking third-person voice ([32], p. 240–246). Reason and Bradbury [33] argue that the best action research will engage all three strategies: First-person research is best when carried out together with colleagues who can give support and challenge. This may evolve into a second-person collaborative inquiry process, as in the mid phase of this project, where Marcussen was given the lead in analyzing the data as part of his master thesis. In this way he has provided a more "objective" third person view and voice in the research, which gives the research a different balance of voices than if Helskog and Weiss were to analyze the data and write out the research report alone. However, when writing this article, their voices have become stronger again, as the focus moved towards dialogic learning-and-teaching.

2.2 Data

The main method for including the participants in this investigation were so-called meta-reflections, which were made both orally, in terms of open dialogs, and in written form. Submitting the written meta-reflection notes was voluntary for the whole staff, but mandatory for the voluntary participating pilot group teachers. This set of data was supplemented by observation notes from Marcussen, who took part in the training in the pilot groups, in the teacher-facilitated workshops with other teachers, and also in philosophical dialogs with students, in addition to reflection logs from all three of the authors.

In the next section, excerpts from the first, and meta reflection notes from the first and second pilot group workshops in action inquiry research cycle 2, are used as examples or cases that are examined in order to find possible answers to the research question. Hence, this will only be one phase taken out of the wider context of the Dialogos process in this project.

For reasons of research ethics, the identities of the participating teachers and students were of course anonymized.

3. Philosophical dialog process and key results

The pilot group dialogs were facilitated respectively by Weiss and Helskog, while Marcussen took the role as a participating observer, together with 11 teachers. The teachers came from various subject backgrounds – among others agriculture, motor mechanics, science, social studies, curriculum for religions, philosophies of life and ethics, so-called special education, and Norwegian. We all sat in a circle around a meeting table, so that each participant could see the others.

3.1 Two pre-workshop sessions

The first dialogs that teachers experienced in this project, took place in two sessions prior to the first full day workshop. Around 100 teachers participated in these dialogs, which were carried out in small groups with 3–4 people. The purpose of these pre-workshop sessions was, among other things, to offer all the teachers of this school a first impression of philosophizing the Dialogos way and how philosophizing might contribute to dialogical learning-and-teaching in general. In the following empirical data from these first dialogs are presented in the form of meta-reflections.

3.1.1 Teachers' dialogs 1: Socratic dialog-inspired reflection upon the topics "love of neighbor/spirit of charity[2]" and "dedication"[3]

The first dialogs that teachers experienced in this project, took place in two sessions prior to the first full day workshop. The dialog formats used were derived from the Socratic Dialog format as described previously in "1.3.2. Dialogue format: Socratic dialogue (SD)". Around 100 teachers participated in these dialogs, which were carried out in small groups with 3–4 people and in which the values "love of neighbor/spirit of charity" and "dedication" were investigated. Both values were drawn from the paragraph of aims in the Norwegian Education Act (§1). These initial dialogs were important because the teachers experienced what it could mean to philosophize upon personal experiences in "heart-to-heart", and in "I-thou" relationships facilitated through dialog (see "1.3. Philosophizing the Dialogos Way - a wisdom-oriented pedagogy"). This was also reflected and confirmed in many of the meta-reflections from the teachers, which they delivered on hand-written, anonymous sheets right after the dialogs. For instance, one teacher said "it was nice to reflect together with others, to become more deeply acquainted with one's colleagues, to see which values they have, what their lives, their image of humanity and society is founded upon", while another wrote that "to share personal experiences with colleagues challenges and makes us more familiar with each other", and a third that "I have never talked so much like today. Inspiring to hear others' stories. I want to use more of this in workshops with my students." Also, being recognized by one's colleagues was important. For instance, one teacher expressed that "colleagues have shown interest for my stories and for what I said."

Some emphasized the role of dialogic inquiry in the overarching work related to the new curriculum reform, on claiming that he or she saw the importance of working with terms and values from the paragraph of aims in the Norwegian Education Act (§1), and to develop the ability "to personalize these terms in order to understand them." Moreover, one claimed the workshop had "showed that a common room for reflection is important, if we want to pull in the same direction.", another that "it is important to work with your own attitudes", and a third that "the way the reflections have been carried out, triggered an interpersonal process and gave a starting point for further reflections. I want more of that."

Some also claimed they had become inspired to take dialogical philosophizing into the classroom, "fostering dialogic reflection, showing that there is more than argumenting and discussing", and "to be creative, unafraid and transcending, so that the students can transcend themselves."

The reason why "love of neighbor/spirit of charity" and "dedication" have been chosen as the topics for these initial dialogs was because one can assume that these two values are essential for what Kahn called eco-pedagogy. And that form of pedagogy, in the long run, will promote an ideal of education in the sense of self-formation (in Norwegian *danning*, in German *Bildung*, and in Greek *Paideia*) that will foster "a world of philosophers" ([20], p. 58). Like these two values, also the themes "sustainable development" and "respect for nature" are part of the Educational Act. In the next sections, these will be in focus.

3.2 The first full day workshop

Since the teachers already had been introduced to the activity of philosophizing, based on personal examples inspired by the Socratic dialog approach in two

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[2] "Nestekjærlighet" in Norwegian.

[3] "Engasjement" in Norwegian.

pre-workshop sessions, as described previously, Weiss and Helskog then planned the first full day workshop to be an introduction respectively to the Philo Café approach, and the P4C-approach. However, in order to connect general sustainable development issues to their own personal life experiences, the teachers were first asked to reflect upon whether and to what degree they had been teaching about sustainable development in their previous work as teachers. This was done because, as outlined in the introduction, connecting the personal and general, the concrete and the abstract, is essential to philosophizing the Dialogos way. This is also where edification towards wisdom can take place. The question that the teachers were asked to reflect upon read: *To what extent and in what ways did you consciously teach according to the value "respect for nature" in §1 in the Educational Act, and the interdisciplinary theme "sustainable development" in the overarching part of the curriculum in the work with your students?*

The teachers wrote their reflections on sheets of paper that were collected as data by us by the end of the day, but also shared orally in the group before we started the philosophical work. 11 out of 12 claimed to have worked with sustainable development issues previously. Several claimed to have included respect for nature in their lecturing. The agriculture teacher had taught biological diversity. The special education teacher had worked with garbage separation at school, and once while hiking, sustainability in general had been discussed. The social science teacher had compared multinational clothing-retail companies, while the Norwegian teacher wondered whether respecting and tolerating different students' boundaries can be a form of sustainability too.

The teachers were then introduced to an exercise from Dialogos [34] in which general philosophical questions were separated from empirical (fact based) questions and psychological questions. Based on this exercise as well as the examples drawn from their own teaching practice, the teachers formulated one question each. All questions were written on a flip chart paper, before the teachers voted for their favorite question, also giving reasons for their choice. The question "How can we save the planet?" was chosen for the first dialog, and the question "What is respect for nature?" for the second dialog.

3.2.1 Teachers' dialog 2: A Philo Café on "How can we save the planet?"

The dialog format used in this workshop in order to investigate the question "How can we save the planet?" was the so-called Philo Cafè, as described previously in section "1.3.3 Dialogue format: Philo Café". This dialog began with one teacher indicating that the question of how to save the planet is old, stemming at least from 1972 and the Brundtland report. The dialog moved forward through an interactive dance between Weiss' and Helskog's questions and facilitation-moves, and the joint thinking of the participants. For instance, if one teacher posed a stand, we would ask if somebody disagreed or had a different view. For instance, due to this, the dialog moved between the levels of global interconnectedness in the general, and personal responsibility in the individual. It also touched upon short-term consequences and long-term consequences for coming generations. Sometimes we also added a concept, such as "is this a paradigm shift?", based on what the teachers said. In order to make sure that everyone could follow the development of the dialog, we asked if somebody could repeat what was just said, or if someone could summarize the content of the dialog so far. The philosophical dialog ended with the comment that "Maybe we have to go back to our cave and eat roots and berries. We obviously can't have this much clothes and things – this is absolutely not sustainable", another adding that "It has to be emphasized that basic needs have to be fulfilled. That people have enough to eat and drink, and maybe education and so on, which is higher up in the hierarchy of needs." Weiss then posed the question: "Can we

achieve more quality of life without using and consuming resources?" One of the teachers then argued that "Quality of life is something within us, and independent from our living standard."

We then moved on to the next dialog, which was about the question "What is respect for nature?"

3.2.2 Teachers' dialog 3: What is respect for nature?

For this dialog, the teachers were briefly introduced to the Lipman-Sharp philosophy for children (P4C) dialog format, as described previously in "1.3.4. Dialogue format: Philosophy for children (P4C)". The dialog investigated the question "What is respect for nature?" and the teachers read a short text from Helskog [34] about 4-year old Vilgot who is reflecting upon nature when questioned by his mum. The teachers took roles reading the text in pairs, one being Vilgot, and one being the questioning mother. A conversation about what it means to be close to nature unfolds, based in the text and the question "What is respect for nature?" The dialog began with one of the teachers claiming that nature has to be handed over to the next generation in a better condition than it was, or at least in the same condition. Also, when you are hiking, you should leave nature in the same condition as you found it. Another one commented that what you do before going for a hike can also be taken into account, like taking the car to the mountain or using a non-reusable barbecue. The teachers then reflected about how humans cultivate nature and about the relation between nature and culture in general. One teacher stated that there is a difference between cultivated and non-cultivated nature. Another did not see a difference between nature and culture but claimed that culture rather is something we take out into nature, arguing that *"everything is nature"*. Another teacher slightly disagreed and tried to define the difference between culture and nature: *"The difference is to either let things happen, or form and cultivate them the way we want."* Helskog then asked if, seen from a moral perspective. i.e. *respect* for nature, is it right to cultivate nature? One participant stated that there is a relation between us taking care *of* nature and taking *from* it, while another continued: *"Some places should be touched by human hands, others shouldn't."* One of the participants gave a concrete example on that: She once had initiated a project in her neighborhood where they cleaned up the forest. After they cleaned up parts of it, it became more child-friendly and better to walk in. Another realized she had been inconsistent when as a teenager she did not want to watch the butchering of animals, but at the same time she was used to buying meat at the store. The dialog continued along these lines for around an hour, ending with arguments like: *"Nature strikes back. Nature is stronger."* and *"Nature is alive. Multi-drug-resistant bacteria are also life and they will come after us. Why shouldn't they have the right to do that, actually?"* One of the teachers said that the planet will try to find a balance, if something goes wrong. Helskog asked: *"So, nature is seeking balance?"* *"Yes, it will fix itself if something is hurt"*, one replied. Another one added: *"Even after the apocalypse, nature will build itself up again."*

Responding to the guiding question, the group developed the following answers, as summarized on a flip chart paper by Helskog: *"What does it imply to show respect for nature?" It implies*

- to leave nature in the same condition as we found it

- to utilize nature without destroying it – to administer without overuse

- to see the whole picture in what we do

- to acknowledge that nature is alive

- to cultivate uncultivated nature

- to acknowledge that everything is nature

- to understand the forces of nature

- to act with humbleness and respect for natural laws

3.2.3 Further content of the workshop

The later part of this full day workshop included a philosophical exercise where values behind emotions and/or actions were analyzed, followed by a general reflection on the possibilities of taking what we had worked with into their own practice with students in the classroom, and also with their colleagues. Finally, the teachers wrote meta-reflection notes about their experiences of the day that were gathered by us as data, while also sharing their experiences orally. This is part of the Dialogos process because it encourages participants to put words and concepts to their experiences, thus bringing the reflection process one step further. Furthermore, it is likely helping participants to psychologically "close" the process, which can be quite demanding, as we shall see below.

3.2.4 Teachers' meta reflections after the 1st full day workshop

As shown in the dialog excerpts above, the teachers talked about multiple perspectives on saving the planet and respect for nature. Nevertheless it is interesting how little these teachers reflected about these topics in their meta reflection notes by the end of the day. A few did though; one teacher stated that the dialogs made her *"widen the perspective on sustainability",* while another teacher wrote that it was *"interesting to see the whole picture".* A third teacher stated that it was challenging *"to work with such big topics, which otherwise often can be forgotten in a busy everyday work",* a fourth writing that it was *"an untidy topic that was tidily organized"* through the philosophical dialog. A fifth teacher emphasized the advantage of getting different perspectives and arguments from others, and that *"the challenge is to organize and to make a system, a summary with the main tendencies."*

Even if there were few reflections on the topic, no teacher mentioned anything negative or voiced criticism. However, seven out of ten answered that they were insecure about their own competence, that it was challenging and new, or that they felt insecure in general. One teacher claimed to have felt physical distress, that his heart was beating, that he felt performance anxiety and that the whole thing was rather" *hovering in the air."* Another said she had been on *"unsteady grounds".* Three teachers were insecure or curious about how they could transform this into teaching or transfer it to others from the teaching staff. One asserted that it was *"challenging, but edifying"* and that he needed some time to digest it. However, several of the teachers stated that the workshop was relevant for them with regards to their further work with the ongoing curriculum reform, which also required that the teachers worked with values, as stated in the introduction.

Some meta-reflections pointed out the challenge of philosophical dialoguing being a rather open way of working. Some wanted clear structures with unambiguous answers and guidelines, because this is what they as well as their students are used to. One mentioned that even though the dialog was interesting, he/she got a bit stressed of the dialog being a bit "floating". Another teacher wrote: "*If I would*

do this in the class, there would be much frustration. I wouldn't have got any answers." A third teacher notes something similar: "*I am used to working with more structure*."

3.3 Teachers philosophizing with students - how did they experience it?

Marcussen accompanied one of the teachers as a philosophical dialog facilitator in two of the classes where she taught Norwegian language and literature - respectively an electronics class and an elite sports class. The students were 16–17 years old, the questions explored were "what is respect for nature?" and "what is sustainable development?", and the two sessions lasted for 1,5 hours each. Afterwards, the teacher had told Marcussen that she did not experience the dialogs with the students as successful. She thought they were characterized by teacher dominance and relatively little participation from the students. However, as we shall see, the meta reflection notes of the students revealed that their experience was quite the contrary. These are three examples:

- "We thought in a different way, and the answers were not concrete as in other subjects. Now we had to come up with something that could become an answer to a question without a conclusion".

- "I felt it was a nice and new way to learn: Not to rely on books and syllabus, but instead think to high and dig deep"

- "I felt that we all experienced a sparkle of light so that we might think differently about things we did not know much about before we started".

9 of 22 students described that they think differently after the dialog. Here are some examples:

- "I experienced to think and consider things to a larger extent than ever before"

- "I got to think in a way that I did not think I was able to"

- "I feel that I began thinking in a new way"

- "I got to think in a new way and develop new thoughts. That the brain was challenged in a new and creative way"

- "Learned to think more in depth, and pose more questions"

- "Got a deeper view"

- "Fun to go deeper into things"

- "That I thought more deeply about what somebody thinks or about what something means"

- "Go deeper into myself"

Several of the students expressed that their thoughts were "opened". One example is the expression that the dialog "opened up for all my thoughts", another that s/he "learned to be more open rather than jumping to conclusions".

Many noted that they have gotten new insights related to sustainability. One wrote: *"I got a new perspective on what sustainability is."* One said that his/her awareness on the topic was raised through the dialog, while two others stated that they could go deeper into the topic, or to see *"problems and topics differently, to see values and what is important."* Four students expressed excitement for the topic and that it was fascinating to investigate it in-depth, also that the topic was *"excellent"* and funny. Two students noted that they got new ideas on what sustainability can mean, and one that he/she got an in-depth look on how to live sustainably. Some noted that they have been inspired to put sustainability into practice more often. One student mentioned that during the conversation he/she has thought about "eco-conscious decisions", another stated that he/she got deeper insight on what it means to live sustainably. One got new ideas on how to act more sustainably, while another realized *"that there is much we do that is already sustainable even though we are not always aware of that."* Two students, however, stated that dialogs are not enough with regards to sustainability: *"... it is a waste of time to discuss this without doing anything".* Another one stated: *"I think that we don't change anything by discussing this in two hours but still I leave the dialogue with more awareness."*

Students also expressed that it was difficult and strenuous to philosophize, however interesting to listen to and to explore and learn from the different views of others. One stated that he or she wanted to become better to see all sides of different issues, while others emphasized the importance of realizing that there are many ways of thinking and seeing.

3.4 Teachers meta-reflections after the 2nd full day workshop

After the second pilot group workshop with the same teachers some five weeks later, their meta-reflection notes show that the teachers were less stressed. Now none reported that they were insecure about their own competence. One wrote that he/she became more organized by letting students write meta reflection notes after sessions from time to time, something that she did not do in the beginning. Two mentioned that it had now become easier to use topics and methods from the Dialogos approach in their teaching. Another one was looking forward to trying out the exercises from this second full day workshop with the students, while another said he/she was inspired to read and learn more about philosophical dialog. Now, how can we interpret this development?

4. Discussion

A main feature of the dialogs presented in the previous section, was that the teachers brought their own experiences and more or less well-founded opinions into the philosophical dialogs. These opinions and experiences were investigated and sometimes also challenged by the perspectives and arguments of the others, and by the spontaneous questions of Weiss and Helskog. As a consequence, and contrary to learning content from books, the teachers could learn content from each other, and in this way raise their awareness on the investigated topics. This form of learning did not necessarily make the participants acquire factual knowledge, but it opened their minds and widened their horizons of understanding regarding the issues in focus, which in this case were related to sustainable development. In the present section, we will therefore discuss central features, in the form of attitudes and skills, that came to the fore in the outcomes of this project.

4.1 In-depth learning

As shown in the previous section, several students said that such dialogs gave them the chance to learn "to think more in depth," to get "a deeper view," "to go deeper into things," and "to go deeper into myself." Such quotes indicate what in general is known by the term *in-depth learning*. More particularly, the quotes can also be related to the previously mentioned philosopher Arne Næss and his conception of *deep* ecology. Furthermore, when Næss argues for awakening the openness to diversity in people ([16], p. 386), then this is what appears to have happened with the teachers as well as with the students. In the dialogs they were challenged to formulate and share their own point of views and understandings of a topic, listen to those of others. Through that they could further develop their own understanding, which can be seen as a key-aspect of in-depth learning. Furthermore, the meta-reflections of both the teachers and the students indicate that the dialogs helped them in becoming more open-minded and in general more aware of the topic. In this respect, the oral meta-reflections from the students can be mentioned, where two of them expressed that dialogic learning-and-teaching does clearly not foster sustainable development. In other words, these students claimed that thinking and talking alone does not lead to change. Here however, another student interjected that dialoguing and thinking together appears to be mandatory in order to raise awareness on such vital topics. Since only with a raised awareness, as this student claimed, people will be more motivated for change. Here again, Næss' argument for awakening the openness to diversity comes into account. And being able to support your students in learning to deal with today's cultural, philosophical and even scientific diversity - i.e. by means of this dialogical form of in-depth learning - appears to be an important skill of the teacher in the 21st century.

4.2 Improved self-confidence

Another important insight from this project was that many teachers, after the first workshop, commented that this way of working, that is, dialogic learning-and-teaching, felt difficult for them. Some even noted that they became anxious and on shaky ground. However, after the second workshop, the meta-reflection notes clearly indicated that the teachers from the pilot group felt less stressed. They gained more confidence in what they were doing - by doing it. And here we arrive at a crucial point when it comes to dialogic learning-and-teaching: It needs practice, it is not simply a technique that, once you understand it cognitively, you can apply it successfully. Rather, it is the experience that comes from participative dialogic practice which helps the teachers improve their dialog facilitation skills as well as develop the attitudes with which they can go into such dialogs. Instead of being anxious, they were much more self-confident when facilitating their second or third dialog. And though it is not a skill in the actual sense, but rather an attitude, improved self-confidence in their teaching practice seems to be a vital resource for today's teachers.

4.3 Active listening

With respect to the previous sentence, one teacher can be mentioned again, who first thought that the dialog she facilitated went rather bad. Only when taking a look at the meta-reflections from the students, she could see that the contrary was the case. Here, one should not underestimate the power of active listening, which forms an essential aspect in this approach to dialogic learning-and-teaching. Silence in a dialog does not mean that nothing is going on. Rather, it often indicates that

participants are going on deeper levels of reflection – something that seems to be confirmed in the meta-reflection notes from the students in this dialog.

Even though students listen to the teacher too when the latter is using a more traditional form of didactics, like when presenting facts and knowledge on a power-point. However, active listening as discussed here slightly differs from this form of listening. Active listening appears to happen more likely in conversations, i.e. in a dialog, rather than in speeches. And this difference appears to be decisive for the previously mentioned in-depth learning - active listening is prerequisite for this form of learning. Therefore, making one's students listen actively appears to be a necessary ability of teachers today.

4.4 Cultivating one's not-knowing

One could of course be critical towards this dialog-oriented approach and say that facts about the topic were hardly or not present at all in these Dialogos workshops on sustainable development. But here the absence of well-founded pre-knowledge on the topic with the participants appears to be decisive. Would they all have known all the facts, figures and theories about the topic, the chances would have been high that they would have just ended up in mere discussion, where each participant would have been concerned with defending his or her point of view. And this was not the case in these dialogs, rather – in reference to Socrates – the participants knew and acknowledged that they did not know, or only knew little, about the topic. In other words, having an awareness of not knowing everything about a topic, seems to constitute a vital attitude that is required by the participants of philosophical dialogs. *Not knowing* in a dialog keeps the learning process alive, since it fosters curiosity and wonderment.

As a consequence, one could even go so far and say that if the awareness of one's own not-knowing is a driving force in dialogic learning-and-teaching then this educational approach can also be used for other topics, and not only sustainable development. In this way, both the teacher and the students are cultivating their not-knowing - and in a complex and diversified world like ours, where one simply cannot know all, a cultivated attitudes not-knowing appears to be of central value. However, as already mentioned previously, dialogic learning-and-teaching should not replace traditional lecturing. Nevertheless, it appears to be a valuable and fruitful approach when education has to deal with phenomena and topics that cannot be put into "square-shaped boxes."

4.5 Togetherness

Furthermore, based on the reflection notes from this action inquiry project, one can come to the conclusion that dialog fosters the social relationships between the participating individuals. With the intention to investigate sustainable development issues together – with the emphasis on "together" – there never appeared to be the need for any participant to come up with the best argument or "winning" the conversation, as it would be in a discussion or a debate. Rather, because both the teachers as well as the students showed a certain curiosity in the topic, on the one hand, and because this curiosity was rooted in the fact that none of them possessed expert knowledge about this complex topic, on the other, they were willing to listen to the other points of view. And here another positive effect of this educational approach comes to the fore which can be formulated in the words of Richard Kahn ([20], p. 77), in which he states that caring, dialogical, and transformative relations would promote cooperation, democracy, and positive cultural values, as well as promote communication, esteem, and freedom in relation to each other. In other words,

knowing how to foster togetherness with the students appears to be an important skill of the teacher in order to promote what is called democratic citizenship.

4.6 Life philosophies

Another positive aspect of such a dialogic approach to learning-and-teaching might be the following: In the discipline of so-called philosophical practice one can find a key-assumption held by several practitioners, namely that each individual has his or her own philosophy of life – not in terms of an elaborated theory, but in terms of lived values and beliefs, expressed in feelings, attitudes and actions (see i.e. Lahav: [27]). In this respect Næss can be mentioned again who believed that one of the solutions to the world's ecological problems is to inspire people to formulate their life philosophies, i.e. about diversity and how things are connected ([18], p. 31). And when it comes to the dialog processes as described in the present article, then this seems to be what happened. Due to the dialogs, the participants became inspired to reflect and think about their own philosophies of life – or at least about a certain domain of their philosophy of life in terms of questions like "How do I relate to my surroundings, not only on a local but on a global level?", "What are the values that come to the fore in this reflection, that appear to be important to me, and how might I be able to practice them?" In one way or another all these questions – which for sure are only a few examples - seem to have been relevant and even investigated in the dialogs. It has to be mentioned though that working with one's own philosophy of life was not an explicit goal communicated to the participants. Nevertheless, investigating this kind of philosophy – especially in relation to sustainable development topics – appeared to have happened at least with some participants as the meta-reflection notes indicate. The ability that was fostered here is the ability of self-reflection and subsequent self-knowledge - an ability that was already held in veneration in old Greece (i.e. in the form of the Socratic "Know thyself").

4.7 Limitation

The obvious limitation of this study is that it focuses only on one project with rather small groups of teachers and students. It is thus not possible to generalize directly to other contexts. Regardless of the limitation, the study might serve as an inspiration for teacher practitioners who want to try out the Dialogos approach to philosophizing in their classroom, or for researchers who would like to study educational processes through Dialogos or similar approaches in action research in their own context. As such, the article describes the Dialogos approach and three dialog formats in such a way that teachers can try them out in their own classrooms.

As to further research, it would also be interesting to try out the Dialogos approach on a broader scale, nationally as well as internationally. The processes could be researched through quantitative methods as well as qualitative.

However, because this study is based on several years of similar action and practice-research (see for instance [4, 35, 36]), we are bold enough to claim that the Dialogos approach to philosophizing is a fruitful way to contribute to education not only for sustainable development, but more generally as an approach to dialogic learning-and-teaching.

5. Conclusion and final remark

The guiding question of this paper asks *how* training teachers in philosophizing the Dialogos Way might promote dialogic learning-and-teaching, and support

education for sustainable development. First, we presented theoretical and practical approaches on the topics of education for sustainable development and philosophizing the Dialogos Way. Here, we emphasized the importance of focusing both on the development of dialogical attitudes, knowledge of ways of philosophizing, as well as dialog facilitation skills. We argued that this form of pedagogy requires an open attitude not only towards the students, but also towards the content. The role of the students is to act as collaborative "wisdom searchers". Together with the teacher as a questioning guide, they openly, reflectively and dialogically explore topics from multiple perspectives together with their classmates (see [3, 4]. We then explained and described three dialog formats, namely the Socratic dialog (SD), Philo Café, and Philosophy for Children (P4C), all being used in the work with the teachers as described in section 3 and discussed in section 4. Based on the process description and discussion, we intended to show *how* teachers' attitudes and skills with regards to philosophizing the Dialogos as a way of promoting education for sustainable development can be practiced. And it appears to be through regular practice that philosophizing the Dialogos Way can contribute to the enhancement not only of skills, but also of important attitudes, insights and awareness needed for teachers and teacher students in the 21st Century.

Acknowledgements

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21st Century Pedagogies and Citizenship Education: Enacting Elementary School Curriculum Using Critical Inquiry-Based Learning

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Abstract

How elementary teachers address citizenship is important in 21st century teaching and learning. Situating citizenship education within the varied global contexts of schooling and connecting content to pedagogical approach is a complex task. Even so, citizenship education can be the philosophical underpinning, or vision, for a teaching pedagogy that engages students in active, creative, and critical ways. This chapter illustrates key features and priorities for citizenship education by exploring the concepts of perspective taking, inquiry pedagogy and critical pedagogy and how they work together using the example of elementary school Social Studies in a Canadian context. Using examples from previous studies and narratives from elementary school teachers, this chapter includes portraits of classroom teachers' work using a critical inquiry-based approach. The chapter illustrates how resources can be used in teachers' planning to design learning that is nestled in citizenship education. Government curriculum documents as well as scholarly literature and teaching resources can support critical-inquiry for citizenship education. This teaching can lead to active, engaged citizens. There are many approaches to citizenship education; drawing awareness to perspectives and pedagogical possibilities is essential in teacher development. Teacher education is the ideal place for introducing and connecting foundations of education to best practice.

Keywords: inquiry pedagogy, critical pedagogy, citizenship education, perspective taking, preservice teachers, teacher education, elementary schooling

1. Introduction

What is citizenship education? Why teach it? How to teach it? These are common questions teacher candidates in my teacher education program wonder as they prepare to become elementary school teachers. Teacher education is where preservice teachers are introduced to curriculum subjects (content knowledge) and methods for those subjects (pedagogical content knowledge). And so, what of elementary school subjects and citizenship education? Unlike literacy, science, and mathematics, citizenship education is not a traditional subject area. Traditionally, citizenship

education may be nestled inside of standard subject areas like social studies; yet, depending on how social studies is taught, citizenship education may not exist at all. Teacher education is the ideal place for introducing and connecting foundations of education to practice; that is, inspiring and demonstrating the power of rationale development for teaching subject areas and reflecting on how and why to teach what is required.

Citizenship education can be the philosophical underpinning or vision for teaching in the elementary school classroom. This chapter explores how citizenship education may be developed as a perspective and pedagogical approach to teaching. By developing a vision or perspective for citizenship education teachers can incorporate contemporary approaches like critical inquiry-based pedagogy to teach citizenship in all subject areas. Social Studies will be used to demonstrate how content can be used to activate strong understanding and engagement with citizenship. The first part of the chapter explores perspective taking and the contemporary pedagogical concepts of inquiry and critical pedagogy and how they work together. Drawing examples from previous studies of elementary school teachers, this chapter include portraits of classroom teachers' work using a critical inquiry-based approach. The second part of the chapter shows how resources can be used in teachers' planning to design learning that is nestled in citizenship education. Government curriculum documents as well as teaching resources can support perspectives when applying a critical-inquiry lens to citizenship education.

2. Perspective taking for citizenship education

Preparing teachers for the world of teaching (teacher education) is an ideal place to introduce the importance of perspective taking. Perspective taking is also described as rationale development or, developing a vision in teaching. Rationale development is defined as, "the intellectual, ethical, and potentially transformative process of personal reflection through which teachers formally articulate their purposes for teaching …" ([1], p. 417). Kosnik and Beck [2] found developing a vision for teaching is a priority in teacher education. According to Kosnik and Beck, having a "vision keeps us aware of the full range of goals and processes of teaching …helps us see how the various aspects of teaching fit together… [and] having an explicit vision is important so teachers can explain to student the purpose of schooling and particular classroom practices" ([2], pp. 153–154). "A vision is what a teacher hopes to instill in their students beyond curricular objectives" ([3], p. 526). Having a vision allows for coherent programming and teaching, and allows for more explicit teaching of social issues. Perspective taking, rational development, or developing a vision for teaching requires thoughtful reflection, understanding one's own practice, and broader pedagogical approaches and content. Understanding the purpose for teaching and unpacking *why* we teach what we do is essential for good teaching.

In my preservice classes, teacher candidates are asked, "what is your vision for teaching?" This question is often received with uncertainty as most candidates are not familiar with the notion of a vision for teaching. While several, if not all, teacher candidates have a perspective for teaching – for everyone is positioned with a stance - it is seldom articulated or unpacked in terms of a vision for teaching. It becomes worthwhile then to engage in opportunities for thinking about one's vision and the potential implications for teaching and learning. A clearly defined vision or perspective for teaching provides clarity in program planning. And, as we consider what it means to teach citizenship education in the 21st century, a vision for what that means needs to develop. Some 21st century perspectives for citizenship may

include international, global, critical, democratic to mention a few. This chapter focuses on developing a perspective for critical citizenship education at the elementary school level that engages an active and critical citizen.

2.1 Teaching perspective taking

Citizenship education can be an approach to teaching. To teach through the frame of citizenship education however one must first determine their perspective or vision for teaching it. Hawley and Crowe studied how teacher candidates' rationale development for social studies teaching as being fundamental to citizenship changed during their teacher education training [1]. They found that when teacher candidates were tasked with developing a vision for teaching social studies, most were able to do so. Teacher candidates were able to develop a vision that combined their own values and the values and content they encountered in the program ([1], p. 424). How one's purpose evolves and develops depends on the unique combination of the teacher candidate's experiences and values and the program's teachings. The negotiation of identities, values, ideas, understandings between one's own experiences and understandings and that of the University and governing bodies that control the school curriculum can be a challenge when the views do not coincide. Time is required to explore, discuss, and understand how one's own understandings connect with the goals of citizenship education. In order to enact citizenship education, a perspective/vision/purpose needs to be developed. Hawley and Crowe suggest, that "[w]ithout an articulate sense of purpose for teaching social studies, an understanding of what purpose means for their practice, teachers may never move beyond a focus of content knowledge and engagement as guiding principles for pedagogical decision making, and social studies teaching may remain the same for another 100 years' ([1], p. 441).

In my work with teacher candidates, a critical stance to citizenship education is used to teach how to teach social studies. Social studies is one elementary school subject that lends itself well to citizenship education. A critical stance includes the attitude, knowledge, and dispositions essential to "way[s] of knowing and being in the world of educational practice that carries across educational contexts… that links individuals to larger groups and social movements intended to challenge the inequities perpetuated by the educational status quo" ([4], p. vii). Lewison, Leland and Harste identify four qualities of a critical stance: consciously engaging; entertaining alternative ways of being; taking responsibility to inquire; and, being reflexive [5]. These qualities are cyclical and interact with experience, and involve the processes of renaming [6] and reframing [7] what it means to be in the world. Having a critical stance is a "deliberate choice made by educators" ([8], p. 136) and is a "lifelong and constant pursuit"([4], p. 28) to becoming an active citizen. A critical stance is a perspective that encourages an active and engaged lens for citizenship education. Critical stance comes from the field of critical pedagogy and aims to position any subject or content area towards equity-based ways of viewing the world.

2.2 Activating perspective taking in practice

Teachers engage in the thoughtful application of their vision/perspective into classroom practice. Schoolwide approaches, led by administrative teams, provide clear pathways for activating school wide visions for teaching. For example, as a 5th grade classroom teacher at Maple Public School many years ago I, like all teachers at the school, followed the school vision. The principal's motto "we're all on the same bus, headed in the same direction" provided the pathway for applying a

particular vision. All teachers followed the same routines, and curriculum including a phonics-based reading program; and, all teachers used a pedagogy of care to guide their practice. When schoolwide approaches are not mandated, teachers activate their own vision for teaching in a variety of ways including reflective practice [3]. Hammerson [9, 10] asserts that a teacher's vision should be clear and compatible with the vision of the school if their visions are to be viable. To actualize a teaching vision, particular pedagogical practices are enacted including an engaging learning environment, authentic learning tasks, and discovery learning experience (i.e., inquiry pedagogy) ([3], p. 534). Inquiry pedagogy is a 21st century approach that engages students in questioning, problem solving, experiencing, and acting. Inquiry pedagogy will be discussed later in the chapter as a key approach for developing a vision of citizenship.

School districts often mandate curricula. In some districts the curriculum guidelines offer clear perspectives for teaching. In Ontario, Canada the Social Studies curriculum uses a perspective of citizenship education that promotes active, responsible citizens and provides an process for activating perspective [11]. **Figure 1** ([11], p. 8), illustrates a process for activating perspective by beginning with a clear vision, set goals for teaching social studies, and framework for citizenship education.
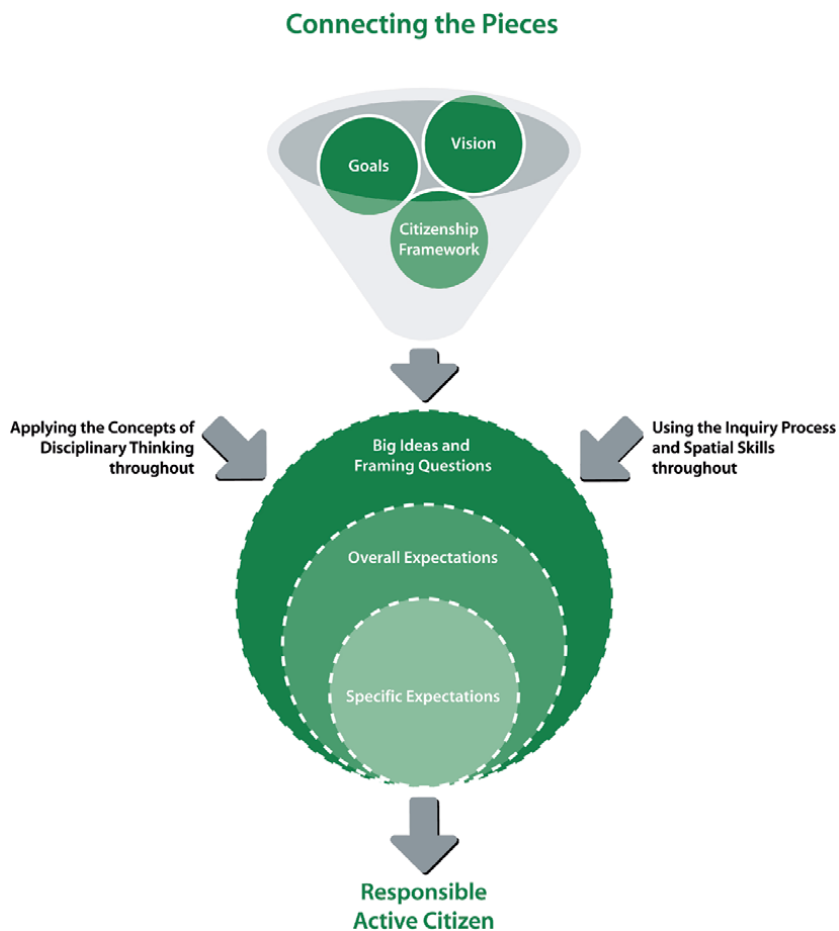
Figure 1.
Activating perspective taking in practice ([11], p. 8). © Queen's printer for Ontario, 2018. Reproduced with permission.

The vision for citizenship education outlined in the document describes how: "the social studies... programs will enable students to become responsible, active citizens within the diverse communities too which they belong. As well as becoming critically thoughtful and informed citizens who value an inclusive society..." ([11], p. 6). The goals list skills, knowledge, and dispositions required to realize the vision.

A clearly defined vision, explicit goals and framework are applied to learning expectations; big ideas (enduring understandings and key concepts) and specific expectations (content and skill-based learning expectations) are listed for each grade in the curriculum document. By using a critical inquiry-based pedagogy and disciplinary thinking students have opportunities to consider and become responsible, active citizens.

3. 21st century pedagogies for citizenship education

This chapter explores two educational pedagogies for citizenship education: inquiry-based pedagogy and critical pedagogy. Each concept is an independent framework and yet to a degree they share common philosophical elements and learning goals that work well together. The pedagogies are presented below. First, inquiry-based learning is explained and then a critical lens, adopted from critical pedagogy is described.

3.1 Inquiry-based learning

Derived from Dewey's theories [12] of experience and education, and constructivist traditions, inquiry-based pedagogy is generally understood as a student-driven, experiential approach to learning [13, 14]. Children collaborate as they question and explore a common goal or interest [15]. Inquiry-based pedagogy values "building on students' prior knowledge, scaffolding new experiences and the students' construction of knowledge" ([16], p. 281). Inquiry-based learning has been described in a number of ways including guided inquiry [17], knowledge building [18], and open inquiry [19] to name a few. While each of these approaches emphasize slightly different components of inquiry-based learning, they all encourage children to investigate their own curiosities about the world. Children's questions are at the centre of the learning experience and their questions drive the learning experience forward [18].

The teacher's role is to guide the children through careful planning and ongoing reflective practice as they explore their questions and queries. Children's voices and ideas are at the centre of the learning. Self-directed learning and student-centered learning are foundational to the process. Throughout this student-centered approach to learning, the teacher is responsible for teaching children the required skills to engage in student-directed learning (reading and writing skills, research skills, analyzing information, and collaborating with peers). "teachers need to demonstrate the skills needed for reflection and provide opportunities for students to practice them, while encouraging students to continually reflect on their work" ([11], p. 24).

As children listen, share, experience, research, and explore, they work alongside their teacher to develop new understandings and come up with new theories about what they are learning [20]. Inquiry-based learning repeats and reviews process. Children share their points of view, ask more questions, explore and experience the world, and read a variety of texts in order to gather more information. In an inquiry-based classroom, children are expected to share misconceptions, and misguided theories and through experience and experimentation sort out their

understandings. Inquiry-based learning does not yield a "right answer". Instead, the approach is used to assess the effectiveness of investigations or learning and students learn the ability to reflect on their work ([11], p. 24).

An inquiry-based approach is in keeping with a vision for developing responsible active citizenship. Taking interest in events or issues, having ownership of one's learning, and, working with others to solve problems or answer questions are undertakings of active citizens. The Ontario Ministry of Education provides a process for engaging in inquiry learning in its Social Studies curriculum. **Figure 2** illustrates a model for inquiry-based learning that includes five components that students use to investigate events, solve problems, and share findings.

The five components include: formulating questions, gathering and organizing information, interpreting and analyzing information, evaluating information and/or evidence, and communicating findings ([11], p. 23). The figure provides several

Figure 2.
The inquiry process ([11], p. 24) © Queen's printer for Ontario, 2018. Reproduced with permission.

suggestions for ways to enact inquiry through the components. There is no particular order or entry point for the process to occur; and, not all learning experiences use all five components. It is entirely acceptable and expected for some elements to be used for a variety of lessons within an unit of study.

Inquiry-based pedagogy brings learning to life. Children have opportunity to question, explore, examine, interrogate, rethink, and communicate ideas and challenge truths. With inquiry-based learning, children invest in their learning; they own it and develop a sense of care for the issues and topics they explore. When using an inquiry-based approach, students not only learn about subject matter; by experiencing, exploring, debating, and collaborating with others, they learn about themselves, communities, and the world.

Like inquiry-based pedagogy, critical pedagogy uses many strategies for learning including questioning, discussing, exploring multiple perspectives, and communicating ideas. What differs is the involvement of an ideology that advocates for social justice.

3.2 Critical inquiry based learning

A critical inquiry-based environment includes critical pedagogy. Critical pedagogy provides an avenue for examining social justice issues in local and global contexts. It has roots in Freire's theories of critical dialog and pedagogy for liberation [21]. Education is used as a vehicle for mobilizing the oppressed by teaching language and literacy and the movement towards understanding power and patterns of inequalities. An enlightenment through education encourages mobilization and change for those in poverty. In classrooms around the world today, critical pedagogy is also for the privileged; to unearth privilege and encourage action towards equity. In Delpit's earlier writings on cultural capital she explains "those with power are frequently least aware of – or at least willing to acknowledge – its existence." ([22], p. 282). Applying a lens of critical pedagogy to all classrooms allows for developing awareness, critical thinking, and activism towards equity and justice.

What is required first is a shift in thinking from traditional, colonialist, capitalist views. Kumashiro proposes four strategies for framing classroom practice: 1. Doing homework, 2. Inverting and exceeding binaries, 3. Juxtaposing different texts, and 4. Promoting action and change [23, 24]. Doing homework refers to rethinking assumptions and beliefs and to reconsider notions of privilege and mainstreaming [23]. Critical pedagogy also requires self-reflexive practice; that is, creating space for students and teachers too have opportunities to reflect on their reading practices as they critique and transform their own understandings and investments and imagine new possibilities for bringing about change ([23], p. 153). Inverting and exceeding binaries suggests moving beyond our standard norms for identities (e.g., boys and girls). Juxtaposing different texts refers to exploring multiple perspectives through a variety of texts. These four teaching strategies complement inquiry pedagogy.

Critical literacy branches from critical pedagogy and is an approach that aims to achieve the goals of critical pedagogy through the use of texts, language and literacy and is a commonly applied to inquiry-based pedagogy. Lewison, Flint, and Sluys [25] use four dimensions to describe critical literacy. The following dimensions are applied to texts and to class discussions: 1. Disrupting the common place, 2. Interrogating multiple viewpoints 3. Focusing on sociopolitical issues 4. Taking action and promoting social justice ([25], p. 382). While seemingly self-explanatory and common sensical, these dimensions are still somewhat radical in many classrooms and school communities. To explore texts through multiple

lenses, and to question and disrupt common ideas is against traditional educational practices. Including and exploring multiple viewpoints is also thought to be more 21st century thinking, "the 'testing and right answer' heritage of schooling stands in direct opposition to examining conflicting perspectives - a process that usually does not produce neat and tidy conclusions" ([25], p. 383). These processes are directly linked to inquiry-pedagogy. Critical pedagogy adds dimensions three and four to the process. Critical inquiry pedagogy is about uprooting what is comfortable, making the known unknown and creating new understandings and possibilities using the lens of social justice.

A critical inquiry-based classroom combines critical pedagogy with inquiry based pedagogy and "[s]uch a pedagogy encourages teachers to take an inquiry stance on their classrooms so that students and teachers become an interpretive community that examine and reflect on both course content and pedagogy" ([26], p. 195). Teachers and students enter into a process of social construction of knowledge that encourages, critique, diversity, rigor, and meaning making [26]. In these classrooms, children are urged to question the world around them as well as to think deeply and reflect on their own ideas and beliefs. They consider issues of social justice and the impact of power and circumstances on their lives and the lives of others. A critical inquiry-based pedagogy therefore is one that enables students and teachers to makes sense of the world through text and experience [27].

Research has been conducted that illustrates critical inquiry-based pedagogy in schools. In secondary schools, listening to students, providing multiple opportunities for discussion, using conversations to guide planning, establishing a safe space, and reaching out to community are ways that support deeper engagement in "explorations of topics [students] find authentic and meaningful" ([28], p. 55). Engagement may foster a sense of care and activism. Literature on critical literacy and inquiry at the secondary level has also emphasized the importance of students becoming aware of the role language plays in their lives [29]. When secondary students become active learners by raising questions about language used in texts and how power plays into the texts, they develop a sense of agency to pursue questions that satisfy their questions ([29], p. 388). They become immersed in their learning and construct meaning in order to deepen their understanding of themselves. Morrell also discusses how the pursuit of "addressing a real problem in [students'] community" can lead to authentic classroom-based inquiry ([30], p. 7).

There are fewer studies of classroom practices for critical inquiry-based pedagogy at the elementary level yet young learners engage in such learning. Cleovoulou and Beach have studied elementary school teachers and documented their work using critical inquiry-based pedagogy [31–33]. Seven principles were determined to frame teachers' work for critical inquiry: 1. Encouraging student dialog of critical issues through purposeful text and media selection 2. Connecting text and media to students' lives through ongoing reflective practice 3. Empowering student voice 4. Use of open-ended questions to develop deeper connections 5. Sharing multiple perspectives through knowledge building circles 6. Use of misconceptions to guide the learning 7. Affirming identities and encouraging advocacy [31]. Children's natural curiosities about the world and the desire to deepen their understanding about the world are significant elements to both concepts, inquiry and critical pedagogy. As children inquire about the world and pose relevant questions and theories about issues that are important to them, the teacher incorporates social dimensions and considerations of power relationships into the learning. Collectively the class explores misconceptions and respond to possibilities for change. The seven principles for teaching critical literacy within an inquiry-based approach demonstrate how two twenty-first century educational concepts can work together to

form powerful pedagogy. Critical inquiry-based pedagogy is a useful approach for citizenship education.

4. Citizenship education using 21st century pedagogies

In keeping with 21st century pedagogies, schools today are working towards developing individuals who are creative problem solvers and critical thinkers. The global pandemic of 2020 provides a compelling example of how awareness of local and global communities is necessary for understanding society and implications for living well. Questions such as: Where did the virus come from? How did is spread? What was/is being done to prevent the spread? Who/What communities are most impacted by the pandemic? Why? What could be done now to protect ourselves, loved ones, and communities? How can we share information about ways to protect against the pandemic? What might life be like afterward the pandemic? To engage with these questions, students require the skills taught in critical inquiry. Likewise, these questions connect with citizenship education.

Citizenship education, ranges in purpose and perspective. From obedient citizens to activators of change [34, 35], how citizenship education is taught depends on the desired outcome. As previously noted in this chapter, in my work with teacher candidates, a critical stance to citizenship education is used to teach how to teach social studies. In doing so I begin by exploring rationale development or building a vision for teaching citizenship education. Foundational readings from critical scholars [21–25, 36, 37] ignite the journey to planning for citizenship education. Teacher candidates are encouraged to reflect on and analyze their positionality and consider what it means for classroom teaching. They are also encouraged to think about their positionality in relation to critical theory. As we work through developing a vision for teaching, I introduce students to social studies as a subject area; and, within social studies they are introduced to citizenship education. Critical theory, social studies, and citizenship education are presented as associated. Once theory is introduced, more time is spent engaging with practice. Examining mandated curriculum assists beginning teachers understand the expectations for teaching content areas. For example, in Ontario, Canada, the Ministry of Education clearly outlines the goals, perspective, and processes for teaching citizenship education in social studies. For what a citizen is, the document states: "The responsible, active citizen participates in their community for the common good." ([11], p. 9).

The "common good" is a significant theory to unpack in and of itself. How the notion of "common good" works inside of both democratic and capitalist nation states, like Canada, all while contemplating critical theories is a significant task for beginning teachers. In following inquiry-based pedagogy, teacher candidates are encouraged to explore these theories and notions *with* their students, recognizing that becoming an active citizen is a process that is personal, contextual, and experiential. Building on perspective and process, the Ministry document explains, "students are given opportunities to learn about what it means to be a responsible, active citizen in the community of the classroom and the diverse communities to which they belong within and outside the school. It is important for students to understand that they belong to many communities and that, ultimately, they are all citizens of the global community" ([11], p. 9). To reach that understanding teachers must engage in citizenship education through critical inquiry pedagogy.

In the Ontario context, each grade of elementary school (grades 1 thru 8) is assigned two topics in Social Studies (one topic in each of the two strands), see **Figure 3**. The topics are well suited to critical inquiry-based pedagogy for active and responsible

The topics treated in the two strands for Grades 1 to 6 are listed below.

A. Heritage and Identity
Grade 1: Our Changing Roles and Responsibilities
Grade 2: Changing Family and Community Traditions
Grade 3: Communities in Canada, 1780–1850
Grade 4: Early Societies to 1500 CE
Grade 5: Interactions of Indigenous Peoples and Europeans prior to 1713,
        in What Would Eventually Become Canada
Grade 6: Communities in Canada, Past and Present

B. People and Environments
Grade 1: The Local Community
Grade 2: Global Communities
Grade 3: Living and Working in Ontario
Grade 4: Political and Physical Regions of Canada
Grade 5: The Role of Government and Responsible Citizenship
Grade 6: Canada's Interactions with the Global Community

Figure 3.
Topics in the social studies curriculum ([11], p. 22). © Queen's printer for Ontario, 2018. Reproduced with permission.

citizenship. It is worthwhile to note the topics outlined in the curriculum are broad based, open for multiple perspectives to engage in the inquiry. The concept of change in the Heritage and Identity strand acknowledges that over time and place there is change and difference in what we understand to be roles, families, traditions, in a community. Binaries are gone and broad explorations of the past, present, and future as well as local and global, and Indigenous peoples, government and settlers are included.

The Ministry provides a detailed framework for citizenship education, see **Figure 4** ([11], p. 10). Applying a critical lens, the frameworks lends itself well to achieving the goals for active citizenship education: structures, active participation, attributes, and identity. These elements represent areas for addressing issues of equity and considerations for the "common good" in society. "Structures" address the institutional elements of society and how those work for against individuals and groups at present and over time. "Attributes" address the cultural understandings, values, and ways of being that support or hinder equity. "Identity" addresses the individual and how one experience power or oppression based on their identity and history in the context. And, "active participation" engages the other elements in activism for the "common good". The second layer outlines the knowledge, skills, and attitudes students should develop and ways for developing them for the goals of citizenship. The inner layer of the framework explores potential topic areas. The topic areas listed are broad in nature and complement the "strand" or topics/themes provided in the curriculum.

While there are no universal models or standard for teaching citizenship education through critical inquiry, how educators design and use the tools and philosophies of such a pedagogy depends upon students and teachers' everyday relations of power, their lived challenges, and experiences. The ideas and priorities will play out differently in different classroom communities. The framework shared here (**Figure 4**) is one example of how teachers may frame their practice to allow for student voice and experience using critical inquiry-based pedagogy to lead the way towards responsible, active citizenship.
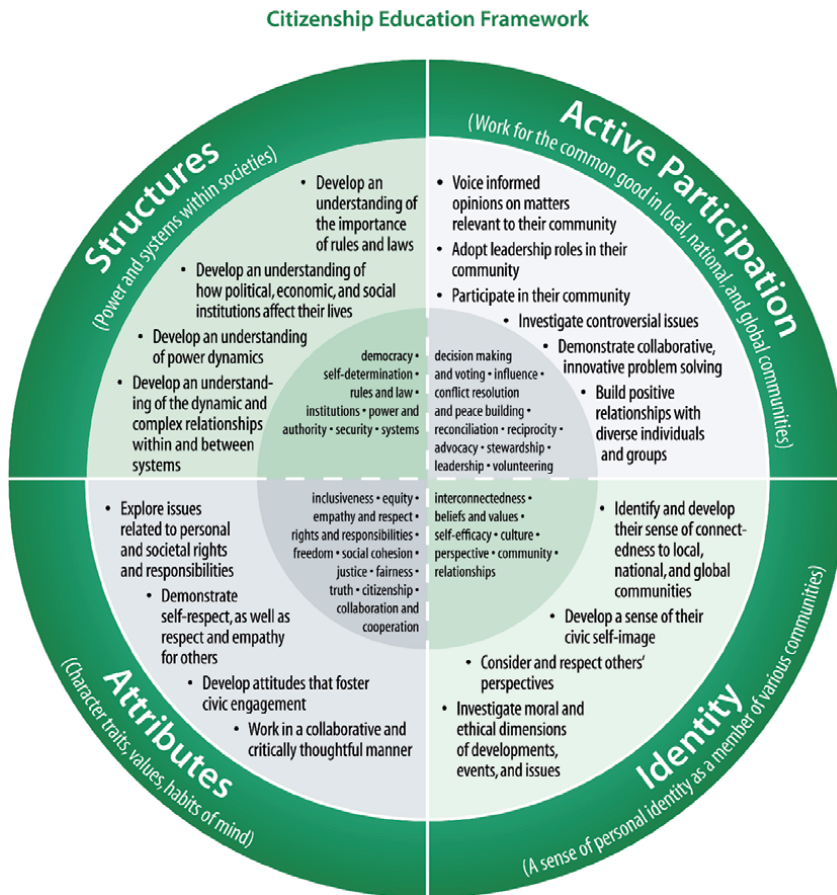
Figure 4.
Citizenship education framework ([11], p. 10). © Queen's printer for Ontario, 2018. Reproduced with permission.

5. Portraits of elementary teachers work for citizenship education

Teachers approach citizenship education in a number of ways. Even when using the same frameworks, practices may look different depending on the priorities and needs of the classroom and school communities. The following two portraits illustrate elementary teachers' work using critical inquiry-based pedagogy for citizenship education.

5.1 Portrait one: 2nd grade class explores identity

Beach and Cleovoulou' study of critical inquiry-based classrooms share the details of a second-grade urban classroom of students who were curious about race [33]. The teacher overheard the children chatting over several days about skin color and they began to express interest in their identities based on their skin. The teacher took notice of the conversations and took the opportunity to extend the discussions to anti-racism through an exploration of identity [33]. Using a picture book to start the discussion, students asked, "What is race?" What is racism?" "Who am I and what about it?". These lofty questions coming from seven-year old children framed the learning. For this type of learning, the teacher was clear about her vision for teaching:

"I love involving children in the stories and children being able to make a change or enacting a change...I find what I want children to do is have a deeper exploration and connection to themselves, to Canada, their culture, to their race and others, to biases that maybe they hear express or express themselves...so there are two parts to that—there's finding the beautiful books with the beautiful stories and what happens in those books we can look at critically." ([33], p. 169).

The children explored their identities and their thoughts about race, and with the support of their teacher, framed their work in affirmation and appreciation for identities ([33], pp. 161–162). At the end of the unit the class invited their families to the classroom to celebrate everyone's unique identity. A key learning in the process was that everyone's unique identity within the collective space of the classroom community was important. Each student was special and it was important to recognize and affirm each person as a unique part of the class. Cleovoulou and Beach's seven principles from critical inquiry-based pedagogy [31] were demonstrated in this approach to citizenship education.

A shared reading of Let us Talk about Race, a story by Julius Lester [38], explores ideas of race, self-respect and acceptance of others, launched a study of identity in the second-grade classroom. By selecting this text, the teacher set up the discourse of race and anti-racism in a way that she was able to probe and address the issues from several angles; through a narrator, a story with several entry points for explorations, and visual cues from the text. The text remained on the chalkboard ledge for the duration of the year for students and teacher to refer back when needing to highlight key learnings about identity and community. Encouraging student dialog through purposeful text selection led to the development of autobiographic work to explore citizenship.

The learning for responsible, active citizenship took shape around the development of an autobiographic book the teacher named a "Selfology". Throughout the unit, children engaged in a variety of experiences where they were encouraged to gather data about themselves and their family history and represent the information in creative ways. Each student created their own selfology text. To create the selfology, students connected the stories of unique identity in the Lester text to their lives through ongoing reflective practice ([33], p. 169). The opening lines of Lester's [38] book, "I am a story, so are you, so is everyone" gave students "in" to tell their own story in the form of an autobiography. Information was gathered and knowledge developed through texts, class and group discussions, interviews with family, and reflective practice.

Student voice was encouraged through the teacher's use of asking open ended questions as a means to develop deeper connection to identity and sense of belonging. ([33], p. 173). Open questions such as "so who can be in a family?" ([33], p. 172) invited students to bring multiple perspectives to the discussion and also allowed for misconceptions to be brought forward. The ongoing discussions that took place in knowledge building circles ([33], p. 173) (forums of discussion where children are seated in a circle and ideas are shared with children responding and building, analyzing, refuting them) allowed for misconceptions to be guided along and reconsidered.

The unit emphasized empowering student voice both in the public sharing of information and the personal reflective practice and artwork that made their final product (see **Figure 5**).

Pages of each student's Selfology were compiled and the end product was an appreciation and celebration for each student's identity and place in the community. Pages included a "family flower" was created that placed the child at the centre of the image and layers of petals included photos of people who contributed and were important people in the child's life (blood relative and otherwise) were glued to the petals. The teacher noted that creating a family history with the child at the centre, "allowed child to determine who was significant in their life, who played a role in their life." ([33], p. 178). This re-design of the traditional family tree offers

Figure 5.
A Selfology cover ([33], p. 171).

an explicit critical re-reading of who is in a family. Other pages in the Selfology included an interview with a relative, a timeline highlighting significant life events, and a self-portrait (see **Figure 6**).

The purpose of the self-portrait was to build affirmation of identity in young children; to have children recognize that each person is different and unique and that everyone is special. Furthermore, students were guided to discuss that in Canada all people, unless they are First Nations, Métis, or Inuit, come from another country. A sense of the self and the Other was central to the learning and to the process of developing an understanding of identity central the development of responsible, active citizenship. Ultimately, the six-week unit of study brought forward a high degree of
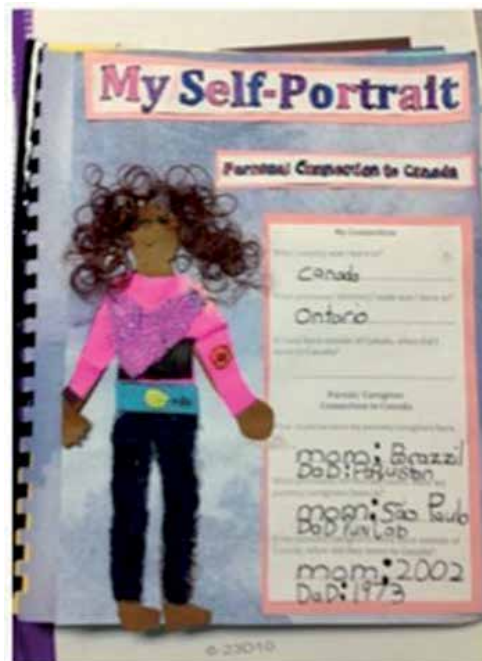
Figure 6.
The self-portrait page of the Selfology ([33], p. 173).

affirmation and recognition of the value of identity and created a sense of belonging for children within their classroom community. This unit of study was, as most inquiry-based learning, takes on an integrated approach and combined language, literacy, visual arts, and social studies. The Grade 2 Social Studies topic, Changing Family and Community Traditions (see **Figure 3**) is highlighted here.

5.2 Portrait two: 6th grade class explores their relationship to nature

Natural Curiosity [18] is a teacher resource that looks at critical inquiry-based pedagogy through the lens of environmental reciprocity. Environmental reciprocity, the connection and responsible care for the environment, is an act of responsible, active citizenship. Natural Curiosity shares stories of teachers' work; one story in particular illustrates 6th graders' transformation to responsible, active citizenship using an integrated approach to curriculum. The teacher introduced the topic of climate change. Discussions, idea sharing, questioning, and outdoor exploration ensue and activism emerged from the students themselves ([18], p. 263).

Students participated in knowledge building, a process where they not only share their own ideas but students build on each other's ideas and theories using a computer database ([33], pp. 264–265). It was only by immersion, gathering and organizing information, and time to process that students began to invest in the ideas related to climate change. Eventually, students asked the question, "Shouldn't we be trying to do something about this?" ([18], p. 265) and from there activism set in. Critical pedagogy, the desire to take action towards justice, is integral to authentic responsible, active citizenship. The teacher reflected on the process and explained, "by giving them time to understand the mission, letting them pursue their own areas of inquiry, the "action" part came naturally from them and it was much more impactful" ([18], p. 265).

The next step involved brainstorming ideas for different types of actions. Knowledge building circles continued the inquiry where students brainstormed and collaborated to come up with viable ideas for change. Through student-led discussions, where student voice was prioritized, the idea of bringing a guest speaker to class arose. The teacher's willingness to pause and follow the students' lead led to student investment. The teacher's role was to support student ideas and bring the suggested guest to the classroom. The teacher reflects on the learning, "I really believe that [the guest speaker] was the moment the class moved away from being engaged to being empowered. It left the students with a sense that anything was possible". Through critical inquiry, the students were experiencing active citizenship.

Active citizenship then led to a sense of responsibility. Empowered with knowledge and a feeling that they could induce change, students chose to write to their members government. A member of parliament came to visit and the class also received a letter acknowledging their good work. The teacher confirmed, the responses from the government were "such a validating experience for the students, who strongly believed they were tackling a 'real' issue and were being taken seriously" ([18], p. 267).

Field trips and ongoing critical inquiry-based pedagogy ensued. The students spent a lot of time outdoors, planted trees around their school and to culminate the unit, students held a "Climate Expo" for their school mates. This event gave students a forum to share their work and actions for addressing climate change. In the end, the critical inquiry-based pedagogy that began as an exploration of their relationship to nature yielded the following outcomes from their responsible, active citizenship:

1. The school made a commitment to becoming an Eco School

2. We inspired other classes to explore the problem of climate change

3. Our custodian has made it a priority for the school to switch to energy efficient lights

4. We are going to try and implement "lightless" lunches where each class turns off their lights during the lunch hour

5. We are going to monitor our waste

6. We share our mission with thousands of people on social media

7. We inspired other teachers to try a different pedagogical approach ([18], p. 270).

Ultimately, this unit of study emphasized several elements of both critical pedagogy and inquiry-based learning. Among them, questioning, collaborating, data gathering and organizing, communicating, were prominent. From the high degree of student-driven learning, which led to an investment in the learning, students developed a sense of responsibility which sparked activism. The teacher reflected on the experience:

"Realizing the freedom [the students] had during this inquiry, the students became much more engaged in the process. They eagerly sought answers to their questions, and felt free to ask more. It also became very apparent to the students that with freedom comes responsibility, and they took on this responsibility by being accountable to each other and to the inquiry process. They realized how important their mission was, and with that realization, our classroom environment changed: it looked, felt, and sounded different as we made the shift from engagement to empowerment...They knew and talked about the importance of this empowerment and its impact on their ability to make decisions in the future. If students feel like they are in control of their lives, even at a young age, it will grow with them. I believe that a student who has a sense of empowerment will be unstoppable" ([18], pp. 269–270).

This unit of study took an integrated approach and explored areas of science, language, and social studies. The Grade 6 Social Studies topic Canada's Interactions with the Global Community (see **Figure 3**) is highlighted here.

What we see in the two portraits are elements of critical inquiry-based pedagogy for citizenship education that aim for responsible, active citizenship. In portrait one, second graders explore issues of race, racism, and diversity through a reflexive inquiry; that is, students engaged in artful and thoughtful autobiographic work of their own identities and celebrated with their class as part of building an inclusive community. In portrait two, sixth graders explore issues of climate change and active citizenship whereby students learned about climate change and then participated in advocacy by writing to their government and sharing information with their school community. Both portraits have dimensions of critical pedagogy including examining sociopolitical issues and advocacy. Both portraits use an inquiry-based pedagogy with students' questions guiding the learning process (see **Figure 2**). It is through the pedagogical approach of critical inquiry that responsible, active citizenship is fostered.

6. Conclusion

This chapter explores citizenship education as the philosophical underpinning or vision for teaching in the elementary school classroom. Beginning in preservice teacher education, citizenship education may be developed as a perspective and

pedagogical approach to teaching by emphasizing the importance of developing a vision for teaching that is critical and inquiry-based in nature. By developing a vision or perspective for citizenship education that includes critical inquiry-based pedagogy, teachers can incorporate contemporary teaching and learning to all subject areas. Social Studies is the subject area that was used in this chapter to demonstrate how content and pedagogy can be used to activate strong understanding and engagement with responsible, active citizenship.

Government documents that reflect 21st century pedagogies for curriculum provide beginning teachers, as well as seasoned teachers, with helpful resources and guidance as they adapt mandated requirements to their school and classroom context and communities. By offering resources that are in keeping with contemporary modes of thinking and practice, teachers have opportunities to plan and teach in ways that are consistent with school districts across regions while addressing the needs of their students. Scholarly resources and teacher resources that provide examples of enactments of teaching for responsible, active citizenship are also helpful for illustrating the varied ways in which teachers can engage with elementary school curriculum using 21st century pedagogies.

Conflict of interest

"The author declares no conflict of interest."

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Green Pedagogy: Using Confrontation and Provocation to Promote Sustainability Skills

Anne Fox and Christine Wogowitsch

Abstract

The chapter describes the features of Green Pedagogy, originally developed in Austria in German where it is still being actively researched. Green Pedagogy offers a structured approach to lesson planning to achieve embedded sustainability competencies within a specific vocational or academic field. The Green Pedagogy approach achieves sustainability competency through a controlled appeal to the emotions and the explicit uncovering of learner values to take on new ideas and new perspectives in a more sustainable direction. The approach is compatible with many recommended Education for Sustainable Development (ESD) pedagogies such as project-based teaching and the case study approach. The approach also implements several more general evidence-based pedagogical strategies such as concept change. The key feature of Green Pedagogy is that the process ends with locally based action whose wider implications are explored. We relate some of the challenges involved in translating a pedagogical approach from one language to another as the ProfESus Erasmus project aimed to disseminate Green Pedagogy to a global cohort of teachers of home economics in English. Reactions of participating teachers in the piloting of the training are explored and some practical solutions offered.

Keywords: Green Pedagogy, home economics, pedagogy, sustainable consulting, sustainability education

1. Introduction

Green Pedagogy is a six-step framework for planning learning experiences from a sustainability perspective that can be applied at many different educational levels and in many different academic and vocational directions. A notable feature of Green Pedagogy is that students not only learn about topics from a sustainability perspective but that they also apply what they have learned directly, to affect their immediate environment, as well as being led to reflect on the potential of their local action for the future. These last two steps of Green Pedagogy ensure that a sustainability perspective is one of empowerment and personal growth rather than simply a source of despair and paralysis in the face of large and intractable problems. Green Pedagogy, as other sustainability approaches, is based on an onion model of wellbeing that assumes that economic wellbeing is dependent on social justice, which in turn is dependent on environmental wellbeing, the so-called strong sustainability model shown in **Figure 1**. This contrasts to the primacy that is usually accorded to
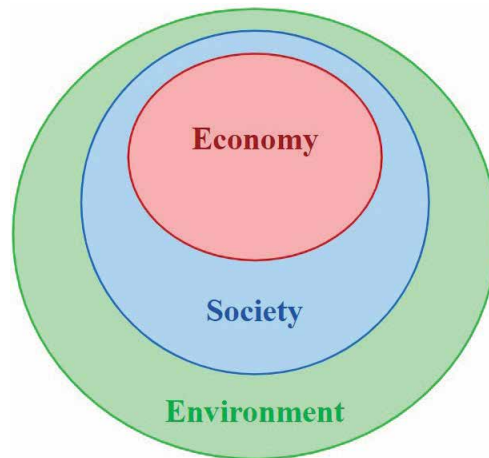
Figure 1.
Nested strong sustainability model.

economic wellbeing in many day-to-day decisions. The final two stages of Green Pedagogy are the way in which the approach builds sustainability competence by automating a sustainability response in the learners; in other words, building a sustainable mindset by making visible the sustainability values upon which daily problem solving can be based.

This chapter is narrated from the perspective of a project that involved the practical transfer of the Green Pedagogy concept from its Austrian-German origins to English in a specially developed blended learning teacher-training course. The linguistic challenges reflect to an extent those faced more commonly in the other direction, from English to a local language and context. The European ProfESus project developed a training course for home economics teachers to help them promote a sustainable mindset in their learners by applying the Green Pedagogy approach and this experience will be used as a case study to illustrate the application of the approach and how it is received both by in-service teachers and student teachers. The coordinating institution of the project, University College for Agrarian and Environmental Pedagogy (UCAEP) in Vienna, Austria, is home to the well-developed Green Pedagogy, which formed the pedagogical basis of the course developed by the project for deployment at European level and beyond. This chapter describes the challenges and successes of translating and transferring a specific pedagogy across languages, cultures and contexts.

Globally, home economics has diminished as a school subject but there are indications that governments (such as Australia's sustainability curriculum) may recognize the value of strengthening home economics at the school level, given rising global levels of food waste and lack of knowledge about healthy eating and food preparation. There is therefore a direct link between home economics and the issue of sustainability, but several other school subjects exist for which this pedagogy is suitable.

2. Background to Green Pedagogy

Green Pedagogy or *Grüne Pädagogik* [1] was developed at UCAEP in Vienna as a way of promoting a strong sustainability mindset [2–6] in learners. The main aim of the approach is to uncover and explore the values of the learners by provoking emotions and to extend their perspectives, especially regarding the wider range of potential stakeholders, to guide learners to an actionable vision that it is possible to

apply in their local context; a "glocal" approach. The approach has been developed by UCAEP in detail [1] since 2010 when it was first introduced as a way of connecting the agrarian, environmental and pedagogical training strengths of the College. Green Pedagogy was deliberately developed as a practical, implementable pedagogy as a counterpoint to the political policy imperative of Education for Sustainable Development (ESD) which has its roots in international organizations such as UNESCO.

Implementing Green Pedagogy was a central aim of the ProfESus Erasmus+ European project to develop a teacher-training course for home economics teachers that was proposed and led by UCAEP over two and a half years from 2016. The aim of the course was to train home economics teachers to help their students develop professional competencies that were more sustainable. The 8 ECVETS/ECTS blended learning course included several innovative aspects, but one of the main aims was to spread the practice of the Green Pedagogy approach out of Austria to the rest of Europe and beyond.

The first obstacle faced by the pan- European project group with partners from Italy, Latvia, Denmark and Finland as well as Austria, was that there was no description of *Grüne Pädagogik* in English. A literature search for Green Pedagogy in English in 2016, when the project started, led to few results. Those results that did occur were mostly where the concept of Green Pedagogy was used in the same way as the adjective 'green' is used in many English contexts to mean something environmental, sustainable or organic but that did not refer specifically to the Green Pedagogy approach which had been painstakingly developed over several years in Vienna. The first challenge is that the developers of *Grüne Pädagogik* had adopted an adjective that was in general use in English but had no specific reference to their work although, as we shall see later, this was not to be the only linguistic challenge involved.

Most descriptions of sustainable education such as Sterling's Future Fit [7], and The Natural Step [8], describe a holistic, multi-faceted and long-term process approach and Green Pedagogy is no exception. This leads to a barrier of complexity when translating from German to English. However, since the Green Pedagogy approach is based on some well-known pedagogical theories such as constructivism [9, 10], experiential learning [11] and conceptual change [12], these provide familiar footholds into the approach.

3. Aim of Green Pedagogy

The aim of Green Pedagogy is to go beyond surface learning, beyond knowledge and skills and to target long term attitudes or mindset. Attitudes can be further subdivided into values and collaborative skills [13]. By targeting attitudes, the aim is to achieve deep learning about sustainability based on a more conscious understanding of how actions, such as the way in which one plans and prepares a meal in the home economics class, support or negate existing values. In this way, sustainable practices cross over into other areas of the learners' lives at home, at work and in their community in the form of deeply ingrained sustainability competencies such as those developed by UNECE [13].

4. What is Green Pedagogy?

The Green Pedagogy approach to embedding sustainability in the classroom can be summarized in **Figure 2**. Already in translating the diagram from German
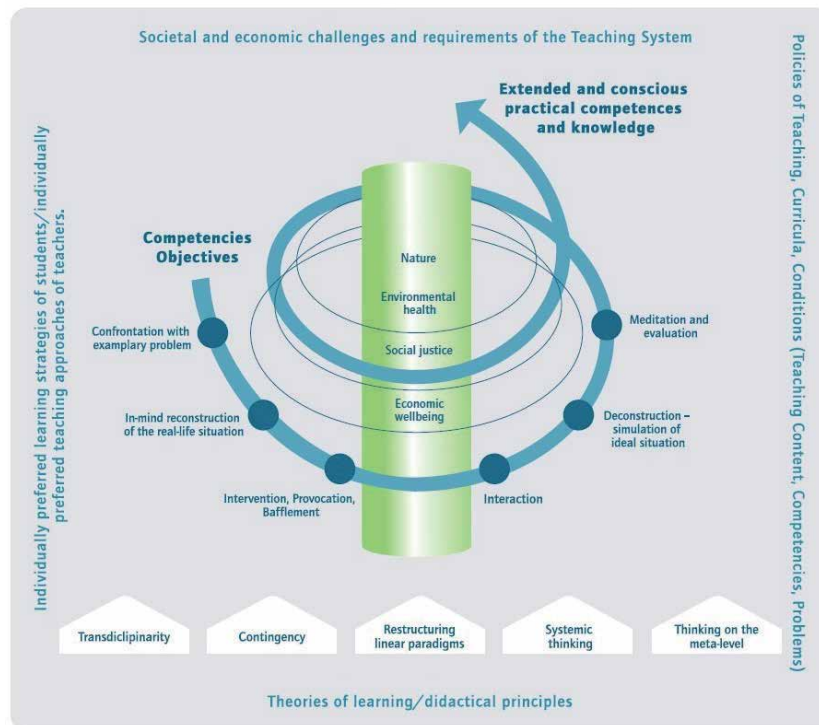
Figure 2.
Green pedagogy: A visual representation.

to English several important decisions have been taken that will lead the English speaker in certain directions that may not be the intended one. In the remainder of this chapter, we will explain the diagram and end by considering some of the questions that teachers raised when meeting this framework for the first time.

The approach is primarily a pedagogy but can also be used to guide consultancy work. The advantage of Green Pedagogy is that it provides a template for learning activity planning, with the six dots at the base of the spiral representing a recommended lesson planning structure and sequence. The plan need not be restricted to a single timetabled lesson but can be stretched over a series of connected lessons that could represent a case study, a project, a research activity, a lab activity, work placement or a field activity. To account for the fact that a single cycle of Green Pedagogy may stretch over several timetabled lessons, we will use the term learning activity plan (LAP) to refer to a Green Pedagogy cycle. The six steps can be applied across disciplines including most of the subjects that are commonly found in a school timetable. The six steps can also be applied at different education levels from lower primary to higher education. The creators of Green Pedagogy assert that this is a pedagogy that could be used as an everyday pedagogy in most cases [14].

Figure 2 conveys the holistic complexity of Green Pedagogy, which comprises the six steps that should be present in every planned learning activity. These six steps are shown against the background of a rising spiral, which indicates the continuous nature of the process to acquire experience-based competency based around the main pillar of sustainability that comprises economic wellbeing, social justice, and environmental health in the center. The first implication of Green Pedagogy is that this should not be a one-off activity in the way that, for example,

some educational institutions include project-based activities on an occasional basis. A major reason for this is that sustainability in this model is seen as a competence that can only be developed with practice over time, rather than a body of knowledge that can be covered after which educators can move on to the remainder of the curriculum.

Another significant aspect of the diagram is that it refers to 'practical competencies' at the top of the spiral. The implication of this is that the sustainable competencies should always be practiced in conjunction with school subject competencies or vocational competencies. In the case of the ProfESus project, sustainability competencies were promoted in conjunction with home economics competencies. In this way, sustainability is embedded in everyday practice rather than seen as a separate bolt-on activity. In the case of the ProfESus project the target group was home economics and hospitality teachers and trainers. Thus, in the pilot training course, the participants were expected to state explicitly which sustainable competencies and which vocational competencies they were targeting in every learning activity.

We will deconstruct the diagram from the bottom up.

5. Pedagogical foundations

Green Pedagogy is based on several pedagogical foundations, many of which are inter-linked. These are at the base of **Figure 2** from left to right:

5.1 Transdiscplinarity

Systemic thinking is a cornerstone of effective sustainable action [15]. The typical school timetable divided into different subjects is the antithesis of systemic thinking, therefore Green Pedagogy encourages teachers to cross disciplines. Transdiciplinarity refers to literacy in and ability to understand concepts across multiple disciplines. In the ProfESus project an example of this was when one of the home economics teachers planned a project in collaboration with the English teacher in a Swedish school since a great deal of important sustainability material is found in English. This was an authentic and natural way to cross disciplines.

5.2 Contingency

This is a reference to contingency theory [16] which says that every situation is unique and that there is therefore no single optimal solution but only a solution that takes account of the internal and external aspects of whatever specific situation is being analyzed. This reminds teachers that whenever they take up a new topic in class, they need to encourage their learners to evaluate the internal and external situation of the problem being analyzed and come up with their own specific solutions and furthermore that several solutions may be equally appropriate. Going further, contingency also points to the potential for learners to propose viable solutions to real world problems that could be implemented.

5.3 Restructuring linear paradigms

The complex nature of sustainability questions means that it is useful to explore problems and their solutions in a holistic and non-linear way in contrast to the reductionist approach increasingly seen in the scientific disciplines according to Foerster [17]. This aspect of the pedagogy is not only relevant to discussing existing

situations but also relevant to the ability to conceive of different future scenarios as variables change.

5.4 Systemic thinking

Systemic thinking is well known as a key factor in developing a sustainable solution to real world problems [15] since students must see all interwoven aspects of the system under consideration in their own community. Thus, systemic thinking is a precondition for any effective sustainable learning process. Systemic thinking encourages problem solving through defining the problem as part of the system from which it derives and then looking at different aspects of the system to see which of these need to be, and which can be adjusted to come closer to a solution of the problem.

5.5 Meta-thinking

Since the Green Pedagogy approach is more than mere knowledge transfer but also about developing a sustainable mindset around relevant collaboration and values, it is appropriate to add a layer of meta-thinking. This is supported by the extensive work of educators in promoting thinking about thinking as a way of raising learning levels in general. As an example, the work of Ritchhart, Church and Morrison on what they term Visible Thinking [18] is enabling educators globally to engage learners in thinking about their thinking to measurable effect in terms of achieved learning. Meta-thinking is important in the application of Green Pedagogy in that it supports the generation of novel solutions to intractable and complex sustainability problems. It has also been pointed out that the increased complexity of the modern world requires increased self-reflection, which is an integral part of meta-thinking [14].

It could be argued that these five cornerstones of Green Pedagogy seem to overlap, and that systemic thinking could be sufficient to cover them all. However, each cornerstone highlights a specific aspect of systemic thinking that is of benefit when being considered by teachers separately as they develop their learning activity plans.

6. The six steps

It is recommended that once a teacher or institution has made the decision to promote a sustainable mindset in their learners, that most learning activities should follow the Green Pedagogy format in the order in which they are described across the six steps. The learning activity plan template developed by the ProfESus project helps teachers planning one or several lessons or trainings. It is often more appropriate to go through the six steps over a series of lessons rather than in one short 45-minute or 90-minute timetabled class. The learning activity plan (LAP) [19] template is thus a tool to act as a prompt for teachers so that they do not forget to highlight the targeted professional and sustainability competencies and how they will be exercised over the six steps. The LAP template can be used as an aide-memoire rather than being explicitly filled out before each lesson or group of lessons.

As we describe the six steps below, it should be noted that where there is a choice of topic, the teacher should choose 'wicked problems' (*i.e.* unGoogleable problems) [20] that are part of complex systems and of direct relevance to the learners by preference. These could also be in the format of a case study. Case studies are particularly well suited to the Green Pedagogy approach because they often deal with

wicked problems and 'bridge the gap between theory and practice and between the academy and the workplace' [21].

7. Sample case lesson

We will now describe the six steps in more detail using the example of menu planning to illustrate how each step follows the previous one. 'The Menu today can change your World Tomorrow' is a sample lesson plan built around the application of Green Pedagogy. The main purpose of the lesson is to raise learners' awareness of the criteria to use in preparing menus for specific target groups such as kindergartners, hospital patients or residents in elderly care homes. The conventional way of tackling this topic is by focusing on nutritional values and individual preferences, tempered by budget constraints. The aim of the case study lesson is to build awareness of the complexity of planning healthy and sustainable nutrition and to use extended criteria in concrete planning situations.

7.1 Step 1: Confrontation with the problem

In this stage, learners must come to the realization that a specific problem exists and needs to be solved, achieved by finding out what learners already know about the designated topic. In the case study lesson, this was done by exploring the concept of 'meal' by showing images of a wide variety of meals, some of which probably pushed the boundaries of some of the learners. They included traditional meals, hospital tray meals, insect dishes, vegan dishes and 3D printed food. A key aspect of Green Pedagogy is to evoke and use emotions in order to prompt action and reflection and this is particularly essential in this first step in order to motivate learners. For example, most people would react to the idea of an insect-based meal, such as the one shown in **Figure 3**, with disgust.

7.2 Step 2: Reconstruction

This is the step during which misconceptions are uncovered and confronted. So, the reconstruction refers to what is put in place of misconceptions. In the case study lesson, the learners were presented with a set of weekly menu plans from different types of institutions such as schools, hospitals, elderly care homes and kindergartens. The learners were then asked to analyze the menu plans according to nutritional, practical and dietary requirements. This step is the first stage of conceptual change [12] where the teacher finds out what the students believe they know about the topic. This stage leads directly to the next step in which the perspective is widened.

7.3 Step 3: Provocation

In this stage learners are prompted to suggest solutions by being provoked with unexpected possibilities. Ideally the provocation should come as a response to the direction in which the learners have been going so far. Therefore, the provocation can neither be the start of the lesson nor be completely planned in advance. An important aspect of this stage is to widen the scope of stakeholders involved in the problem. In Green Pedagogy, this stage is also referred to as "irritation" and this can be confusing for English speakers as we explore later in this chapter.

In our case study lesson, this stage was achieved by showing the learners images of the food production, consumption and waste cycle involved in some of the menu plans that had been described. These included images of intensive farming, use of

Figure 3.
Tarantula spiders as a meal.

Figure 4.
Do eggs and chicken come from battery farms?

pesticide, intensive farming methods of animal husbandry regarding pigs and milk cows as well as images of the food waste and garbage that is a common end result of this type of institutional catering. At this point the learners realized that they had not considered intensive farming methods (as seen in **Figure 4**) or pollution problems that were embedded in their menu plans. Their perspective had stayed almost wholly in the kitchens.

This step is the second stage in the conceptual change process in which beliefs are challenged. This stage was an invitation to re-visit the menu analysis stage to discuss possible improvements. In a learner group that has already been exposed to Green Pedagogy for a while, this step could sometimes be a rapid and simple check whether all stakeholders have been considered.

7.4 Step 4: Interaction

The interaction stage is necessary for learners to process and evaluate possible solutions in the light of the wide range of additional perspectives met in the

previous stage. The interaction stage is an opportunity for collaborative analytical discussion. In the case study lesson, step 3 was a silent gallery walk. Therefore, after the walk, the learners were full of ideas to discuss what needed to be done to improve the menu plans in this interaction stage based on the new information about the food production chain. In the sample lesson, this involved discussion and writing notes on the posters about what additional information they needed before amending their menu analysis. It was an opportunity to voice the emotions that arose from the silent gallery walk of the previous stage. At this point, it is easy for learners to be overwhelmed by feelings of frustration and the teacher needs to use moderation and facilitation skills to make this a useful interaction. This is the final stage of the conceptual change process in which earlier beliefs are amended in the light of new information and thinking.

7.5 Step 5: Deconstruction

This stage is needed to reduce learners feeling powerless in the face of the problem under consideration. In this stage, learners are prompted to relate what they have learned to their personal experience. In the case of the sample lesson, learners were asked to consider their school canteen and what they could do to improve the situation in this local context. They suggested that the meals at school should be labeled according to the different aspects that they had discussed. This included adding icons to the school menu showing whether the meal is organic, vegetarian or produced according to recognized animal welfare benchmarks. In this way, learners can create viable solutions to real life problems.

7.6 Step 6: Reflection

This final stage requires the learners to create a vision of where their ideas or actions from stage 5 could lead. To embed learning, it is equally important to ask learners at this final stage what they learned in this process. In the case study lesson, this was achieved by asking what the effect would be if canteens and restaurants across the region adopted their new icon system.

The six steps do not necessarily take the same amount of time each. In some cases, it will be appropriate to spend very little time on one or two of the steps. For example, in some contexts it is possible for the provocation stage to take only two minutes.

7.7 Synopsis

We can also look at how the case study lesson plan sits on the pedagogical foundations at the base of the diagram. The proposed LAP becomes transdisciplinary at step 3 where the learners are invited to consider the wider context of their menu plan analysis. Contingency is included once the learners are prompted to consider how the wider menu analysis can be applied to their local context. The restructuring of linear paradigms occurs when the learners are prompted to revisit their menu plan analysis in the light of the new information on food production methods. The third step prompts learners to think about the whole system of food production and therefore represents systemic thinking. Finally, there are several points in the lesson where learners are prompted to think at a meta-level, when they are for example invited to consider what constitutes a meal for them, how much the production methods of food affect their emotions and when linking the general principles of menu planning to their local context and to their personal preferences.

8. Theoretical underpinnings

The Green Pedagogy approach is based on several theoretical foundations that have been extensively described in the literature in German and summarized in English [1]. These include:

Kolb's experiential learning in which learning is 'a continuous process in which experiences are collected in concrete or abstract form and are then used in experimental or reflective ways' [11]. In Green Pedagogy this is manifest through the way in which students learn through the deconstruction, reconstruction, and reflection of a specific problem (Steps 1-6).

Green Pedagogy also reflects Situated Learning [22] by proposing that learning is bounded by the circumstances and settings in which it happens, including the existing mental frameworks that learners bring to the room. This is manifest in Green Pedagogy by the insistence on starting with a meaningful problem and probing what learners already believe about the problem before going on to discover new solutions (Steps 1-6).

The theory of concept change [12] aims to counteract incorrect beliefs by first examining what learners already know about the considered problem or topic before challenging these beliefs with new perspectives (Steps 1-4).

Constructivism [9]: Green Pedagogy reflects constructivism in its step-by-step process that takes a learner from a known topic to a new understanding of the topic through collaboration, discussion, analysis and reflection (Steps 1-6).

Reflective thinking [23]: The whole process of Green Pedagogy embodies Dewey's reflective thinking which he describes as follows: 'Reflective thinking, in distinction of other operations to which we apply the name of thought, involves first a state of doubt/hesitation/perplexity/mental difficulty in which thinking originates. Secondly an act of searching/hunting/inquiry to find material that will resolve the doubt, settle and dispose of perplexity'.

Expansive learning [24] describes an approach to learning that aims to improve the lives of the learner and society at the same time. The approach uses a prescribed cycle of inquiry by highlighting the contradictions of the current situation (a specific type of problem-solving activity) and empowering the learner to find realistic solutions.

Figure 2 is bounded by reference to preferred learning approaches on the one side and constraints and requirements of applicable policies and curricula on the other. This means that Green Pedagogy can be applied in widely different educational settings. Green Pedagogy does not rule out using other proven effective sustainability approaches. It is compatible with UNESCO recommended approaches to sustainability [25] such as storytelling, project-based learning, and values education. The novel feature of Green Pedagogy is that it provides a format for planning learning activities that puts the dual competencies of sustainability and subject specific skills at its center, the whole based on learner values that are made explicit during the process.

We have described how Green Pedagogy can be applied in one specific home economics lesson, but it can be applied equally successfully to a wide range of other school and vocational training areas. The following list contains exemplars from different vocational and academic fields where it would be advantageous to employ the Green Pedagogy approach.

1. Agricultural practice: learning best practices for the control of weeds and pests

2. Geography: exploring the results and implications of different urban planning policies

3. Physics: exploring the implications of using renewable energy as well as the mechanics of efficiency

4. Hotel management: considerations when making decisions about purchase or lease of bed linen and staff uniforms, reduction of food waste

5. History: analyzing and learning from mistakes in the course of catastrophic events such as the Irish potato famine

6. Consultancy exercise: devising a new marketing strategy for a hospitality business such as a holiday activity center.

9. Implementation of Green Pedagogy

A summary of areas of current research into the application of Green Pedagogy in the classroom reveals some of the issues with which teachers may need to deal, when adopting it as a new practice. The identification of strengths and drawbacks of the concept of Green Pedagogy is a matter of ongoing research, for which lesson plans of experienced teachers are the material of continuing qualitative analysis to advance the concept itself further.

First results show difficulties in transfer to daily practice. Often, open learning processes without obvious clear solutions tend to be rejected by teachers and the processing of the resultant emotions is rather limited, even though bafflement and provocation are applied. Sometimes it proved to be hard to uncover multi-perspective points of view.

These results led to the development of follow-up courses to cover the demand for further training of teaching staff to meet the future challenges of sustainable teaching practice.

Another current research project deals with the strengthening of personal and social competencies in Green Pedagogy learning processes. It focuses on presenting concrete didactic measures to foster the development of personal and social competencies of learners. Therefore, the application of Green Pedagogy represents an active field of inquiry where not all best practices are yet finalized. This may present an additional challenge when attempting to translate the approach from its native German into English for an international audience.

10. Translation: the ProfESus case

The ProfESus Erasmus+ project developed an 8 ECVET/ECTS teacher training course aimed at home economics teachers and hospitality trainers to help them prompt sustainable mindsets in their students. The course attracted 35 participants not just from Europe but also from Pakistan, Egypt, Kenya and Tanzania. The 15-week blended learning course started with a face-to-face week in Vienna for Module 1 followed by two online modules in which participants explored different aspects of the pedagogy such as systemic and strategic thinking, collaboration, and values education in Module 2. There followed planning and execution of a lesson or series of lessons in Module 3 in their home setting and finally they met up again to exchange feedback on their experiences and make plans for their future practice in the classroom in the final fourth module which took place face to face in Finland. Course participants were introduced to Green Pedagogy in Module 1 in Vienna, revisited it as a pedagogical approach in Module 2 and were required to implement

it in their project lesson(s) in Module 3 by using the specially developed learning activity plan template in which the elements of Green Pedagogy were embedded. At the meta-level, the project partners planned the blended learning course itself to follow the Green Pedagogy structure. In the next section, we will review some of the questions and misunderstandings that our participants experienced as they tried to understand the translated version of Green Pedagogy in English. Note that for almost all the participants, English was their second language, which could have created an even greater remove between the original German version and their final understanding of it.

11. Areas of potential misunderstanding

The project had several opportunities to discover participant reactions to the new approach. These included the two face-to-face weeks, the learning diaries that formed a required part of the course, dialog during three online meetings that occurred during the online section of the course, the content of the responses that the participants gave to the required tasks and multiple feedback surveys during and after the course.

From the experience of the ProfESus pilot blended learning course the following issues regarding Green Pedagogy became apparent.

11.1 Irritation

The word as it is used in German can best be compared to the grit that forms the pearl in the oyster, meaning that this is a stage that can be used to generate new understanding and learning. It is unfortunate that the German word has its direct English equivalent, which is rather negative in meaning. Some of the ProfESus course participants therefore understood this stage 3 at first to mean that they should cause annoyance in their students, rather than the intended meaning that an attempt should be made to make learners stop and think when something surprising or out of place is presented to them.

11.2 Provocation

The challenge with this in stage 3 is that it seems too similar to the first confrontation phase, but also with placing it sometime into the lesson rather than at the beginning. Many teachers understand the value of starting a lesson by provocation, so waiting for this stage had to be justified. However, the second name for this stage, intervention, might make things clearer. Thus, a lesson starts with a confrontation that identifies and defines a problem and after exploration of that problem has begun, targeted interventions that widen the perspective of the problem, are brought in by the teacher.

11.3 The value of the last two stages

The issue of sustainable development as a central topic for a lesson is becoming more popular as the urgency of the problem becomes more apparent. Repositories such as the World's Largest Lesson and the British Council, which helps teachers globally teaching English, offer a wealth of free resources. It is common in these lesson plans to stop at the point when the sustainability problem has been described and analyzed. The last two stages of the Green Pedagogy approach are extremely important to combat feelings of hopelessness and lack of agency by focusing on

what students can do in their own context that relates back to the analyzed problem. In the example of the British Council lesson plan entitled 'Climate Change' [26], which does not follow the Green Pedagogy template, it is suggested that generating visions and solutions is added as a time-filler in case the lesson ends early, or the teacher needs to give some homework. Had this lesson plan been created using the Green Pedagogy approach it would have recognized that the last two stages of Green Pedagogy are critical for the mental health of the learners and should not be seen as optional extras.

12. Initial teacher reactions to Green Pedagogy

Green Pedagogy was new for all the non-Austrian participants in the ProfESus course. Even the participants from Germany, although German-speaking, had not been introduced to this approach before. For the Austrian participants, some of whom were recruited through the project coordinating organization, UCAEP, which also developed the pedagogy, Green Pedagogy was nothing new and already embedded in their practice.

In the blended ProfESus course, questions arose because of the unfamiliarity of the new pedagogical framework. Below are the four main questions together with responses.

1. Does the Green Pedagogy format not become repetitive over time? The response to this is that if each learning activity ends with a truly actionable plan at the personal level, this should maintain learners' engagement.

2. Can you apply this to all your lessons? The Green Pedagogy approach is almost subject agnostic. Although it may seem difficult to fit Green Pedagogy into the study of mathematics at first glance, there are wide possibilities to apply mathematical skills in the field of sustainable development, such as land consumption, food waste percentages or precipitation amount. Most traditional school and vocational subjects easily lend themselves to the Green Pedagogy approach.

   The question also refers to the use of Green Pedagogy throughout a course, which is implied in the methodology aims of Green Pedagogy and therefore it is beneficial to integrate sustainable work practices in most lessons.

3. Do you have to go through all the steps? It is recommended that steps are not omitted, and this is particularly important regarding steps 5 and 6, otherwise students can be left feeling overwhelmed and helpless.

4. Is this forcing the teacher views on to the students? The role of the teacher in Green Pedagogy is to provide additional perspectives for the learners to consider. These new perspectives may lead to new solutions that better chime with learners' existing values. Therefore, this is not about a teacher imposing their values on learners.

13. Identifying a sustainable mindset

We could attempt to see how well the concept of Green Pedagogy was embedded in our teacher participants by examining the learner diaries that we asked them

to compile as part of the four-month course. A text analysis carried out using a content analysis software tool showed that the concept of Green Pedagogy was a minor rather than a major theme for the ProfESus participants [27]. This indicated that there was more work to be done in conveying the practice of Green Pedagogy more efficiently in English and that a four-month course is insufficient on its own to effect sustainable change in didactics and education. A continuous peer-reflection process might help to implement Green Pedagogy enduringly into a wider field of learning.

14. Conclusions

Green Pedagogy is useful amidst the plethora of materials emerging from the UN Sustainability Goals initiative to help teachers include more sustainable approaches insofar as it gives clear guidelines at the lesson planning level. This pedagogical approach can be used at all levels of schooling and beyond in higher education. The 6-step process is also useful as a way of approaching consultancy briefs where the aim is to include a sustainability perspective. The second main advantage of implementing Green Pedagogy is that it can be used to lead educators to target both vocational (or subject-specific) competencies and sustainability competencies simultaneously. This means that academic or vocational skills are acquired through a sustainability perspective and that sustainability does not need to appear as a distinct topic in the school timetable since it can be infused across large parts of the existing curriculum. The Green Pedagogy guidelines can be justified by reference to established theoretical frameworks such as conceptual change. Learners can be overwhelmed by the intractable problems of the world and Green Pedagogy offers a way of countering this. An important aspect of Green Pedagogy is to allow learners to uncover their own values as a result of what they have been exposed to through the Green Pedagogy approach rather than imposing teacher values on learners. The approach encourages learners to widen their consideration of the range of relevant stakeholders affected by the problem as a way of highlighting the sustainability aspect of any problem. Thus, a systematic implementation of Green Pedagogy across an educational institution will lead to its learners understanding much more about, for example, the institution's suppliers, its treatment of waste and its local impact after first examining the chosen problem in a national or global context. The stakeholder understanding will also include the learners' own context at home and include the effect of the actions of family members. An important part of Green Pedagogy is to end learning activities with an actionable vision that learners can act upon rather than leaving the classroom feeling that all is hopeless. It is easily combined with other recommended sustainability education approaches and provides a useful checklist to ensure efficacy. Thus, Green Pedagogy is a useful addition to the sustainability education lexicon if some of the German origins are thoroughly explained, to ensure that Green Pedagogy transitions effectively from the German-speaking sphere to the English context. It is a pedagogy that can support transformative learning through the exploration and clarification of learners' own values.

Acknowledgements

Figure 2. By permission of the ProfESus project

Figure 3. From Flickr https://www.flickr.com/photos/slapers/6720032299/in/pool-1453665@N24/

Figure 4. Compassion Over Killing, CC BY-SA 3.0 <https://creativecommons.org/licenses/by-sa/3.0>, via Wikimedia Commons

Conflict of interest

The authors declare no conflict of interest.

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Chapter 14

Intentional Teaching: Building Resiliency and Trauma-Sensitive Cultures in Schools

Christian Scannell

Abstract

In a time where many students and their families are grappling with uncertainties and educators are faced with uniquely complex challenges in the delivery of effective instruction, the ability to create educational communities that respond to the needs of all learners is crucial. There is increasing emergence of technology and pedagogy that have facilitated connections to the classroom never seen before. Yet, educators and school communities need to respond to this time of uncertainty with the lens of trauma sensitive instruction, the creation of meaningful teacher-student relationships, and building the resilience necessary for students to thrive in the ever-shifting landscape of education. This descriptive paper explores strategies for implementation including creating safe spaces for learning, addressing disparities in learning opportunities, preventing academic disruption, and using a proactive approach to address stress and trauma in the classroom. The multitude of teaching modalities available has paved the way for a transition to fluid education but the need to do so with intentionality cannot be ignored. The transition to remote and hybrid learning may change the landscape of education forever, and with it comes the responsibility to ensure high expectations for student success are balanced with compassion, and rigidity is replaced with flexibility.

Keywords: trauma-sensitive instruction, pandemic resources, safe spaces, resiliency, connection

1. Introduction

Adversity and crises are commonplace throughout the world, with most individuals having experienced at least one adverse event in their lifetime. Yet these experiences and the ability to effectively adapt to them vary significantly from person to person [1, 2]. Significant events such as school shootings, natural disasters, and societal unrest have regularly gained national attention and created crises in educational systems that required responses. Adverse events have shown us that all contexts of individual lives are impacted, including educational environments, and that no one environment will solely be influenced [1, 3, 4]. Therefore, in the face of the current pandemic, we must recognize the impact on all spheres of an individual's life when designing education and learning opportunities. The previous crisis events were on a small scale, short-term basis, and did not create the type of

disruption that has been seen in the current pandemic. Covid-19 has presented a crisis that has influenced the entire globe and has fundamentally altered education as we know it. Being quickly found to spread via person-to-person transmission, the widespread response to Covid-19 was to implement social distancing measures, including at times quarantine, designed to curb the spread [5, 6]. Consistent messages from leaders in governments across the world emphasized the concept of flattening the curve, by measures such as staying indoors, working from home where possible, the closures of businesses and schools, and avoiding social gatherings [5–9].

While Covid-19 is not the only crisis that the educational system has ever faced, it is the one with the most widespread impact and that has posted the greatest number of challenges to overcome. In all of the other crisis experienced, the educational system did not have to make the shift away from in person instruction the way that they have in response to Covid-19. This past year has uprooted the world of education and has pulled the curtain open to just how unprepared educators and systems of education are for crisis situations. Covid-19 created a fast and unique challenge to educational systems, many of which were not equipped to pivot and change course. Educators were asked in a matter of days to completely shift from traditional education modalities to emergency remote learning, in many cases without the skills and resources to do so [10, 11]. As a result of this quick changing landscape of uncertainty, educators were forced to pivot to creative models for instructional delivery including online methods, both synchronous and asynchronous, hybrid models, and flipped classrooms. The introduction and incorporation of learning management systems became commonplace with many students and educators quickly being pushed out of their comfort zones and into educational environments that they were not equipped to manage [8, 11]. While some educators may have been prepared to face such a situation, the vast majority had to make major overhauls to their teaching in a short time without the training, support, or emotional bandwidth necessary [8, 11, 12]. These demands added pressure to already stressed and under resourced educators who were transitioning out of their classrooms and into their homes. Classrooms where boards and erasers sat empty while bedrooms, kitchens, living rooms, and closets became home offices. It was clear through the immediate change of course that the priority was safety rather of students, educators, and society rather than learning experiences [9–11]. Initial messages received from educational systems and administrators to maintain the continuity of instructional methods and academic rigor, quickly shifted into how can we keep students from being overwhelmed and ensure they feel supported [10]? Educators were often expected to reach unattainable goals with inadequate tools.

While initially many may have been pleased by the thought of having an extended break from school, the reality of what it meant to alter the instructional process so vastly coupled with the uncertainty as to when a return to education as usual could occur quickly created stress and confusion in many educators and students [9]. Both Educators and students quickly faced challenges related to technology, travel restrictions impacted foreign exchange students, isolation, and mental health exacerbations [8, 9, 13, 14]. In the absence of typical preparation time, the result was a chaotic transition in which educators attempted to transfer learning environments built upon face-to-face dynamics online in most cases to whatever learning management system their school system had access to [11]. This type of disruption has widespread emotional influences for both students and educators related to identity, safety, and success. Even instructors who have well-established identities as educators will experience stress and anxiety in the face of change and uncertainty. Technology such as laptop computers, cell phones, and tablets that

were once seen as detrimental to the learning process and banned from schools, quicky became the catalyst for instructional delivery.

Covid-19 has impacted the lives of educators and students far beyond the learning environment and such contextual factors cannot be ignored if we are to effectively provide instruction in times of uncertainty. The loss of face-to-face interactions was a necessary sacrifice to ensure the safety of the larger population, implying that staying home and social distancing equated to safety [8, 9, 14]. Yet it was not just the educators who were asked to quickly transition to remote learning and to move out of the traditional classroom and into their homes for a vastly different educational experience. For many students' home does offer the safety that it was conceptualized to, and in many cases it created a profound loss of a school environment that allowed time away from challenging home environments [15, 16] It is important to recognize that for some students home is not a safe environment nor is it always conducive to academic achievement [8, 10, 15, 16]. These challenges for students are intensified by the lack of support from the school environment, community supports, and isolation created by social distancing guidelines [11, 16]. In addition to the vast disparities in home environments [8], geographic distance can directly contribute to teacher and student isolation. Educators became increasingly crucial in providing effective social interactions and assisting in combatting isolation that has been experienced by many. New educator responsibilities increasingly include reassuring students and parents, assisting students in the management of their learning resources, and finding creative ways build virtual communities.

While online instruction has been commonplace for quite some time there is a stark difference between individuals who sign up for an online course and those who are forced into it without preparation. The flexibility that is touted as a major benefit to online learning may not be experienced by many students as access to technology, support, and resources to make online learning a success simply does not exist [6, 7, 10, 17]. While online education is not a new phenomenon, its widespread emergency implementation was wrought with challenges due to the lack of preparedness in educational systems for such a crisis [6–9]. While most educational systems implement some form of technology, many did not incorporate online learning platforms that could readily sustain a shift of such magnitude to a fully online environment [8, 9]. While there exists a plethora of digital technology to transition in traditional teaching models to the online environment, the incorporation of such models requires planning, resources, and effective training, none of which the current pandemic afforded [6–9].

Education provides a stabilizing element for children throughout the world and its absence has been felt, recognized, and appreciated, which represents a perspective shift from previous dependence on it and the expectation of it. Educators and systems of education should seek to harness this recognition and the challenges experienced in the face of an emergency transition to remote learning to create a path forward that strengthens not only our ability to deliver instruction but also our preparedness for the future [11]. We are uniquely poised amid the current pandemic, after the rush of the emergency transition of Spring 2020 has ended, to recognize the critical role that education plays in every aspect of our society and the widespread impact that is felt when "education as usual" dissipates. While the hope of a return to "normal" exists in the hearts of educators and educational systems worldwide, these experiences can be utilized to not only inform ongoing pedagogy but also to further develop the multiple pathways to learning available to educators and students [6–9, 11, 14]. Thus, it is useful to explore both the challenges and successes experienced during this time to not only ensure success in the future but to also to incorporate the strengths that have emerged into ongoing pedagogy and to create intentional teaching strategies that will lead us into the "new normal."

2. Trauma sensitive instruction

2.1 Experience of adversity and trauma

Adversity in the educational environment has been experienced by many school systems with events such as school shootings having a major influence on the perception of safety, the experience of stress and distress, and increase the risk of trauma responses in students [18, 19]. Yet most students who experience significant adverse events in schools have been found to fully recover, there are students who will develop clinical disorders such as Posttraumatic Stress Disorder (PTSD) in their aftermath [18]. Traumatic exposure has been linked to a multitude of issues in children and adolescents including low academic performance, difficulties in interpersonal relationships with peers and adults, engagement in high-risk behaviors, and disruptions to the developmental trajectory [17–24]. School systems are often the entryway through which students access and are referred for mental health support services, with more students receiving help this way than seeking out community based mental health clinics [20]. Trauma exposure presents a unique challenge to educators and educational systems who must strike a balance between their primary goal of academic instruction and the reality that without support the entire child, the goal of education is not attainable [17, 20]. The use of trauma informed instruction and trauma sensitive pedagogy can help to buffer the influence of adverse events on students and educators [17] and is crucial to successful instruction and learning in the face of a global pandemic.

In non-crisis times, research suggests that half to two-thirds of all students will experience a traumatic or adverse event [19, 23, 25] with estimates from the National Survey of Children's health reporting that 46 percent of children under the age of 18 have experienced an adverse event, and 11 percent have experienced three or more adverse events Historically, the concept of trauma is often conceptualized in a pathological light which overlooks the impact of adverse events in everyday life, including the role of social traumas, that can influence the way in which individuals interact with and perceive the world [3, 26, 27]. More recent definitions have expanded trauma from a life-threatening event to include real or perceived threats to individuals physical or psychological well-being with the potential for lasting effects [26–28]. These definitions recognize that as social beings, we are influenced by interactions with those around us and the events that we are exposed to in society and that these events, when they create a real or perceived threat to our psychological well-being can create a stress response in individuals [26–28]. This definition allows for the way in which the event is experienced by the individual, the inter and intrapersonal contexts, to be the avenue by which reactions are determined [26, 27].

Covid-19 has the potential to create stress and trauma reactions in children and adults as they are facing prolonged, chaotic, and unpredictable disruptions in their daily lives, that is based on a perceived danger that is unknown to them and is outside of the control of themselves or their families [6, 16, 28]. These factors have been known to create physiological stress and distress reactions and may be particularly significant for children who have a history of exposure to adverse situations [16]. The current pandemic social distancing guidelines have also increased the prolonged exposure to adversity in home environments that are no longer buffered by time spent in school [13]. In addition, it has added additional socioemotional and financial stress to many families who may lack the coping skills or resources to effectively manage it, resulting in an increase in violence and exposure to maladaptive home environments [13, 29]. Increased family stress related to financial hardships, isolation, and an inability to meet basic needs have become increasingly common and disproportionately so in lower socioeconomic and minority groups,

exacerbating pre-existent disparities [17, 26]. Stress responses and trauma are disproportionately experienced by marginalized populations [6, 13, 26] and the current pandemic is no exception with minority groups experiencing more health-related negative outcomes related to Covid-19 than their counterparts [30].

2.2 Contextualizing student behaviors

While trauma experiences have been correlated to specific responses and characteristics, student stress responses may not always directly reflective the typical presentation [17, 19, 31]. While educators can start by developing an understanding of the way in which trauma can influence the emotions and behaviors of students [32], in order to truly understand the multiple consequences of stress and trauma, educations can seek to adopt a trauma sensitive lens. This approach allows educators to view students in their current contexts and to recognize how stress or trauma may be influencing their current presentation [32]. The use of trauma sensitive instruction helps to shift the perception of students from a reaction to their behaviors to an exploration of the events or context that have had a hand in the development of the behaviors [17, 33] and creates increased ability to find compassion rather than negativity and to create instruction that can meet the needs of individual students. This may also be particularly important in reducing existing and exacerbated disparities in student achievement [17, 33]. It is important to recognize the cumulative impact of stress and trauma for individuals and the role that trauma sensitive instruction can play in decreasing the stress experienced by students and educators [32].

2.3 Trauma sensitive school culture

Trauma sensitive instruction is not simply the implementation of instructional strategies to enhance student learning, it is the creation of a culture throughout all levels of an educational system that is committed to the provision of instruction in a manner that recognizes trauma responses and fosters resilience [26, 32, 33]. It builds upon the goals of prevention and early intervention that are already deeply imbedded in our educational systems [24]. The implementation of trauma sensitive instruction does not seek to pathologize the experience but rather to identify effective ways to engage all students regardless of the presence of a known adverse experience [32]. A trauma sensitive instruction model assumes that all students have experienced adverse events rather than attempting to identify pathological responses in individual students [32]. These practices will need to be aligned with current instructional methods at all levels to be effective [33].

It is a critical time to recognize the role that educators and educational systems play in creating a conducive learning environment and the direct connection between long-term outcomes and educational achievement [12, 17]. To effectively assist students in the face of not only the current pandemic but also with the recognition of the many adversities that they will face throughout their education and life, instruction that is student-centered and responsive to the frequently changing needs of students will be critical. This includes the implementation of flexible learning environments and relational pedagogy as avenues to promote student engagement and the development of resilience to stress [6, 17, 34]. In its implementation trauma sensitive instruction emphasizes the use of relational pedagogy to foster shared responsibility and decision making [6, 12, 17] breaking down the power dynamics and empowering students to co-facilitate their own educational experiences [35]. This approach recognizes the value in listening to students and respects their ability to be directive in their learning trajectories [17]. Trauma sensitive instruction promotes collaboration

through transparency, authentic engagement, and an understanding of what both students and educators regard as important and useful to the process.

While traditional learning models focus on the educator as the transmitter of knowledge [36], here the emphasis is also on the student's construction of their learning experiences. This requires a widening of perspective that balances instruction provision with overall well-being of students [17, 35]. For students who face uncertainties such as the current pandemic or other adverse life events, an effective learning environment incorporates the educator as an academic facilitator and guide with student as co-creator [17]. Trauma sensitive approaches emphasize positive relationships as the catalyst for the development of the foundation for learning and represent a shift away from behavior management models and punitive responses [17]. To be effective, educators must take a proactive approach, providing support and encouragement to actively participate and rewards for taking responsibility for the learning process [17, 34]. This paradigm may also help to balance out the challenges faced by educators and educational systems to emphasis standardized tests and student performance measures and introduce more student-centered accountability measures [17]. Trauma sensitive practices can facilitate the development of self-regulation and foster the development of long-term self-management skills that increase the potential for academic success.

While educators have recognized the importance of attending to student emotional well-being, challenges have been identified in implementing practices that are conducive to such a holistic approach such as large class sizes, demands of preparation and responsibilities, lack of resources, and systemic support [35, 37, 38]. Additionally, Baweja and colleagues found that there is a need to create shared understandings across educators and educational systems of trauma and to provide educators with training on how to identify and respond to trauma [37]. Directly tying in adverse experiences in school districts and student populations was found to increase educator support of these approaches and decrease concerns related to loss of instructional time [37]. The ability for educators to buy into a shift in paradigm will allow for the recognition that finding the time to teach resilience is not time wasted.

The current pandemic has poised educators and educational systems to influence well-being despite an ever changing, chaotic landscape. The ability to facilitate connection building can decrease the isolation experiences and assist educators in restoring their own sense of professional identity [17]. While traditional education exists within the walls of a school building and boundaries of teacher/student relationships, Covid-19 has brought educators into the homes and lives of students, allowing for the opportunity to develop relationships in a new way.

3. The role of safe spaces in education

Trauma sensitive instruction is a pathway to the creation of safe spaces for students to process their experienced and challenge themselves academically. Educators and educational systems are tasked with providing instruction and support not only on the academic plane, but they are also looked upon to promote healthy social relationships between students, to meet the needs of each individual student in their classes and to create a milieu in which all students feel valued and supported. The concept of safe spaces has been discussed regularly in the literature on education and has been incorporated into teaching pedagogy by many educators and educational systems. A safe space has been defined by Holley and Steiner as a climate in which students feel safe expressing themselves openly and honestly, taking risks to explore the root of their views, beliefs, and opinions and in many

cases confronting themselves and others [38]. This definition highlights that it is not the physical space that is safe or the catalyst for the experience of safety, rather it is a climate that is free from the potential for of psychological or emotional harm [15, 38–41]. It is a definition that highlights the educational contexts that have been found to foster intellectual and social learning for students [42]. In practice, this educational milieu is free from purposeful embarrassment and facilitates risk taking by students in the learning process, making this environment a place where failure is an option and accepted [38, 39]. Safe spaces are built upon mutual respect and promote healthy social interactions and an atmosphere for community building and academic success [38, 39]. These learning environments recognize the connectedness between student well-being and their academic achievement [40] and seek to balance both presenting needs.

Safe spaces are not environments that are free from discomfort or controversy but rather they are environments that foster the ability to have challenging conversations without the threat of emotional harm or judgment [39, 42]. Safe classroom spaces can decrease the negative experiences of students who are willing to take risks in sharing their views and experiences by engaging in personal disclosure [39]. As a pedagogical approach, safe spaces refer to the actual experiences of students in the classroom as being free of fear, self-doubt, and social exclusion creating the intellectual and emotional safety necessary to openly disclose information that they otherwise may have self-censored [41, 43]. They value opportunities to where students openly demonstrate their individuality and supportively acknowledge the experiences of discomfort or struggle [38, 39]. Educators of safe classrooms balance the curriculum, pedagogy and assessment measures that balance risk and rewards [42].

3.1 Climates of safety in adverse times

In non-crisis times, educators recognize the struggles that students often have with class requirements such as participation, group work, and presentations, these challenges do not dissipate in the online environment [42] and may be exacerbated by the stress that already exists in mastering the transition online. While instruction is often built around the expectation of personal risk-taking and critical inquiry to foster and self-determine intellectual advancement, this pedagogy is best paired with an environment that makes it safe to do so [42].

In the face of Covid-19, societal unrest, and widespread controversy, students are regularly exposed to a multitude of attitudes and beliefs about social distancing practices, governmental responses, and safety which can increase their experience of anxiety and create confusion related to whom they can trust [15, 44]. We would be remiss if we did not recognize that not only was the introduction of social distancing meant to stop the spread of a pandemic illness, there was also a very real component of fear as messages that safety is best achieved by staying home became commonplace and began to influence the behaviors and daily lives of individuals and families across the globe [15]. The Covid-19 pandemic, with social distancing and safety protocols, has created a gap in the emotional and community support that individuals have access to increasing feelings of isolation and anxiety [44].

Safe spaces incorporated into educational practices afford students the experience of consistency and continuity in the face of quickly changing contextual landscapes [15]. There is a need to create environments where fears and concerns about Covid-19 and other adverse life experiences can safely be talked about rather than proceeding with instruction as if nothing is remiss. The avoidance of these conversation ignores the stress and experiences that many students and educators are experiencing and misses crucial moments to develop relationships through

transparency, vulnerability, and shared experiences [10]. Instead, educators can increase their emotional presence thereby creating a climate of empathy and compassion [6] and normalizing conversations about emotional health and holistic well-being. While we can recognize that students may not be able to retain all of the information that they learn during times of adversity, the experiences and feelings that they had during this time can frame how they view education moving forward [6].

3.2 How to create safe spaces in the classroom

While safe spaces have been widely explored in the literature, their ongoing implementation and emphasis as a pedagogical approach represented more of a cultural ideal than a necessary practice [38]. Safe spaces have been correlated with increased student responsibility and engagement in the learning process in traditional educational settings, they may play an even greater role in the success of virtual environments where educators cannot use physical proximity to ensure that behavioral expectations are met [39]. Tasked with the goal of not only providing instruction but also promoting healthy social relationships between students, teachers must explore how they can continue this in a virtual environment.

While many educators understand how to create safe spaces in their classroom environment, the ability to translate these concepts into an online learning environment requires a different level of understanding of the concept and skills to implement it [45]. This requires starting with the recognition that it is no longer education as usual and using mindfulness to approach online student instruction [45]. As students are exposed to a multitude of new online instructional formats, the need to adapt to them and the rules for each one can be a stressful transition for many, one that needs educator awareness, support, and recognition [45]. We would be remiss if we assumed that student's ability to utilize technology such as cell phones and social media accounts equates to their ability to navigate new instructional platforms [45].

In order to create safe spaces, educators must move beyond traditional lesson planning, incorporating the flexibility for the vast array of emotions that may be experience by themselves and students through the school day and year [40]. This includes the ability to be vulnerable and a willingness to share about themselves and their experiences [10, 39]. Holley and Steiner found that qualities students identified in educators that fostered a safe environment included being welcoming and approachable, having a non-judgmental demeanor, being emotionally present and supportive of students who take the risk to share [39]. Educators can establish safe classrooms by partnering with students in the development of ground rules for interactions with peers and the teacher and by reinforcing a common understand of appropriate engagement and class climate [39, 46]. The process of student-centered norm development increases buy in from students and the concept of co-creators of the classroom community. These rules include the recognition that we cannot share in a manner that is intended to harm another student and providing examples of constructive framing and inappropriate sharing are useful to establishing shared responsibility [39]. While it is tempting to utilize all of the technological opportunities available, and to find new innovative and creative ways to deliver lessons, educators must consider the benefits of consistency and simplicity and the comfort that is brought to students through routines [46]. Educators can utilize specific positive feedback as a way to highlight that there are positives in all that students share [46, 47] and to demonstrate that they are listening and value what students share with them [17]. Students also described safe classrooms as having educators

that were culturally sensitive, attended to the cultural issues that occurred in the classroom and valued the diversity of the students [39, 48]. This practice helps to create inclusion and a greater sense of belonging for underrepresented groups that can experience increased vulnerability in the classroom [42].

While safe classrooms foster students' willingness to question their own beliefs, they also require educators to be willing to look at their beliefs and to recognize when there may be errors in their logic [39]. Educators are role models for students and as such can model the types of interactions that are expected in the classroom [39]. Evidence suggests that students in safe spaces perform better academically [39, 40]. Holley and Steiner found that students valued safe classroom spaces and identified this milieu as playing a role in both what they learned and how much they learned [39]. Students reported that safe classroom environments gave them additional learning opportunities by exposing them to the ideas and experiences of other students, thereby helping to expand their personal views, increase their creativity and facilitating experiential learning [39]. Further students reported that they learned more in safe classroom spaces and that this knowledge was more likely to be practically applied to their lives and fields of study [39]. Safe spaces were found to increase student self-awareness, communication skills and to create an environment where they felt challenged to learn [39]. This is consistent with research that found increased academic performance in safe classrooms, particularly in environments that created connectedness between students and educators [38].

Safe spaces allow students to express themselves and experiment with their identity, this includes their place in social structures and provides experiences in managing social pressures across the multiple contexts in their lives [41]. They build upon the social nature of children and the social expectations that they are presented with [41]. It is important to recognize that not all students will experience safe spaces equally and that classroom climate will need to be a fluid construct as students experience changing relational and social contexts [41]. While it is unclear how the educational system will define itself after Covid-19, it is clear that the integration of safe spaces increases outcomes and enhances learning opportunities for students and helps to decrease disparities. Safe spaces can create a positive climate that facilitates participatory engagement and responsibility for learning outcomes.

4. Educational transformation: toward the new normal

Online education programs, while increasingly popular has heard many criticisms for lack of rigor, similar costs, low student success rates, are generally revered as less desirable than traditional educational environments [49, 50]. This view became intensified in the Spring of 2020 when many chaotic transitions to online education left educators, educational systems, students and the public questioning the education students would receive in coming academic years in the face of a continuing pandemic. This may have perpetuated the misconception that online education is inferior to classroom instruction and that education as usual is the best option for school systems as educators did not have access to the preparation time necessary to create and design virtual courses [6, 11]. This left many simply transferring their classroom work into online platforms [6, 11]. Yet online education has been an attractive option for many students and families due to its accessibility, convenience, and student-driven learning strategies [15, 50]. It also, when planned and implemented correctly, has the ability to sustain educational systems facing adverse situations.

Covid-19 has left footprints on the educational system that will last for years to come and presents a unique opportunity to transform traditional educational modalities into contemporary learning models. While the transition in the Spring of 2020 was emergent, the academic year 2020–2021 was not and it has opened the door to embracing successes and challenges to formulate new educational milieus constructed from these experiences. These instructional strategies and educational environments would move beyond a crisis response and shift pedagogy and educational emphasis.

4.1 Teaching with intentionality: one size does not fit all

While social distancing in its earlier conceptualizations referred to the cultural and social distance between groups in society, it has now taken a broader that encompasses physical distance as well [15]. It is with intention that we must recognize the different comfort levels and experiences of educators and students during the pandemic and varying levels of restrictions, and to recognize the cultural context in which these experiences exist [15]. While there is a significant benefit to being able to create continuity through continued education, the transition of traditional education online is not without obstacles. While some students will excel in models of self-regulated learning, others will flounder and feel lost. Students have struggles with self-direction, access to learning materials and learning environments as well as feelings of isolation [51, 52]. When students and educators transitioned out of classrooms that were free from distractions and into their homes that often house siblings, other family members, and pets, all of whom are also participating in daily life while students are attempting to focus on remote learning.

Educators and systems of education must be up to the task of preparing to respond not only to the unique needs of each student but also to the multiple contexts in which students lives exist. For the vast majority of students, this is their first exposure to social distancing, stay at home orders, and the many restrictions that have been put in place as a result of the pandemic, including an emergency remote learning shift [53]. Many students have experienced anxieties related to how Covid-19 will impact their academic performance and their ability to continue to progress academically, having their previous identities as students shaken [53].

Although technology is commonplace in our daily lives and allows us to stay connected when geographic location prohibits it, it does not readily replace the connections that exist when we are able to be in close physical proximity of others. Technology has helped us to facilitate education when the current public health situation prevented meeting physically, however, technology is only one piece of the success of remote learning. While technology regularly has its place as a supplemental learning tool, Covid-19 has been the first time that it has been used to replace face-to-face instruction [54]. Educators must be intentional in building classroom communities that create connection to the students and that foster connections between students. The transition to remote learning creates a shift in classroom milieu when students can no longer receive non-verbal cues from the reactions of educators and other students that must be considered when planning online learning communities [52, 55]. When educators and students meet in person, they can readily recognize when the material is not resonating for a student or when a lesson plan needs to be extended or adjusted based upon what they can see from students' reactions, however, this can be quite different in a virtual environment and requires creativity and flexibility to build a community that fosters what may have come naturally before. Educators can utilize their understanding of contextual influences, trauma responses, and stressors to create safe spaces for equitable learning experiences for all students.

4.2 Technological resources and digital competence

Technology was the cornerstone of ensuring that the educational system was able to continue to function in the face of a global crisis. As such, individuals with limited technological resources or that had poor internet connection were at a significant disadvantage during this transition [7, 12, 53, 58, 59]. School systems found themselves faced with large percentages of their population lacking the basic technological resources and internet to participate remotely, thus creating a demand for the distribution of resources to families and students in need [7, 60]. Students in remote and rural areas struggle with network capacity, leading to loss of educational opportunities [53, 58–61]. Socio-economic status has also been found to be directly linked to technological resources, as the poverty level increases in a community the rate of technological resources decrease [12, 56]. While many school systems were able to ameliorate the lack of technological by distributing resources to many students and their families, the transition to remote learning was slowed for these students, creating concern around loss time and instruction [7, 12, 61].

This raises significant concern regarding a system that is tasked with bridging the equality gaps of its students that was significantly usurped in this effort by a pandemic that accelerated educational inequalities at an alarming rate [12, 57, 60]. Many students who previously had relied upon the school resources for access to technology were at a significant disadvantage to students who had access to personal technological resources [56, 57]. Equity issues related to social capital, access, and vulnerabilities were reported by students creating a widespread concern for the exclusion of marginalized populations due to widening inequities [50, 60]. Even for students who do have access to the internet, many do not have the adequate skills to navigate the multilevel learning modules and online platforms in this new learning modality [53]. There is a vast array of technological platforms and applications that can be employed in remote learning, however, this requires users to be able to navigate the technical configurations which requires digital competence that all students do not possess [58].

The vast differences in educational systems availability of infrastructure and technology that prepared them to transition in emergent situations contributed to the differences experienced by students and education in the weeks following the Covid-19 restrictions [8, 62]. Integrated learning modules and technology to support practical experiences has been significantly lacking highlighting the need for innovated practices such as video simulations and practical exams to assist in closing the gap [60, 63]. Many educational systems were forced to engage in experimental labs by observation rather than participation. Attention will need to be paid the incorporation of field and research experiences to prevent students graduating without skills necessary to be successful [63]. Ensuring that all content is available and accessible from a variety of devices increases the possibility that students who will be able to access it regardless of whether or not they have access to a computer or laptop device [50].

4.3 Assessment in an evolving educational climate

The delivery of quality education is the cornerstone of our educational systems, assessment is often regarded in a similar light, as the means to identify whether students are being given access to and learning what is expected of them. Assessment allows for the evaluation of what students have learned and thus must exist in a manner that is representative of the learning environment, even in times of remote learning and social distancing. The recent transition to multiple online teaching models has increased concern regarding how to effectively assess students without increasing

dishonesty and maintaining the reliability and validity of assessment measures [9]. The current crisis has created a demand for measures of assessment of student learning and outcomes that is fair, safe, feasible, while maintaining its reliability and validity.

The shift to online learning has left students concerned about how their learning environments and opportunities will influence their academic reports and tests [9]. The use of adequate and innovative tools for evaluation and self-evaluation are especially necessary during the Covid-19 pandemic in order to be representative of the changing learning environment and provide students with adequate feedback on their performance. Educators and educational systems have a unique opportunity to create flexibility in assessment methodologies and to harness technology to create innovative measures of educational achievement. Rather than trying to identify ways in which educators can supervise assessment measures remotely and continue with education as usual, harnessing the available media and digital technologies that include text, video, imaging, presentations etc. may be more effective ways for students to demonstrate achievement and progress in a multitude of ways [36]. Digital technology allows for the use of varied timescales for assessment and decreases the need for measures that are time sensitive or location driven [36]. They also readily allow for student accommodations due to individual needs such as extended time with technology also affording the opportunity to access assessments from multiple digital platforms [36].

Educators and students have highlighted the use of informal assessment measures such as self-check quizzes as useful measures of performance and opportunities for feedback without the high stakes of more formal assessment measures [64, 65]. Alternative options such as discussion prompts, video submissions, and collaborative assignments are just the beginning of the creative ways that academic progress can be measured. Educators have reported challenges for integration of innovative assessment measures including time management due to the additional time it takes to provide feedback to assignments such as discussion posts, papers, and other measures using new online technologies [64, 65]. The use of students as moderators or asking students to provide peer feedback may help to reduce some of these stressors for educators. Students have experienced challenges related to the complexity of assessment measures in a time where contact with the educator does not occur in real time [64] and where they are not able to ask questions while taking the assessment as they would traditionally. In order to bridge this gap in support, educators can break down assignments into smaller pieces, providing multiple opportunities for feedback, provide tutorials for students, as well as rubrics that highlight the features of the assignment that will be the major portions of the student's grade [64].

4.4 Preparing for the new normal

The online learning environment leverages technological tools to shift the focus from the educator to that of the student. Such pedagogical styles as inquiry-based learning, problem-centered learning, and integrative learning can be employed to shift the role of educator from one of provider of information to that of co-creator of a dynamic learning process [11]. These pedagogical approaches are conducive to trauma sensitive instruction and the facilitation of safe educational spaces. Educators can create collaborations with students as partners in the learning process [42] thereby increasing student responsibility for their learning and creating a sense of ownership and empowerment [50]. Students should be challenged to discover content rather than be provided with it as an avenue to deepen their learning [11] this includes a conscious shift to activity-based learning assignments in lieu of recorded lectures and assigned readings [66]. To effectively do so, online learning must be structured in such a way that allows for ease of use, with assignments that are clear

to understand thereby decreasing stress levels. While technology tools to provide instruction are plentiful, educators should seek to simplify the process as often as possible and avoid multiple logins, passwords, and platforms for students to learn thereby decreasing the possibility of confusion and anxiety [66]. Educators can also increase effectiveness by implementing modular teaching practices, providing clear structure, breaking up content into smaller pieces, and using repetition as a tool [51].

To provide effective learning opportunities to students we must attend to all contexts in which they are influenced, as all contexts will influence their capacity to learn [12]. Educators can recognize that in the face of global adversity that humility, grace, and unity are at the foundation of instructional success [50]. Conversations about Covid-19 and other adversities that students experience should be talked about including prevention strategies, information regarding public safety, and mental health education [8]. Experiences such as the transition to remote learning should be openly discussed including shifts in expectations, participatory roles, and implementation of technology such as cameras. Educator presence places a central role in the effectiveness of remote learning and experiences of students, perhaps more than in face-to-face classrooms [11, 12, 51]. Educators are challenged to find their voice and presence in an environment where time and space have shifted and are not always synchronous [51, 66] and many students have reported that positive teacher-student interactions are lacking in remote learning [11, 54]. Educators should be planful in their delivery methods of instruction and create multiple communication pathways for students to have access to support and clarification [66]. Assignments and learning expectations should match student readiness, identified with an understanding of all contextual factors, and should seek to be effective yet brief whenever possible to combat student concentration and attending challenges [51].

Recommendations include building the technical infrastructure to provide learning platforms that are easy to access and organized in a manner that is consistent and easy to follow [8, 9, 63]. This includes structure to online learning platforms that is consistent and orderly. Routine can be established in remote learning using consistency in due dates and assignments. All students should have access to the necessary technology, placing a need on educational systems to ensure that families are provided with electronic devices and internet capabilities whenever needed [63]. Educators will also need to be provided with home-based teaching materials that allow for ease of instruction. This includes providing accessible online resources and the consideration of incorporating open access materials to provide additional learning opportunities for students [14, 55].

While educators are revered as experts in their subject matter and have practical teaching experience in a traditional classroom, this does not readily translate into expertise in delivery of instruction online [54]. Educators will benefit from professional development that focuses on pedagogical differences in online learning and developing skills in the use of e-learning tools for assessment and instructional delivery [9, 11, 53, 55, 57, 63]. This includes ways to effectively create classroom climate, encourage student engagement, and ways to provide feedback in real time to students thereby decreasing experiences of confusion and isolation [50, 54]. As educational narratives are changing, pedagogical approaches and methods of interacting need to shift to remain relevant and effective. Trainings and ongoing supports from educational systems should emphasize the demands on educators during times of change, highlighting self-care strategies and building awareness of emotional and psychological responses to crises [40].

Educational systems should work to develop opportunities for practical classroom experiences, such as laboratories, harnessing community resources and stakeholders whenever possible [63]. The incorporation of low-stakes or ungraded assessment measures that allow students to receive feedback and educators to track

student progress can bridge the gap created by the lack of face-to-face observations [64]. Educators and school systems while understandably caught off guard by a global pandemic, now have the experience to ensure that there are contingency plans for all issues that may arise. Implementation of emergency plans for scenarios such as technological issues, internet outages, and times where learning platforms are inaccessible can provide students with steps to follow and decrease confusion or learning disruptions [50, 51]. Methods of student communication and information sharing that are consistent create ease of implementation of back up plans and ensure that students are not scrambling if something does not go according to plan. While the Spring of 2020 created an emergency response in educators, felt widely by students, preparedness can decrease the experience of emergency and provide reassurance and consistency. Continency planning also creates the flexibility to pivot and switch as necessary which is particularly useful in the face of a global adversity that is long-lasting and is experienced in waves [51].

5. Conclusions

Although it is still unclear how the current pandemic will shape educational practices, it presents a significant opportunity to integrate engaging pedagogies, assessment strategies, and interactive technologies to build innovative classroom environments [36]. The quick pivot out of the classroom in the face of the current pandemic created a response of emergency remote teaching and with it many challenges and concerns related to teaching infrastructure, teacher preparedness including training and support, as well as the need to consider the uniqueness of an at home environment versus being in a classroom [8, 51]. Educators have not all been equally prepared for the fast shift to remote learning and there appears to be a lack of mentorship and support designed to increase teacher competency in using digital technologies in an efficient and effective manner [8, 66]. In the emergent transition to remote learning, decisions were often made without an understanding of how the pandemic and resulting experiences have impacted student's ability to learn and has raised concerns regarding the quality of the instruction that they have received [7, 9] exacerbating an already critical lens of online learning. As educational systems have transitioned out of the emergency learning contexts of the Spring of 2020 and into a continued mix of in person, hybrid, and remote learning, it is important that educators and educational systems are able to develop quality instruction and learning environments. If we are planful, educational systems can emerge from this from this global crisis stronger and poised to create long needed changes in learning access and equity.

Adopting a pedagogy of care [6], trauma sensitive instruction, as well as creating safe classroom environments can increase educational outcomes for students both during adverse times and in traditional educational delivery. There are many positive opportunities that will arise from the forced transitions of pandemic education that should be implemented into the "new normal." Educational systems can emerge stronger and educator training programs can utilize this opportunity to incorporate all methods of teaching thus ensuring that all future educators have the capacity to teach in multiple modalities [50]. Educational systems must invest in the necessary resources and educator professional development to lead the educational system forward into new diverse times.

Conflict of interest

The author declares no conflict of interest.

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Temperament in the Early Elementary Classroom: Implications for Practice

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Abstract

Temperament is a contextual and biological trait that influences how an individual interacts with the environment. Although scholars have organized and prioritized different dimensions of temperament, in this chapter we focus on temperament dimensions that are most salient to—and how they are exhibited in—early childhood classrooms. Temperament continues to be an important topic in early childhood classrooms because it is both important for children learning to manage their social emotional competence, which relates to long-term academic success and positive mental health, and for teachers to develop classroom management skills that provide a positive climate for an array of children and temperament types. After introducing the notion of temperament, we describe how teachers may create environments and react to children in ways that support child temperament. Finally, *INSIGHTS into Children's Temperament*, an empirically based social–emotional intervention, will be introduced. This intervention focuses on how children's temperament unfolds in the classroom and how the adults in children's lives can create "goodness-of-fit" for optimal outcomes.

Keywords: temperament, early childhood, elementary classroom, INSIGHTS intervention

1. Introduction

Children's behavior in school settings varies widely depending on the situation and setting (e.g., from child to child as well as within an individual child). Child behavior is highly variable within the early school years because critical self-regulation skills, that assist with adhering to expectations of teachers and peers, are still developing [1]. For many young children, typical behavioral expressions include negative behaviors indicative of anger (i.e., yelling, hitting) or sadness (i.e., crying), and positive behaviors indicative of sociability (e.g., greeting new children) and persistence (e.g., sticking to a task until it is completed). Thus, children are not only greatly affected by their encircling environment [2, 3], but also by their individual, internal characteristics such as temperament [4–6]; the interplay between environment and individual temperament creates a transactional

relationship between how children both receive and affect their environments, specifically the classroom [6, 7].

Social emotional competence, which includes temperament awareness and self-regulation development, is important for young children to process and positively interact with various social stimuli [1]. Environmental stimuli may include stressors or trauma that directly or indirectly influence an individual [8]. A 2007 study [8] suggests that at least five million children in the United States "experience some extreme traumatic event". These traumatic experiences include natural disasters as well as human-caused social problems [8]. A 2016 study [9] found that 48% of children in their sample were influenced by some form of violence, and therefore victimization, within the previous school year. In addition to these existing traumas, the current years have brought forth novel national and global stressors. Cornonavirus-19 (COVID-19) is a global pandemic that has potentially affected every household and every school; although limited research has been published about the COVID-19 effects on young children, it can be hypothesized that this natural disaster will greatly increase child trauma and stress [10]. Racial injustice and economic declines are also global phenomena about which society has grown more aware due to COVID-19. Thus, early social competence development is needed for children to avoid negative consequences such as post-traumatic stress disorder [1, 8]. This chapter aims to provide useful information about child temperament as well as an intervention that provides important social–emotional development to young children promoting long-term positive development and mental health.

Temperament refers to individual genetic and personality differences in disposition that represent emotional reactivity and self-regulation [5, 7, 11, 12]. Emotional reactivity is conceptualized as an individual's natural and initial response to environmental stimuli and is measured in terms of the duration and intensity of the response [5, 12, 13]. Self-regulation refers to the ability to adapt or control one's "temperamental reactivity" [13]. That is, temperamental regulation is the ability to modulate emotional and behavioral reactions to the environment [5, 12]. In this way, reactivity and regulation are synergistic; regulation *modulates* an individual's reactivity. Temperament reflects differences in biology, emotion, and behavior; although temperament adaptability develops overtime, essential aspects of an individual's temperament remain and continue to characterize that person across the lifespan [7].

2. Historical context of temperament research

Temperament has been studied since the 1970's and remains relevant in today's classrooms. Alexander Thomas and Stella Chess [14] launched the New York Longitudinal Study—a multiple dimension examination of temperament in infants. This set the foundation for contemporary research on temperament [14]. Inspired by observing their own children, Thomas and Chess conducted parent interviews regarding their infants' behavior in various contexts and in-depth observations of infants aged 3–6 months [15]. Noting individual differences in the infants' primary reaction patterns, they observed nine temperament dimensions: activity level, adaptability, approach-withdrawal, attention span/task persistence, distractibility, intensity, mood, rhythmicity, and threshold to responsiveness [15]. Activity refers to the level of motor activity. Adaptability is defined by how easily a child adapts to changes or transitions in the environment, whereas approach-withdrawal is how a child responds to new stimuli [16]. Attention span or task persistence is how long a child sticks with an activity when difficulties arise, as

opposed to distractibility, which is the extent to which a child may be distracted by a stimulus and change behavior. Intensity is the level of energy a child displays in responses (i.e., happiness, sadness, anger, etc.). Mood describes a child's overall disposition, or the negative and positive feelings a child typically displays. Rhythmicity, also referred to as regularity, is the degree of predictability of a child's behavior. Last, threshold to responsiveness is the level of stimulation needed to elicit a child's reaction [17, 18].

From these dimensions, Thomas and Chess found that approximately 60% of children could be classified as one of three types (i.e., easy, difficult, or slow to warm). Children categorized as "easy" were described as having a more positive mood, higher levels of regulation, lower intensity in reaction to stimuli, and more openness in approach to unknown people, places, and situations. In contrast, children categorized as "difficult" were described as having a high level of reactivity, tending to withdraw from new people, places, and situations, and slowly adapting to changes or transitions. Children categorized as "slow to warm" were described as displaying lower levels of activity as well as responding to new situations with a lower level of intensity than their counter parts. Like those in the "difficult" category, children in the "slow to warm" group also tended to withdraw from new people, places, and situations and adapt slowly to changes or transitions [19]. Thomas and Chess [14] stressed that no temperament type was better or worse than another, but that positive adjustment was predicated on the "goodness-of-fit" between the child's temperament and the environment. For instance, a "difficult" child is more likely to require a supportive environment with sensitive and responsive parents and teachers, whereas an "easy" child may thrive in various contexts because they do not demand as much attention and support from parents and teachers [6]. It is important to note that difficult temperament qualities in children vary across cultures [20].

Although Thomas and Chess laid the foundation for modern temperament research, most researchers today recognize the framework of Rothbart and colleagues that link biological and environmental factors of temperament. Rothbart and Derryberry [11] define temperament as "constitutionally based individual differences in reactivity and self-regulation, influenced over time by genes, maturation, and experience", with constitutional referring to the biological determinates of temperament. Rothbart and colleagues conceptualize temperament as resulting from the interplay of reactive and regulatory temperament dimensions, with an emphasis on the role of regulation in the development and display of temperament across age [5, 21]. These regulatory processes begin to develop during early preschool with the greatest development happening during preschool and kindergarten. From this point forward, regulation is rather stable through the lifespan [5, 6].

Current temperament research recognizes that temperament is relatively stable; individual differences in temperament appear at birth and have strong biological bases. For example, researchers have found the amygdala to be associated with fearfulness [22]; activation of the amygdala increases when there is perceived threat [23]. The amygdala has also been linked to the prefrontal cortex region of the brain that is associated with state and trait anxiety [24], executive functioning, and attentional systems [25]. These studies suggest a neurobiological link to temperament. In addition, studies have shown a genetic link to temperament traits such as activity level, attention and persistence, impulsivity, negative emotionality, shyness, and effortful control [26]. However, temperament is not influenced by biology alone – it is also shaped by the environment [27]. Approximately 20–60% of observed variation in temperament is due to genetic factors and the remaining variance, 40–80%, is due to environmental influences [26].

3. Cultural context of temperament research

Although temperament is biologically based, there are patterns and distinctions that vary across cultural contexts [28]. Within the Bronfenbrenner's ecological systems theory, culture can be examined from various levels ranging from the most individual level, the microsystem, to the most overarching level, the chronosystem [3]. Each of these levels may have varying influences on a child. For instance, parental and teacher guidance are micro levels that directly influence a child. However, COVID-19 and racial injustice are looming global realities within the chronosystem which means that even if a child does not fully understand these circumstances, every aspect of their environment is still altered by these natural and social atrocities. Cross-societal comparisons across enveloping societal characteristics (i.e., overarching norms, social-economic status, values, and government systems) have been conducted [28–30] although research has yet to analyze how the COVID-19 pandemic, which is a novel cross-societal experience, or global racism may alter child temperament. Several observational studies of Eastern and Western societies have examined whether certain dimensions of temperament are more or less universal and the extent of cultural influence [28, 29]. Research suggests that children and the styles of parenting to which they are exposed, differ in collectivist cultures compared with individualistic cultures. [28] found that when they compared two Western countries, the United States and Germany, White children from both countries had similar temperaments. The researchers concluded that was likely because of the individualistic values similar to both nations.

Further, Krassner and colleagues [30] conducted a study of young children from Western (United States, Chile), Eastern (South Korea), and in between (Poland) contexts. The four countries that they examined represent individualistic (United States) and collectivist (South Korea, Chile) cultures with Poland being both geographically and culturally in between the United States and South Korea [30]. The researchers found several differences in child temperament; Chilean children tended to have higher negative affectivity than children in other countries, South Korean children tended to have higher effortful control, Polish children's temperaments were similar to South Korean children with regard to lower surgency levels (i.e., high motor activity, impulsivity), yet differed from all countries on all other temperament variables, and children from the United States were similar to Chilean children in that they "appear to be [more] impulsive and sociable" than Polish and South Korean children. The differences emerging in this cross-cultural study may also stem from racial and ethnic distinctions [30].

Although temperament has been largely analyzed in terms of global contextual variations, limited research has specifically analyzed whether child racial and ethnic identities, particularly for non-White and minority children, moderate or influence temperament [31–33]. Race and ethnicity must be recognized as moderating factors because of the racial discrimination that pervades the United States education system [34–36]. Thomas and Chess were the first to propose that child temperament relates to *goodness-of-fit* in the classroom (i.e., positive classroom adjustment); however, Black and other minority students in the United States do not fit this standard [32]. Taylor [32] suggests that "young African American children are likely to be distinguishable from their White, middle-class counterparts (and their teachers) by higher rates of motor activity, more expressive social-interpersonal styles, and use of nonstandard language dialect (i.e., Black English)". Taylor also suggests that culturally relevant classrooms can accommodate for the variance in child temperament. This includes adjusting teaching styles to incorporate various perspectives as well as incorporating not just the funds of knowledge (FOK) of White students and mainstream culture, but also learning about and

incorporating the rich FOK that minority students also have to offer [37–39]. The concept of FOK suggests that children's out of classroom experiences, such as home settings, have "ample cultural and cognitive resources with great, potential utility for classroom instruction" [37]. Similarly, ecological perspectives maintain that the interaction between home and school is critical for supporting positive child outcomes [2]. FOK is specifically important in classrooms that aspire to create socially just platforms for a diversity of student populations [39, 40].

Worobey and Islas-Lopez conducted a small-scale longitudinal analysis of low-income African American mothers' reports on their infant's temperament [41]. Their findings were congruent with previous literature in that the infants increased motor activity as well as decreased fussiness and crying episodes through a three-month developmental period; previous research has suggested that as infants develop, they learn to fuss only when they need to and they gain motor ability and functioning. Although their sample size does not characterize all Black Americans in the United States, the authors recognized the need to address the racial and ethnic gap in child temperament literature. Lee and Doan [31] also suggest that ethnicity moderates' children's temperament. Their study compared European American and Chinese American children from the same United States city [31]. Although all children were born in the United States, they found that European American children had higher affect-extroversion than Chinese American children, thus supporting distinctions between Eastern and Western cultural values even though all children were living in the same US city [31]. Although temperament variation is considered positive, many children of color in the United States are perceived to exhibit more negative temperament traits as well as more negative behavior patterns than White peers. For instance, high maintenance temperament is often reported as a negative when demonstrated by minority students [32]. Rather than characterizing students' behavior as negative, teachers should reflect on how they could better support each students' classroom adjustment: What barriers does each student face entering the classroom? How does culture intersect with temperament? How can the instructor increase their awareness of a students' home life? How can students' home lives be incorporated into the class? More temperament research in subcultural variation is needed to assess the true validity of temperament's initial connotations. This is especially important because of the strong links between children's positive classroom experience and their academic achievement and classroom belonging.

4. Classroom context of early childhood temperament

Children's temperament has been related to their academic outcomes [6, 42] social success [43–45], and mental health [46]. Both reactive and regulatory temperament characteristics are salient to the classroom environment; reactive temperament traits, such as shyness [47], activity level [48], negative emotionality, anger [49], and regulatory temperament traits, such as attentional focusing and inhibitory control [48] are particularly relevant to children's success in school because of the inherently social, competitive, and academic nature of the classroom context. Children are expected to interact positively with peers by sharing and taking turns in group activities, as well as with teachers, by following directions and responding well to new information, changing circumstances, and redirection. These behaviors require children to enact behaviors that may be challenging (i.e., staying quiet, remaining still, raising a hand to get the teacher's attention, and waiting for a turn to participate in a desirable activity). For children with temperament indicative of higher reactivity, adjustment to the classroom environment requires them to engage

higher levels of regulation. However, without sufficient regulation skills, this may be especially difficult. Thus, children with high reactivity and low self-regulation will likely have a more difficult adjustment to the classroom environment; a child with high self-regulation and, especially, low reactivity will likely have an easier adjustment. A visual representation of how low or high regulation and reactivity interactions affect a child's behavior can be found in **Figure 1**.

4.1 Negative reactivity in the classroom

Negative reactivity is conceptualized as a child's tendency to feel and express negative emotions (e.g., gets easily angered/frustrated, often cries/yells, moody/cranky). Children high in negative reactivity become easily upset, react strongly to environmental stimuli or changes, and often seem moody; they will have more difficulty adapting to the world than children who are calmer or inclined to "go with the flow" [5, 17]. Especially without the support of strong regulatory skills, behavior indicative of negative reactivity can be antithetical to the classroom environment. Children who tend to display negative reactivity [categorized as "difficult" 67]. are at risk in the classroom environment because they tend to have lower quality relationships with peers [50] and teachers [51, 52] and poorer academic outcomes.

4.2 Shyness in the classroom

Shyness, or withdrawal, refers to the extent to which a child is uncomfortable with new situations or new people (e.g., is shy with new adults, does not approach/avoids new children/visitors, acts bashful, prefers to play with a familiar person, is nervous/anxious/fearful/wary in new situations) [47]. Shyness can impede children's social and academic success in educational settings. Shy children may feel uncomfortable
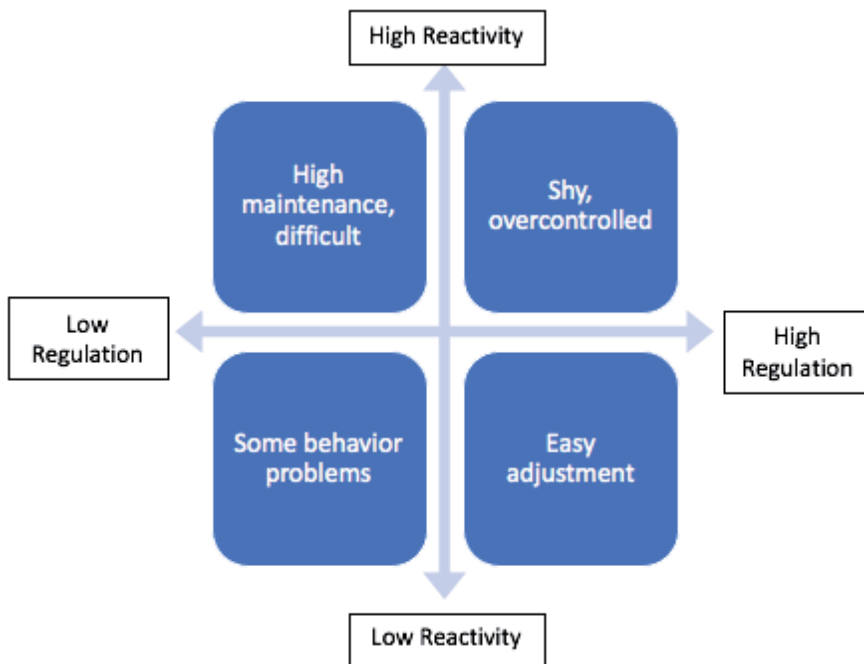
Figure 1.
Expected behavioral outcomes depending on low or high regulation and reactivity combinations.

asking for help or speaking up when needed and often become at a risk socially and academically. Because of their lack of interactions with peers and teachers in the classroom, shy children's social and academic difficulties tend to go unnoticed by teachers [41]. The social nature of the classroom can be daunting for children who are withdrawn and quiet; therefore, the classroom may cause shy children to miss out on classroom interactions and instruction [53]. Shyness is a reactive temperament trait that is often neglected; shyness puts children at risk for withdrawal and disengagement in the classroom [47, 54]. In addition, children who are high in shyness tend to be underestimated by their teachers in terms of their ability and interest [55].

4.3 Motor activity in the classroom

Motor activity, the tendency for a child to display large body movement or physical motor activity, is often associated with excitement and eagerness for new experiences. However, because of the structured nature of classroom contexts, high motor activity often disrupts whole class settings (e.g., inability to sit still, running in classrooms, and rushed or hurried behavior) [48, 56]. Motor activity can both facilitate and impede children's adjustment in the classroom depending on how well a child can regulate this high activity level (e.g., running during outdoor playtime, but sitting during lessons). When children are highly active, their behavior may be disruptive to their learning, whereas a more moderate level of activity can be conducive to academic growth [42, 48]. Teachers can support active children's adjustment by providing expectations that align with those children's activity levels [41].

4.4 Self-regulation in the classroom

While some children have a difficult time hiding their temperamental tendencies, other children have high levels of regulation, allowing them to control negative reactions, internalize inappropriate reactions, stick to tasks until they are finished, and behave appropriately [5, 57]. Effortful control, often conceptualized as a child's ability to pay attention to specific stimuli yet inhibit inappropriate behaviors, reinforces children's adjustment in the classroom. Children with high effortful control regulate their initial spontaneous reactions to the environment purposefully. For example, shy children with high effortful control may speak up despite feeling anxious (purposeful activation) and active children with high effortful control may sit still on the carpet during circle time despite feeling antsy (purposeful inhibition) [41].

Correspondingly, task persistence, often conceptualized as a child's self-direction in completing tasks or responsibilities (e.g., remembers to do assignments without being reminded, returns to responsibilities after an interruption, continues assignments/projects until finished, or complete assignments), also promotes children's success in school. Children with low task persistence tend to have problems completing tasks and focusing attention [58]. Alternatively, children with high task persistence show the ability to ignore distractions, remain focused on specific tasks, and successfully complete assignments. Task persistence may relate to a child's ability to ignore desires or impulses to accomplish a specific goal (e.g., listening to instructions in order to determine how to play a new game).

5. Teachers supporting temperament variance

A higher quality classroom environment fosters increased social skills and academic achievement as well as decreased aggression and externalizing behavior; this is particularly significant for children who are higher in reactivity and

lower in regulation [59–62]. Understanding temperament is a useful tool for early childhood teachers to promote goodness-of-fit which occurs when teaching or caregiving practices positively align with children's temperament and classroom interactions [41, 63, 64]. Teachers who are knowledgeable about various temperament types and combinations are better equipped to respond to the individual differences in their classroom more thoughtfully and effectively. Therefore, interventions that provide teachers with temperament-based strategies with better understanding and effective management of children's emotions and behavior are helpful for disrupting trajectories for negative outcomes [6]. Temperament-based responses include warmth, support, encouragement, affirmation, expectations, and problem-solving. Although individual child temperament is generally constant, their engulfing environment is adaptable. Goodness-of-fit can be established by modifying the environment (e.g., demands, expectations, and opportunities) so that it is responsive to every child's temperament [51] and cultural differences [32].

Kinkead-Clark [63] explored how early childhood teachers perceive the use of temperament-based approaches in classroom management and how children benefit from using temperament-based approaches to solve conflict in the classroom. Teachers who were trained to use temperament-based approaches in this study felt that it was unfair to use a 'one-size-fits-all' approach with regard to classroom management, appreciated children's temperamental diversity, and better understood how to respond appropriately to each unique child [63]. Further, Kinkead-Clark [63], suggest that it is important to understand what motivates child behaviors and to have realistic expectations about child temperament development, skills, and competencies (e.g., who they are and how this relates to what they do). For instance, it is more realistic to provide children who are low in task persistence with smaller parts of an assignment that are manageable rather than requesting they complete the entire assignment at once.

Children who have difficulty completing complex and sequenced assignments are not lazy or incompetent; however, they may be low in task persistence and require additional teacher scaffolding to understand how to break down the assignment into smaller components. Children who have difficulties remaining still are not intentionally disrespecting the teacher yet may have high motor activity and require more breaks in order to demonstrate better control. To help teachers understand how to best create goodness-of-fit in their classrooms, temperament scholar, Sandee McClowry Ph.D., RN, FAAN, has developed an evidence-based social–emotional intervention for kindergarten and first-grade classrooms.

6. INSIGHTS into Children's Temperament

INSIGHTS into Children's Temperament (INSIGHTS), a ten-week intervention, teaches social emotional skills to young children, their teachers, and their parents to promote long-term positive effects. The parenting and teacher programs include three instructional parts. Part one focuses on child temperament by explaining the 3R's: Recognize, Reframe, and Respond. Teachers and parents learn how to recognize children's unique temperament, how to reframe their perceptions of children by understanding that no temperament is ideal in every situation, and how various responses affect their interactions with children and subsequent behavior. It is important to note that teachers and parents also learn that different temperaments are not considered 'good' or 'bad', but instead learn how to adjust according to each temperament.

Part two focuses on temperament-based management strategies. Teachers and parents learn how to apply temperament-based strategies specifically matched to children's temperament in order to improve children's behavior. Part three focuses on children's developmental needs. Teachers and parents learn how to support children in temperamentally challenging situations using scaffolding and stretching strategies. If the situation is overwhelming, parents and teachers are taught to remove or reduce it (i.e., scaffolding). However, if the situation is manageable when the child receives support, teachers and parents can apply stretching strategies to enhance children's self-regulation. The incorporation of parents is critical for continuity between school and home contexts.

Teachers and parents are provided with 'vignettes' (i.e., quality video clips) that demonstrate how to model and frame temperament with young children. Vignettes are short videos, ranging from thirty seconds to two minutes, that help relay content visually. For adult participants, scripts were written that showed how the characters–each with distinctive temperaments–would react in various situations. The scripts were based on parent feedback from initial pilot studies [10]. There are a total of 50 vignettes; half are intended for parent participants and the remaining half are intended for child participants. The vignettes were assessed by experts in temperament theory for content validity. Experts scored each vignette for content relevancy and developmental appropriateness. They strongly endorsed the program materials with the average for the relevancy index being 3.72 and the developmental appropriateness 3.86 out of 4.0 [56]. Vignettes were recorded with real child and adult actors. The quality vignettes and relatable typologies help parents and teachers see how distinctive temperaments react differently to the same real-life experiences. These real-world vignette scenarios interacting with friends, family members, and teachers solidify content, as well as make it memorable and applicable for adults who are new to the idea of temperament. In one of the child-focused vignettes, "Hilary wants to play with Imani but Imani says no. Imani tells Hilary nobody likes her because she is the teacher's favorite student" [10]. Vignettes such as this one prepare young children for difficult situations and allow them to think about various resolutions ahead of time. To assess understanding for adult participants, handouts, worksheets, and assignments also assisted the teachers and parents as they identify child dimensions and profiles. Teachers and parents are further cautioned to avoid labeling a child by profile; the profiles are used only as tools to compare and contrast behavior and for the ease of communication within workshops, yet each child is recognized as an individual beyond a profile.

The children's classroom version of *INSIGHTS* uses puppets with different temperaments to demonstrate how each puppet reacts to various situations and model positive social emotional behaviors [65]. Empathy is enhanced when children learn that various situations can be challenging for some puppets and children, while other situations are easy based on their temperament. *INSIGHTS* also introduces children to a problem-solving strategy that helps them expand their self-regulation skills. The strategy involves pausing when there is a problem, weighing pros and cons to different options, and trying out the most helpful option by role-playing with hand puppets [7, 66]. The puppets are important modeling tools for young children because they find them relatable which increase their engagement and comprehension [56]. The four profiles are Fredrico/Felicity the Friendly, Carlos/Coretta the Cautious, Henry/Hilary the Hard worker and Gregory/Gretchen the Grumpy. Each profile recognizes both the strengths and challenges that are associated with the temperament profile.

A major goal of *INSIGHTS* is to improve goodness-of-fit [64] between the child and the classroom/home environment by increasing children's, teachers', and parents' understanding about temperament—both the child's and the adults. Adults learn how to respond more effectively to children's needs based on their

temperament and to provide scaffolding that bolsters children's self-regulation. These strategies have led to improvement in teachers' ability to positively interact with children and to respond to their behavior [67]. The intervention was first developed and implemented in an urban metropolitan New York context. There are several significant findings from the randomized clinical trials that tested the efficacy of the intervention including decreased behavior problems, increased emotional support in teacher practices, less off-task behaviors, improved child engagement, and improved teacher-child relationships [51, 65, 67].

The *INSIGHTS* intervention continues to be replicated to evaluate its efficacy in different environmental contexts. The intervention was adapted for Jamaican classrooms [63] and is currently being implemented within rural Midwestern Nebraskan communities [68]. Samples from these contexts are both considered low-income as well as early childhood. Replication in various U.S. (and Caribbean) subcultural contexts addresses the current literature gap regarding subcultural temperament variation. Rather or not regional culture and racial/ethnic makeup affects temperament outcomes, adjusting for age as well as socioeconomic status (i.e., will there be temperament variation across contexts where developmental level and financial limitations are constant?), will be an original finding in temperament literature. For more information regarding early childhood classroom temperament, we recommend Sandee McClowry's *Temperament-Based Classroom Management* [7].

7. Conclusion

It is essential that research on temperament development in classrooms continues to be conducted so that the concept remains relevant and reliable as children face new and unprecedented challenges. As previously mentioned, today in the United States alone, more than half of young children experience some form of trauma [8, 9]. Due to the spread of COVID and the continuation of racial injustices, youth trauma is likely to increase [10]. As an external factor, trauma impacts child mental health by interacting with temperament and ultimately affecting child behavior and success in school. Interventions such as INSIGHTS help children and teachers recognize and work with temperament, thus fostering the development of social–emotional competence for navigating current and future challenges [1, 8]. Still, there is much we do not yet know. There is evidence that temperament influences intrinsic classroom motivation, although research [69] suggest that it does not significantly influence extrinsic classroom motivation. There is also little information on how modern classroom realities interact with temperament (e.g., virtual learning, social distancing/ decreased social contact, and increased attachment to the home setting). Although these global stressors affect each individual child's temperament combinations and behaviors, understanding the major temperament dimensions allows teachers to consider child point of views and more fluently adjust to accommodate individual differences.

Acknowledgements

Video

This video provides introductory overview of the INSIGHTS intervention. Footage was collected from Nebraska samples. https://vimeo.com/339204616

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Section 4

Sensitizing on Diversity, Multiculturalism and Inclusion

Chapter 16

Foundations for Promoting LGBT+ Social Justice through Early Childhood Teacher Education

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Abstract

This chapter presents a framework for early childhood (EC) teacher education experiences that align with aims of LGBT+ (lesbian, gay, bi, trans, plus other identities) social justice. The chapter begins with an introduction to the populations addressed: children of LGBT-led families, trans people, children who represent gender diversity, and LGBT+ teachers. Ethical and teaching responsibilities of educators who serve children aged birth to five are shared, including the work of authors in the interrelated fields within EC education. Examples of supportive educator competencies are shared across three critical aims: including and supporting LGBT-led families, supporting children's explorations of gender (including combating gender bias), and supporting LGBT+ educators. Next, a model for authentic, field-based EC educator preparation is presented, including strategies for better linking preparation to practice. Finally, resources for EC educators and those who prepare them are provided. The overall goal of the chapter is to integrate topics, competencies, and issues typically treated separately into a more holistic view of the possibilities within EC teacher education to enhance the inclusivity of preparation programs, broaden the knowledge and skills of pre-service educators, and positively influence the lives of LGBT+ individuals.

Keywords: gay, lesbian, social justice, early childhood, teacher education

1. Introduction

Two decades into the 21st century, preservice educators struggle to openly discuss and integrate practices related to gender, social identities, LGBT-led families, and inclusive curriculum [1]. Teachers experience concern about or fear of what will happen to them if they include books in their classroom libraries that include same sex parents, even when children in those classrooms are members of LGBT-led families. In literature examining teacher perceptions, participants debate practices displaying the most basic level of representation or care. LGBT+ people still worry about the consequences of living authentically as they seek employment as educators, and as they work to secure education and care for their own young children [2]. These are among the challenges in contexts where injustice is the norm. The absence of community or support, inadequate preparation, limited awareness of

resources, and poor understanding of professional obligations and opportunities all work against teachers, children, and families even *without* the active suppression associated with homophobia and legally/religiously sanctioned discrimination.

Literature has emerged which provides some hope, as well as evidence of both the potential benefits of various supportive practices and the harm of failing to employ them in the field of EC education. Furthermore, literature on the devastating effects of isolation, oppression, harassment, and bullying of LGBT+ people is extensive. The purpose of this chapter is to identify dimensions of EC education with potential for direct, positive impact on the lives of LGBT+ people, and to consider what a comprehensive EC educator preparation framework that addresses them might look like. In other words: what areas and practices might the field of EC teacher education need to consider in order to build systemic change?

Social justice is defined within this chapter as equal educational rights and opportunities for LGBT+ people and the individual and systems-level changes required to ensure optimal supports and outcomes for educators, children, and families. Each section of this chapter focusing on promising practices begins with a list of group-specific rights and educator responsibilities that expand upon the definition above. That definition carries with it an acknowledgement of certain truths in the field of EC education and literature within it that addresses equity, diversity, and inclusion. For example, the ongoing suggestion (within EC literature and professional organizations) to implement or teach *welcoming*, *supportive*, and *inclusive* practices presumes the normalization of unwelcoming and exclusionary environments. Practices addressing the needs of "non-traditional" families essentially expose a history and understanding of "tradition" that by definition excludes LGBT-led families and LGBT+ educators. Finally, preparing future EC educators with competencies that will ideally benefit children with diverse potential gender identities or future orientation requires a recognition of the near-worldwide normalization of practices that cause harm to such children and continue to perpetuate conditions that threaten their development, health, and lives.

This chapter identifies, describes, and shares practical recommendations around three broad areas related to social justice for LGBT people that have implications for both the preparation and roles of early childhood educators. The sections to follow are designed to serve as a starting point for enhancing practices, raising visibility, mitigating ongoing harm, and identifying further needs both in teacher education and in the settings in which children and families are themselves served.

2. Complexities and contexts: who are these teachers, children, and families?

Approximately 4.5% of adults in the United States (U.S.) identify as lesbian, gay, bisexual, transgender or queer (LGBTQ), translating to a minimum of nearly 15 million people [3]. 1.4 million adults in the U.S. identify as transgender, with a slightly larger estimate of 1.5 million for the European Union (EU), including data from the United Kingdom (UK) [4]. LGBT rights are protected in both the U.S. and the E.U. This includes recognition of same-sex relationships and protections from employment discrimination; however, countries vary significantly on other rights and protections, many of which are under continuous threat. As a result, the experiences (including stressors, barriers, and the effects of discrimination) of LGBT+ people who decide to parent vary tremendously as well. The sections to follow present three groups about whom LGBT-inclusive literature/practices have most frequently been published: children in LGBT-led families, children who do not fit a strict gender binary (including trans children), and LGBT educators themselves.

2.1 Lesbian and gay-led families

In the U.S. alone, millions of children in the U.S. are raised and cared for in families led by LGBT+ parents; these families include nearly half of lesbians and over 20% of gay men under the age of 50 [5]. Families with LGBT+ parents exist in every family configuration – married spouses, separated or divorced parents, blended families, families led by extended family members, and single parent families. LGBT+ parenting is achieved through adoption, surrogacy, alternative insemination, or other means. LGBT+ parents face scrutiny and opposition rooted in homophobia and discriminatory religious beliefs. Over one million LGBT+ people in the U.S. (where gay marriage is legal in all 50 states) are married to a same-sex spouse, with at least another 1.2 million in same-sex relationships [4]. In the EU, laws pertaining to gay marriage and family-building vary by country. As a result, family configurations differ as well. Many EU states offer full parental rights to lesbian and gay couples. Meanwhile, other countries (including many where gay marriage is still not legally recognized) have acted aggressively against the rights of LGBT+ couples; Hungary, for example, enacted a 2020 law forbidding them from adopting.

Research on lesbian and gay-led families has shown similar parent/child relationship quality and developmental outcomes to that of non-LGBT-led families. Parents' orientation has also shown not to predict children's orientation, gender identity, or the likelihood of abuse or neglect. Such families demonstrate resilience and are strengthened by loving bonds; the only unique sources of stress they face tend to be discrimination, harassment, and bullying by non-LGBT individuals. In 2021, these issues continue to threaten the health and welfare of such families; in fact, hate crimes have recently risen in many countries. Because LGBT-led families regularly interact with EC educators and their children are counted among those receiving birth-three (B-3) and preschool education, it is imperative that EC educators to be prepared to understand and respond to their unique needs.

2.2 Trans and nonbinary individuals

Approximately 1.5 million adults identify as trans in the U.S. [6]. Exact numbers in the EU are unknown and range from 30,000 to as many as 1.5 million. Public awareness and media attention regarding gender diversity has increased dramatically in recent years. In some ways, this visibility has worked to the benefit of trans and gender non-binary individuals through greater representation in media, a rise in prominent figures and role models, and an increase in visible support. The visibility of trans and gender diverse people has been met with a rise in discriminatory action and organized attempts to dehumanize them. The consequences for individuals who do not conform to narrow binary conceptions of gender are devastating. As one example, by adulthood the majority of trans people in the U.S. have lost a job due to discrimination.

Of course, all young children explore and learn about gender regardless of their genetic or physical characteristics. During early childhood, masculinity and femininity are portrayed for them in a variety of ways, and they learn what it means to identify as male or female through the available models, transmitted values, teaching, and through both encouragement and discouragement by adults and peers. The victimization of children whose play, dress, interaction style, or choice of play partners deviates from the expectations of this gender binary is already in full effect when children reach the age of 5–6, when research has identified that they have already experienced teasing, correction and redirection of their play choices, and other unsupportive behaviors that lead to shame, hiding of their emergent identity,

withdrawal, or even aggression. These children benefit from broader laws and local policies that respect their agency to define their gender and ensure that they are safe and protected in school. Children who do not fit the gender binary are vulnerable to verbal harassment and both physical and sexual assault [7]. They benefit from strong teacher-child relationships and supportive learning environments that encourage development of self-awareness, promote acceptance, and push back against developing biases and strict gender norms. Practices that accomplish these goals are not well understood and rarely used in early childhood education. A great need exists for practicing and preservice teachers to better understand and implement both supportive and preventative teaching strategies.

2.3 LGBT+ Educators

It is estimated that somewhere around 2 million people (almost exclusively female) in the U.S., and 1.2 million in the EU work as early childhood educators, although these figures are underestimates given the diverse roles and titles educators carry within the complex and varied systems of education and care for children under the age of 5 [8]. The number of openly LGBT+ teachers is small in both the U.S. and the E.U. While the number of trans adults in the U.S. has been estimated to be approximately 0.6 percent (approximately 1.4 million people), there are no known statistics on the number of trans and gender-nonconforming people working in schools.

While overall conditions (including employment protections and public perception) have improved for LGBT+ educators, conditions are highly variable across states and the E.U. Misconceptions, isolation, and invisibility are still faced by the majority of LGBT+ educators. Even under the best of circumstances, parent or community opposition or even harassment remain legitimate concerns for educators. Preservice EC educators have also expressed concern about such issues as being accepted in their field experiences, witnessing or experiencing unchecked homophobia, misconceptions about men (particularly gay men) who enter the EC field, the challenges of intersectionality (such as experiences of dual discrimination for being both black and gay), and how/whether identity should come up as they approach graduation and enter the field [9]. For some LGBT+ educators, coming out is a privilege not afforded to them, and for others remaining invisible is not possible. Experiencing negative consequences for these forced decisions is unacceptable. Like most EC educators, LGBT+ EC educators seek human connection, opportunities to collaborate, and enter this field to make a positive impact in the lives of young children and their families. Most of them lack critical supports, preparation, or even an acknowledgement of their need for community, role models, and the freedom to exist authentically in their professional lives.

3. In what ways has the field of EC education responded to the need for LGBT+ social justice?

Teacher education models and practices supporting the aims of LGBT+ social justice have not been comprehensively studied. Preservice teachers have minimal exposure to meaningful learning experiences that support their development of these skills or implementation of practices [10]. Still, policymakers and professional organizations in the fields related to EC education have responded to the needs outlined in the previous sections of this chapter. Policies regarding equity, nondiscrimination, and addressing the needs of diverse children and families are present in professional organizations, position statements, and teacher education

standards in the U.S. and E.U. Specifically, sexual orientation, gender, and family structure are repeatedly named as forms of diversity that must be addressed via an equity lens. EC education is cited across multiple professional fields as a critical professional context where the foundations and negative effects of racism, sexism, and homophobia are rooted, cementing a firm link between the role of EC educators and not only the rights of LGBT+ individuals, but their well-being, positive identities, and protection from harm. As an example, the National Association for the Education of Young Children (NAEYC) Code of Ethical Conduct [11] in the U.S. prioritizes, above all other concerns that practices that are "emotionally damaging…disrespectful, degrading…or intimidating to children" must not under any circumstances be employed in EC education [11]. In numerous position statements and professional articles published by NAEYC, authors have attempted to articulate and provide examples of practices to address gender identity inclusivity, and gender bias, as well as practices to support LGBTQIA staff. NAEYC and other organizations also acknowledge the need for recruitment of LGBT+ faculty in EC education and identify it as a priority for teacher education programs. Organizations such as the Gay Lesbian Straight Education Network in the U.S., ILGA-Europe, and other country-specific organizations have advocated for educators, collected and widely shared useful data, and pushed back against harmful policies. Professional development targeting anti-bias practices is increasingly available and desired by educators, particularly in the virtual environment, but more is needed. On the whole, most education advocacy organizations focus almost exclusively on children in elementary/primary school through adulthood.

Social justice issues not only affect EC education from its broader educational and societal contexts, but arise within schools and EC centers themselves when: a) neglect or erasure of, or discrimination against LGBT-led families with young children is evident and allowed; b) rigid gender norms are upheld in EC classrooms in opposition to the developmental needs of young children who do not present as stereotypically masculine or feminine; c) children's identities are silenced, punished, or ignored; d) educators are subjected to negative judgment or discrimination due to their orientation or identity. In the section to follow, examples of these issues in action are explored in greater detail.

The existing problem of defaulting to heteronormative practices in EC is rooted both in assumptions of heterosexuality, pathologizing or erasing other groups, and in the mistreatment of those who are either not heterosexual, perceived as LGBT+, or whom heterosexuals fear will become LGBT+. Worsening this harm is the persistence on the part of heterosexuals to equate teachers addressing LGBT+ needs with introducing the topic of sexual activity to children. This misconception has fueled fear and resistance to supporting children and families, raised the anxiety and reinforced the isolation of LGBT+ educators, maintained confusion and hesitation regarding developmentally appropriate teaching practices, and inhibited the progress of this field. Unfortunately, research on perceptions of LGBT+ people (including educators) continues to reinforce or even legitimize this misconception. For example, surveys may ask respondents questions about their opinions regarding marriage, family, and children in LGBT+ families alongside questions about gay and lesbian sexual relations. This normalizes the idea that scrutinizing the sexual behavior of parents is both a right of educators and somehow relevant to respecting the rights of LGBT+-led families or meeting the needs of their children - a horrific notion unthinkable to heterosexual parents.

The disconnect between what is known about child development and the practice of educators is, of course, not unique to LGBT+ issues. Even in publications focused on racism, space is frequently provided to the concern that "sensitive" topics such as race are too complex or upsetting for young children to explicitly

learn about. There is little evidence to suggest that adults should worry about harm associated with introducing these topics too early; in fact, it is of greater concern when they are ignored. It is long overdue for EC educators to transcend older and more abstract notions of inclusivity and work toward reframing of EC education as an essential context for asset-based, LGBT+-supportive practices that enhance (rather than detract from) the lives of children, families, and educators.

4. Relevant areas of practice in early childhood education

The areas of practice most often discussed in literature related to LGBT+ social justice fall into three general categories: welcoming and including LGBT-led families; addressing gender bias and allowing for gender agency and creativity; and incorporating social justice into EC curriculum. In the sections to follow, examples of these areas of practice are shared with a goal of identifying some of the knowledge and skills EC teacher educators must consider in designing preparation experiences for future educators. These consist of practices which have been recommended and/or evaluated in EC education literature as well as in the policies and publications of organizations (such as NAEYC) focused on the education of young children. Each section begins with a set of principles related to LGBT+ social justice representing the beliefs of the author which underlie the presentation and critical analysis of practices that follows.

4.1 Inclusive EC practices addressing LGBT-led families

EC educators must:

- recognize the realities of LGBT-led families as critical issues of EC development rather than exclusively adult social issues

- understand and prevent negative consequences (for children and families) associated with erasure, silencing, shaming, and/or ostracizing

- recognize and value the importance of knowing, collaborating with, and supporting LGBT+-led families

- fully include LGBT+-led families in programs, classrooms, and curriculum

- teach with an asset-based lens on diverse family structures

- work within diverse family structures to identify developmentally appropriate materials, learning activities, and practices

Practices for responding to family diversity are the most prevalent in all literature pertaining to LGBT+ issues in EC education. A potential reason for this is the broad relevance of these practice across the developmental continuum from birth to age five and across roles, program models, and systems. Family-centered practices are integral to addressing the needs of LGBT+-led families because family engagement itself is integral to the success of collaborative education and intervention for young children. These practices are rooted in dual concerns: first, ensuring that LGBT+-led families feel that they are valued members of the community of their child's EC education program; and second, a desire for children in such families to begin their school experiences with a sense of family pride, as opposed to feeling

erased or silenced by messages of exclusion that are potentially damaging to their self-esteem [12]. As teacher educators consider how to best approach the teaching of these practices, a critical lens on such practices is necessary for bridging the gap between preparation to practice. Adaptations and responsiveness to individual settings and needs should be emphasized, as well as strategies to support children's emerging understandings as they begin to develop.

4.1.1 Considerations of language

Across both published research and in the articles and policy statements of various professional organizations, practices directed toward LGBT+-led families are frequently framed as "welcoming" and "supportive." Inclusive language serves as one example, particularly on forms and communication from the school. For example, forms that refer to or require the input of a "mother" and "father" could easily be changed to read: a) "parent 1 and 2" b) "parent/caregiver 1 and 2," or 3) "caregiver" with options to indicate whether each adult is a mother, father, foster parent, extended family member, etc.

Another change in language involves reflecting on and updating language used to refer to various family structures. The terms *traditional* vs. *nontraditional* reflect a history of heteronormativity, as *traditional* often refers to nuclear families and carries with it an outdated assumption that such families are superior or prevalent. A useful question for educators to consider is whether grouping families into more general categories is necessitated by context, or whether the labels are associated with generalizations about family types reflect a deficit lens on families who are different from those in the experience of the educators themselves.

4.1.2 Welcoming and inclusive policies

Families vary widely on what they view as welcoming and inclusive [12]. While a mere symbol (such as a rainbow flag) can be powerfully welcoming for some families, for many others inclusiveness is rooted in trust that must be earned. This can be a challenging idea for preservice teachers to grapple with as they enter preparation programs potentially holding assumptions that children and families will immediately respond positively to their good intentions. Family-centeredness requires educators to allow and encourage families themselves to decide whether they feel welcome or included, rather than assuming that a practice or policy itself is inherently welcoming or inclusive.

Table 1 presents examples of supportive practices from EC literature. A pitfall in implementing such practices is a failure to root them in actual relationships. They also rest on a variety of assumptions, hypotheticals, and generalizations about LGBT+-led families that run the risk of simultaneously ignoring both the diversity of such families and their potential similarities, including with non-LGBT+-led ones. Instituting blanket policies can be necessary and useful; in itself, however, this does not necessarily meet the need for individualization that true inclusivity requires. In **Table 1** examples of policies are resituated within responsive, individualized, and potentially more inclusive frameworks on the right.

4.1.3 Strategies to increase family representation in the classroom

EC educators can affirm children's family lives by creating a classroom environment that positively represents families' experiences and structures. NAEYC's Position Statement on Developmentally Appropriate Practices [13], which guides EC teaching/preparation in the U.S., includes among its standards for Creating a Caring, Equitable

Generalized Policies	Responsive Policies
• In dialog, refer to all *husbands and wives/moms and dads* as *partners*	• Learn how the members of each family refer to one another
	• Demonstrate respect by consistently incorporating the terms used by each family
• Address communication to *families* rather than *parents* [10]	• Recognize LGBT+ parents **as** parents and ensuring they are included and referred to as such rather than diminishing them via dilution of language
• Abolish holidays such as Mother's Day or Father's Day (where these are celebrated)	• Consider the purpose/benefit of these holidays to children; ensure they are addressed in developmentally appropriate ways (as opposed to, for example, overusing adult-selected projects to send home)
• Replace gender specific holidays with others, such as Families' Day [10]	• Recognize a variety of meanings of parenthood in diverse families
	• Learn about whether/how same-sex couples have addressed the topic of the opposite gendered parent with their child
	• Learn more about adoption types and acknowledge adoptive LGBT+ parents' wishes regarding the inclusion of biological parents
	• Encourage children with two mothers or fathers to celebrate and create for both parents
	• Encourage children to include other close male and female family members (e.g., grandparents, aunts and uncles)
	• Celebrate adoption in the curriculum and through literature
• Recognize Adoption Awareness Month (or other similar isolated celebratory events)	• Learn about the unique journeys to parenting and adoption experiences of LGBT+ people
	• Authentically, meaningfully, and consistently celebrate and acknowledge adoption in curriculum and literature
	• Include families in planning and decision-making for informational or celebratory events

Table 1.
Resituating broad policies pertaining to families into a responsive framework [1, 10, 12].

Community of Learners the following: *Educators acknowledge and accept the family composition that each family defines*. Representation is rooted in this acknowledgement and takes many forms, including basic visual representation, wherein photos of children's families are included in the EC classroom as a way to ease separation, provide a foundation for conversation, and to increase children's awareness of the spectrum of human differences and relationships. As an alternative, classroom posters or other displays can also portray this diversity. Teachers can include families with slight changes in the wording of songs and fingerplays. Educators should be prepared to answer children's questions about family structures, to model genuine curiosity and acceptance of differences, and present an inclusive definition of families and the various ways they are formed [10]. EC educators must also set expectations for what is acceptable and unacceptable treatment of children in LGBT+-led families by peers and other adults. Such competencies are critical to combating hesitancy stemming from ignorance and fear, and the resulting erasure of these families.

Literature serves as a powerful tool for increasing family representation in EC classrooms. It is crucial, however, that in preparing preservice teachers to select texts for their early childhood classrooms, teacher educators strive to address

representation not as a static goal but as a complex phenomenon. For example, Christiane Engel's *baby's first words/mis primeras palabras* is a beautifully illustrated book appropriate for B-3 including familiar words within a day in the life of a family with two fathers; the representation provides the context for the concepts and vocabulary in the book rather than their focus. In contrast, a book such as Michael Genhart's *Rainbow: A First Book of Pride* includes joyous vignettes focusing on the colors of the rainbow flag around more abstract concepts such as spirit, harmony, and healing, which has different implications for how and with whom the text might be shared. Additional dimensions of representation requiring consideration by EC educators include the extent to which a text presents families through an asset lens; the level of representation (i.e., including an LGBT+-led family vs. a story about that family); vocabulary and concepts requiring explanation or teaching; intersectionality and diversity within the category of LGBT+-led families, and; themes and messages within each text.

4.1.4 Strategies to address family needs and provide support

While EC educators must maintain an asset lens when working with families, support for LGBT+-led families may also require an understanding of the ways in which discrimination, teasing, and bullying have affected them. Educators require targeted and intensive preparation in order to understand how to develop and act on a commitment to breaking these patterns. Roles for EC educators include supporting children who have been teased, creating a supportive classroom community, connecting LGBT+-led families with resources (or those who may provide them), and serving as a voice of change when it is needed in their programs/schools. EC teachers must also be prepared to create opportunities for open dialog with parents, including non-judgmental listening and problem-solving in instances where parents/caregivers may have felt excluded or misunderstood [10]. Such conversations require skilled dialog within which educators seek to understand and reflect (listen actively, probe further, value parent/caregiver views, commit to collaborative problem-solving). A reflective stance, willingness to reveal/reflect on/reduce bias, openness to feedback, and professional self-awareness are all required in order to develop skills which build and deepen relationships between educators and families.

4.1.5 Community-building

Even when their children are enrolled in EC education programs, LGBT+-parents can still feel isolated, or perhaps struggle with whether/when to come out to teachers or other parents. Educators who want parents to feel welcomed may ask whether those parents would feel comfortable attending a planned family event, not realizing that this question contains an underlying message that the family should not be comfortable. Even when parents do feel welcomed and included, they may face challenges in relating to other parents. For example, a mother who has not experienced childbirth firsthand or a father who utilized surrogacy to become a parent each experienced journeys to parenthood that differed from each other's and those of, for example, mothers who themselves gave birth. In addition to demonstrating sensitivity and a commitment to representation, planning informal community-building activities and events can be helpful in helping parents get to know one another and share their journeys to parenting in a low-stakes environment before assumptions about their experiences take root. This can be helpful whether an LGBT+ parent is the only such parent/caregiver in a class or one of many. Over time, as educators develop relationships with additional families, they

may participate in informal support networks for parents who do not know others who have experienced similar journeys.

4.2 Incorporating social justice into EC curriculum

The most frequently cited resource on incorporating the aims of social justice in EC education programs is *Anti-Bias Education* [14]. A basic tenet of this approach is that bias is learned. From their earliest days of life, children receive messages about their own identity and the identities of others. These messages are often subtle and learned unconsciously—from family, friends, school and the media—but they can have a lasting impact on their self-image and worldview.

The *Anti-Bias Curriculum* is organized around a set of four core goals focusing on positive identities, human differences and connections, addressing unfairness, and action against discrimination. The four core goals are presented as child outcomes which begin with the phrase "*each child will...*" [14]. Below, those goals have been reorganized and reformatted as six questions that shift the focus from children to teachers, linking goals to teaching practices. These questions provide a starting point for teachers to investigate, reflect upon, and eventually identify/share specific practices aligned with LGBT+ social justice. Further, teacher educators are challenged to consider the specific practices their programs actually prepare preservice candidates to enact:

1. How do you ensure that children who will later identify as LGBT+ build self-awareness and confidence?

2. What practices do you utilize in order to ensure that children in LGBT-led families demonstrate family pride?

3. How do you help children to notice, discuss, and celebrate the similarities and differences among children and their families?

4. How do you support young boys and girls in learning how to demonstrate caring and to maintain caring relationships?

5. How do you support young children in understanding and describing unfairness and its consequences? How inclusive are these practices?

6. How do you empower children to act against prejudice toward or discrimination against others? What forms of discrimination do you actively combat?

One of the ways in which EC educators have sought to translate anti-bias principles into action in preschool is through the enhancement of curriculum to emphasize social justice [15]. Essentially, this involves using an anti-bias lens to evaluate and adapt existing practice to reflect a particular conceptualization of social justice. Social justice curriculum has largely been applied to preschool (rather than birth to three) settings, within which curriculum is reconceptualized to adopt an inclusive view of human diversity, address injustice or unfairness in the classroom through problem-solving approaches to conflict, introduce conversations about similarities/differences, exclusion, and support children in developing an understanding of empathy. These models address social responsibility, engagement with the surrounding community and problem-solving through integrated exploratory projects or units focusing on such topics as health issues or food scarcity [15]. They support the aim of inclusivity through incorporating inclusive language, open discussions

about topics such as gender identity, and the empowerment of LGBT+-led families through welcoming practices, parent/caregiver support, and affinity groups.

4.3 Supporting gender identity and development

With respect to gender diversity in early childhood, children have the right to:

- agency to declare their gender

- positive practices that support their emerging awareness of gender

- educational environments where it is safe to explore and talk about gender

- a variety of materials, activities, and supports for non-stereotypical play and learning

- protection from harm (e.g., shaming) for non-stereotypical behavior or choices

- inclusive language regarding gender identity

During infancy and toddlerhood, children already respond to cues and norms in their families and schools regarding gender and categorize people accordingly. Children often learn the gender roles of their caregiving context during these years; most of the time this consists of stereotypical roles for boys and girls in alignment with the societal patterns, cultural signals, and attitudes of others. By the time they reach kindergarten, these stereotypes are firmly entrenched and children begin to reject non-stereotypical play and materials, as well as those who choose to engage in them. Many children explore gender through their play and even take on opposite gender roles or personas, but do not grow up to identify as nonbinary or trans. For these children, the exploration has no effect on the constancy of the correlation between their assigned sex and their understanding of their own gender.

During preschool, children who identify as trans at some later point in life may display visible signs and choices that indicate their identification with a gender other than that presumed by adults. Research suggests that children who change their gender do so as a result of an awareness and understanding of their identity [16]. This contradicts the common misconception that children simply decide to change gender without fully understanding themselves, or have been influenced by others or the media. From preschool on, children who do not fit those stereotypes begin to pay a price for it – social, academic, and mental health issues that children later frequently experience are, for the most part, the result of their identity being suppressed or oppressed [7]. These children are largely ostracized, bullied, shamed, and the challenges to their mental health and safety worsen as they get older.

4.3.1 Examples of supportive EC practices

In EC, when children are encouraged to explore a variety of toys and materials without constant gender signifiers, supported as they do so (rather than chastised by adults for not fitting cultural stereotypes), and allowed to engage with presumed opposite gendered peers, they tend to behave less in accordance with harmful stereotypes than children who are not, regardless of their later gender identity. Contextual factors in the classroom can provide natural opportunities for children to explore gender in their own way and on their own terms; some of the practices that support these opportunities are indicated in **Table 2** below [17–19].

Practice	How this might look
Demonstrate respect	• Accepting children's interests, choices, self-descriptions • Refraining from characterizing children's friendships as romantic ("is she your girlfriend/boyfriend?") when children of presumed opposite genders play together)
Using inclusive language	• Addressing children in gender inclusive ways (e.g., *learners, investigators, readers, artists, thinkers*, or simply *children*) • Avoiding assumptions of gender in play, literature, and learning activities within and outside of the classroom
Expanding practices beyond the gender binary	• Teaching that identity has many components, and the ways people are both individuals and members of various groups • Avoiding the introduction of gender stereotypes or gendered expectations (e.g., use groupings other than boy and girl) • Minimizing separations between "boys" and "girls" toys, materials, cubbies, etc. • Expanding pretend play clothing and materials to enable a variety of forms of play and exploration • Building on children's understanding of gender and categories through conversation
Disrupting segregation or mistreatment	• Teaching children to share and resolve problems • Intervening when misgendering or stereotyped roles/exclusion are used • Interrupting children's suppression of one another's play and expressive choices
Attunement and responsiveness	• Allowing and answering children's questions about gender and gender roles • Supporting and joining children as they explore non-stereotypical toys, clothing, and play

Table 2.
Practices that support gender diversity in EC.

Many of these practices are complex, challenging to enact, and likely to be met with questions or resistance by those to whom they are unfamiliar or even threatening. For preservice EC educators to learn and implement these practices successfully, they must do so with the support of teacher education faculty in field settings where collaborative groundwork has been laid to support them.

5. Identifying and addressing the needs of LGBT+ EC educators

LGBT+ EC educators have the right to:

• safety, and safe spaces within the workplace

• protection from harm aimed at their identities

• support in addressing LGBT+ issues and supporting families

• decision-making regarding coming out at work, free from the threat of negative repercussions (including job loss)

• administrative support in individually and collectively addressing social justice issues

• systems that support the professional development of non-LGBT+ colleagues in understanding and enacting practices that address equity

- colleagues who understand and respect their identities

Many LGBT+ educators now live and work in settings where their identities are celebrated. Even within more accepting and protective political systems, however, LGBT+ educators still face complex and varied local policies and beliefs which may regulate their practice, threaten their sense of safety, and/or reinforce the silence within which oppression thrives. Contexts where teaching about LGBT+ issues is forbidden are associated with higher rates of bullying and homophobic comments, lower rates of acceptance for LGBT+ people, and poorer outcomes for children who identify as LGBT+ [20]. Teachers in these contexts have access to fewer resources and are less likely to support LGBT+ students.

The particular experiences of EC educators have not been extensively researched. Too many educators still face tremendous (and under-researched) stress in what King [21] accurately referred to as a "very bad bargain'" – in which LGBT+ teachers have agreed (implicitly or explicitly) to remain in the closet, hiding identities from children and creating an inauthentic professional persona only to then live with the cost of teaching in a state of hypervigilance, self-monitoring, and fear of judgment or even losing their jobs within systems that erase them. They also are faced with teaching within systems where students who share their identities are neglected or harmed.

Discrimination against LGBT+ EC educators (and staff) is common [2]. Some evidence to suggest that the younger the children served, the more concerned teachers are about being "out" [20]. Stereotypes about LGBT+ EC educators (particularly men), as well as long-standing misconceptions about recruitment, childhood sexuality, and potential harm to children persist despite decades of evidence invalidating them. Such misconceptions fuel prejudice and underlie the attitude of caution adopted in literature outlining superficially welcoming or inclusive practices. In other words, these resources state or imply that LGBT+ EC educators must demonstrate respect and a posture of deference posture toward individuals who offer them neither.

In terms of teacher education, examples of the needs of LGBT+ preservice EC educators include:

- safe spaces in teacher education programs and on campus where preservice teachers can form social and practice-based communities,

- networking opportunities with LGBT+ EC teachers and administrators as well as those who teach and lead in systems where teachers feel safer and supported

- advice and support on coming out during field experiences/internship

- strategies for identifying supportive workplaces

- opportunities to engage in action to for broader legislative and educational systems change

- support in dealing with resistance, especially homophobia/transphobia

- mentorship from LGBT+ EC faculty and practicing EC teachers

- opportunities to explore, learn about, use, reflect on, and share teaching resources specific to EC

Even if such needs are met, improving the working conditions and supporting the practice of LGBT+ educators requires change in the preparation and support of *all* preservice teachers. This may involve educating them on LGBT+ issues while dispelling misconceptions that inflame their biases. In a broad sense, this preparation could be integrated into efforts to awaken or support their interest in teaching for equity; however, simply sharing practices and resources in the university context is not enough, as those same misconceptions, biases, and fears are likely to prevent teachers from applying what they have learned about. Perhaps nothing reinforces this point more strongly than research on the reluctance of non-LGBT+ educators who are fearful about showing support to colleagues out of a fear that others will think they are LGBT+ as well [2]. (i.e, "I can't do more to support you, because someone might think I am like you"). This destructive pattern slows progress for all LGBT+ people and continues to inflict harm on educators.

6. How are these competencies and skills best developed?

The assumption that non-LGBT+ teachers will reflect on and change their practices rests on their willingness, experience, support, and sense of community. Evidence has repeatedly identified teachers' fear and discomfort in addressing LGBT+ issues [22]. Teachers are unlikely to develop an awareness of their biases and transform into advocates for social justice unless they have been specifically prepared to find, build, and contribute to systems that challenge heteronormative, exclusionary, and biased practice. Educator preparation must build these skills and provide opportunities to apply and reflect upon them, as well as creating both safe spaces and communities of support.

Some teacher education programs have incorporated supportive practices such as addressing negative attitudes and stigma, providing diversity training, and including advocacy practices for LGBT+ students and families. However, EC teacher education is characterized by a lack of comprehensive and cohesive preparation in these areas of practice. In the U.S. in particular, traditional models of EC teacher education are largely seen as ineffective and inequitable. They have done little to address high teacher turnover rates associated with complex systemic issues, and indicators of quality in teaching are minimal and fail to capture skills relevant to addressing equity. Teachers report that they lack the knowledge and skill in addressing issues affecting the LGBT+ community, and that they fear the repercussions of becoming advocates. In addition, they cite their own biases and prejudiced beliefs as a justification for allowing inequity and harm to occur.

For preservice and practicing EC educators who are interested and committed to action, limited professional development is available. Other than where EC programs provide opportunities for collaboration around social justice issues (such as affinity groups devoted to LGBT+ equity) it is up to individual teachers to figure out for themselves how to proceed. Integrating new knowledge and practices requires that teachers collaborate to plan, learn from, and reflect on their work on their journey to developing expertise [23–25].

6.1 Collaborative, field-based teacher education as a context for effective and authentic preparation

In order to consider how to most appropriately and effectively address areas such as those represented in this chapter, the limitations of traditional models (emphasizing university-based coursework and clinical hours followed by internships) must be acknowledged. Teaching expertise is most effectively built through

authentic experiences and interactions. Building intensified, purposeful field-based learning experiences has been repeatedly identified as a key strategy for preparing preservice educators to enter the field with the necessary resilience, knowledge, and skills to serve diverse children, families, and communities [23, 26]. Models which emphasize these experiences are viewed as both authentic and of greater value by educator-partners. Teacher education has, for years, been shifting in focus from university-based preparation of individual teachers with a goal of placement and retention in schools [23] to authentic preparation of engaged teachers with broadened impact on children, families, and communities [25].

Field-based teacher education programs transcend the notion of merely adding hours in the field through outcomes-based learning opportunities designed and sequenced so that students work alongside practicing teachers and teacher education faculty throughout their preparation, with opportunities to build teaching skills under their collaborative supervision [24]. These models are grounded in mutually beneficial partnerships between community organizations, schools, and teacher education programs. With opportunities for growth through authentic experiences and continual feedback and reflection, these models are much more likely to provide the types of field experiences required to support complex and challenging practices. Findings have demonstrated the initial effectiveness of field-based models in meeting the needs of students and community partners.

Table 3 presents some of the key differences and challenges associated with models emphasizing traditional preparation and those embedded in fieldwork [25]:

Aspect of preparation	Challenge to transcend from traditional approaches	Solutions within field-based models
Purpose	Bridging university- based and inauthentic online learning and with work in availability-based clinical site placements	Integrate the content knowledge and practices associated with effective teaching and social justice in the field
Format	Foundational/methods courses and clinical experiences may be planned and delivered by different faculty or departments, leading to misalignment and discontinuity	Knowledge and skills organized developmentally: students move purposefully toward competency; preparation proceeds through sites chronologically along the developmental continuum of EC
Knowledge and skills	Meaningful yet manageable individual courses require isolation of various competencies	Preparation activities/ assignments respond to the complex and integrated needs of children and families in diverse community contexts
Faculty supervision	Isolated silos where university-based preparation and supervision of practice do not always reinforce one another	Faculty teach through direct and consistent involvement in EC programs; university-based work exists to serve field-based learning
Role of early childhood teachers	Practicing teachers have little voice in the design of teacher preparation programming and limited communication with university faculty	Teachers meet with faculty before, during, and after field-based learning, as well as modeling, supporting students, and providing regular feedback
Role of school-based administrators	School and center administrators have little to no contact with individual faculty members outside of approving candidate placements	Administrators identify opportunities for mutual benefit, support teachers and engage with students.

Table 3.
Challenges within traditional preparation models and potential field-based solutions.

In field-based EC teacher education, pre-service teachers and EC faculty work together within the shared spaces of EC programs, emphasizing direct experiences over coursework and thus creating and requiring new roles for practicing teachers in collaborating with faculty and apprentice students [25]. Coursework is designed to support these experiences rather than the reverse, and course schedules are designed around the schedules and learning activities of partner schools. In addition, administrators who have traditionally been viewed as gatekeepers for students collaborate with faculty to open conversations about shared aims relative to equity.

Area	Strategies
Building community and relationships	• Provide safe spaces and community-building events for LGBT+ students and faculty • Form mentoring relationships and professional networking opportunities between students and practicing LGBT teachers/faculty • Build community partnerships within which discussion about social justice issues can be normalized
Developing a social justice orientation to LGBT issues	• Meaningfully incorporate LGBT history and current local/national/global issues • Utilize professional resources on equity and supporting LGBT families and teachers in EC • Assist students in understanding the limitations and potential harm of a strict gender binary • Host and provide professional development events inclusive of all students • Support students' efforts at teaching social justice concepts and acting to produce change • Engage in collaborative action research to address social justice issues affecting preservice teachers, families, and children
Setting up meaningful interaction with LGBT families	• Share research on family experiences with early childhood professionals • Host panel discussions and other events during which students can meet LGBT parents/caregivers and learn about their journeys to parenting and experiences • Action research in field sites designed to identify and address biased or exclusionary practices • Collaborate with sites to plan events
Instilling the dispositions of reflection and continual growth	• Empower teacher candidates to explain practices using evidence • Utilize continual supervision, progress monitoring, peer and partner feedback to expand equitable and supportive practices and challenge bias
Learning and application of inclusive teaching practices	• Ensure that students understand both the advantages and the limitations of welcoming practices • Support candidates in assessing and enhancing inclusiveness of classroom materials, displays, literature, and activities • Teach and support competencies that build social competence, self-determination, and community • Demonstrate and support the implementation of social justice foundations/curricula • Ensure that activity/lesson planning tools and curricula • Support the application of inclusive practices across the continuum of preparation

Table 4.
Practices supporting LGBT+ social justice within field-based teacher education models.

6.2 LGBT-affirming practices within authentic models

Within field-based teacher education models practices for supporting LGBT+-led families, young children, and EC educators themselves may be organized around five priority areas. These are presented and described in **Table 4** above.

Within each of these types of experiences, EC teacher educators should aim to accomplish four interrelated goals: 1) challenge preconceptions, biases, complacency, and the myth of "neutrality" in teaching; 2) build knowledge; 3) deepen empathy and a commitment to change, and 4) practice applying emerging skills in settings where children and families are served. Teacher education faculty can also revisit the six questions regarding anti-bias practices within each area and at critical points across the preparation continuum.

7. Conclusions

Supporting families and family-centered programming/intervention are central to the professional identity of EC educators. As a field, however, EC education (including teacher education) has failed to thoroughly acknowledge, identify, or address the needs of LGBT+ families and gender-diverse children. The field continues to hold a position of implied acceptance toward bias and prejudice while simultaneously acknowledging that these cause harm. Injustice also continues toward LGBT+ educators, who have not been sufficiently supported or protected from ongoing discrimination and the persistence of misconceptions about their identities. Every EC educator carries the professional responsibility to advance equity and a unique opportunity to do so. A need exists for a vision of full LGBT+ social justice in EC teacher education. The dimensions of practice and resources shared here reflect attempts by educators around the world to increase inclusivity, improve knowledge and skills, reduce hesitancy or fear, and build community and support. These themes are critical to addressing serious gaps in educator preparation that undermine social justice for LGBT+ people. Comprehensive examination and redesign of EC teacher education activities is a critical step toward maximize opportunity and mitigating harm to LGBT+ teachers, gender diverse children and LGBT-led families so that equity is both envisioned and achieved in the remaining decades of this century.

8. Positionality and bias

While the content of this chapter was designed to further discussion about how EC education and the rights of LGBT+ people might be jointly addressed via teacher education, it is inevitable that the assumptions of the author and the limitations of the literature on these topics leave certain individuals and groups behind. This chapter's author is a white, cisgender gay male living in the United States where same-sex marriage is currently legal, residing in a state with progressive educational policies regarding the teaching of LGBT+ content, history, and issues. This scholarly work has been developed at a university with an inclusive nondiscrimination policy and explicit social justice mission. The information in this chapter inevitably reflects these contextual and cultural dimensions, and privileges and biases associated with them. The work here stems from a desire to understand and identify opportunities in early childhood education and teacher education; as a result, the ideas therein reflect and mirror the structures of these professions when those structures should indeed be further interrogated and challenged.

Nomenclature

LGBT+ is employed in this document to refer to lesbian, gay, bisexual and transgender populations as well as other identities. LGBT is admittedly an oversimplification; however, most closely represents the ways in which individuals were described in cited literature. Other more specific terms are used in the cases of studies focusing on narrower populations. The + was added to recognize that the content of this chapter may have utility or at least warrant discussion around other identity groups even though they are not represented in EC education literature.

Appendix: sample readings and resources for teacher educators

Supporting Lesbian and Gay-Led Families	U.S. Dept of Health and Human Services. *Partnering with Parents Who Identify as Lesbian, Gay, Bisexual, and/or Transgender*. https://eclkc.ohs.acf.hhs.gov/publication/partnering-parents-who-identify-lesbian-gay-bisexual-andor-transgender COLAGE: An organization supporting individuals with LGBT parents www.colage.org
Supporting Classroom Practices	*Children's literature with diverse gender representation:* Julian is a Mermaid *by Jessica Love* When Aidan Became a Brother *by Kyle Lukoff* Call Me Max *by Kyle Lukoff* *Children's literature with diverse family representation:* Additional texts representing diverse family structures and backgrounds are included in this resource from the U.S. Dept of Health and Human Services: *https://eclkc.ohs.acf.hhs.gov/publication/childrens-books-include-diverse-family-structures* *Children's literature that serves to define LGBT concepts:* *Intersection Allies* by Chelsea Johnson, LaToya Council, and Carolyn Choi *Rainbow: A First Book of Pride* by Michael Genhart *Pride Colors* by Robin Stevenson *I Am Jazz* by Jessica Herthel & Jazz Jennings *Children's literature that may inspire action and change* *Say Something* by Peter H Reynolds *Speak Up* by Miranda Paul
Resources for Supporting Broader Efforts	Teaching for Change: supporting social justice teaching https://www.teachingforchange.org/anti-bias-education Responding To Children's Questions on LGBTQ Topics https://www.welcomingschools.org/resources/challenging-questions/ Sample Guidelines for Inclusive Professional Development: https://www.thehrcfoundation.org/professional-resources/all-children-all-families-lgbtq-inclusive-parent-preparation-training GLSEN (Gay, Lesbian, Straight Education Network) www.glsen.org Equity resources from the National Association for the Education of Young Children https://www.naeyc.org/our-work/initiatives/equity AMAZE: provides resources and curriculum inclusive of EC www.amazeworks.org

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A Guide for Deconstructing Social Reproduction: Pedagogical *Conocimientos* within the Context of Teacher Education

Jesus Jaime-Diaz and Josie Méndez-Negrete

Abstract

As the mosaic of student demographics continue to change into the 21st century, teacher credential training programs must necessarily prepare educators to be culturally affirming and responsive to the equitable schooling of students. Through pedagogical *conocimientos,* educators-in-training may rely on self-reflexive methodologies, which facilitates the engagement of self and others in interaction, as they collectively retrieve family legacies, focusing on gathering histories on their family's origins, language, religion, work, education, and migration. This prepares future teachers to unearth and examine internalized prejudices, traumas, and stereotypes, to thus counter and contest deficit thinking and distorted views of student populations, beginning with them. This chapter introduces pedagogical *conocimientos,* illustrating the praxis as it problematizes social reproduction in the context of schooling.

Keywords: pedagogical *Conocimientos*, *pláticas*, *testimonios*, chicana feminist theory, social reproduction

1. Introduction

By the end of the century in the United States of America, the majority of people will trace their origins to Latin America, rather than Europe [1]. With demographic changes, teacher credential programs must necessarily engage the preparation of educators to become culturally affirming and responsive to the equitable schooling of students. The trauma associated with the ever-shifting nativist rhetoric of immigrant bashing by those who have long established roots in the nation-state must be contested [2, 3]. Alternative pedagogical practices must be utilized to disrupt a history of Anglo-conformity and Americanization that dehumanizes people of color and immigrants who are perceived as a threat of difference. A social justice and approach to teacher preparation must begin with a culture of love and healing, thus interweaving each other's humanity in the context of schooling. Ideologies that reproduce and continue to socially transmit deficit and otherized thinking dehumanize those who are perceived as foreign or alien [4, 5].

This chapter focuses on Chicana pedagogical *conocimientos*, which [pertains to knowledge and the dialogic processes of knowing self in interactions with others

as a self-reflexive methodology], and used to prepare teachers to engage self and others in interaction, as they reciprocally examine student/learner views of the world, working with students to retrieve family legacies in relation to family origins, language, religion, work, and education, as well as other systemic or structural sites of oppression and domination. This approach prepares educators to unpack their own internalized prejudices, traumas, and stereotypes, as they gain awareness and become conscious about the ways in which they reproduce oppression and domination in the context of schooling. In addition to self-awareness, educators mindfully contest deficit views to impart a socially just education informed by an equity literacy lens in spirit for the common good, by socially locating and positioning students and themselves within the structuration of society.

1.1 Overview

These are troublesome times in teacher education where teacher attrition mirrors student push outs from schooling. There is a dire need to take upon a holistic approach that demonstrates the ways in which critical pedagogues deconstruct oppressive and pervasive teaching practices deriving from the early socialization of teacher educators within the structure of schooling [6, 7]. Thus, it is imperative to unpack ideologies closely aligned and along racial, ethno-racial, political and economic, and gender structuration of minoritized groups [8]. Critical pedagogues have long problematized norms in teacher preparation as deeply entrenched in Predominately White Institutions (PWI), where white supremacy is the master scroll in teacher preparation [9–12]. These scholars continue to scrutinize and deconstruct the socialization of teachers as reproducers of inequality [13, 14].

As an alternative, Chicana feminisms avail notions in the training of educators. This simultaneously draws upon epistemologies that engage students in dialogue along with their own self-reflections. Founded on cultural expressions that simultaneously affirm respect, with discourse or [*pláticas* as informal conversation used as research methodology by Chicana feminist scholars]. This approach begins with dialogic *pláticas* [15] or praxes implemented with the objective of deconstructing privilege, power, and difference as norms of communication and interaction in schooling, while modeling the transparency of becoming agents of transformation, with the expectation of humanizing pedagogies through *pláticas* and dialogue [16, 17]. With difference, subordination, and privilege on the table, consciousness about space and place emerges allowing teacher/learners to engage the contradictions with which they contend in daily life.

To contest normative expectations, the emphasis must be placed on pedagogies of domination and ideologies of whiteness and how these serve to veil inequities and discourses of exclusion that dominate those for whom schooling was not intended. Drawing from Critical Whiteness Studies (CWS), Critical Chicana/o scholars have problematized white innocence as a discourse that mediates the racial formation of minoritized groups which continue to 'otherize' and exile them throughout the educational systems [18]. Such views pervade the justification of surveillance and punitive disciplinary action against minoritized students, purging them as the problem while placing whites at the center [19–21].

Given the historical legacy of educational institutions, trauma informed teaching and the importance of embodying a domain of awareness emerges. It calls to recognize trauma among students, especially in those instances where it may surface as internalized thoughts, feelings, and emotions that trigger cultural, institutional, or social spaces where injuries were perpetrated. In such contexts affirmation and acknowledgement become invaluable in working with students [22].

The critical importance of equity literacy, and pedagogical approaches is to prepare culturally responsive teachers, entails examining the ways in which schooling reproduces social inequity [23]. Teachers must recognize embedded norms within the structure of schooling and disrupt the oppressions—in themselves and in the students.

It is of vital and critical importance to disrupt the vicious cycle of the inequity sociohistorically reproduced in higher education. Toward that end, the process of pedagogical *conocimientos* is a praxis that challenges its reproduction. This self-reflexive methodology calls for learners/teachers to place themselves historically and in relation to others, through the facilitation of dialogic interactions with self, peers, and instructors. This approach has shown to be useful, as it makes visible the oppressive realities experienced by people of color, while simultaneously honoring and locating their learning experiences within intersectional struggles of the human experience, which generates healing through dialogic interactions [24]. These first-person accounts or [*testimonios* speak to socially significant experiences of a collective group expecting to contest and change their circumstances]. Thus, as an intersubjective methodology, *testimonio* further humanizes the complexity of student/learner experiences, while embodying a praxis that is supportive of students of color when unmasking oppressive realities in relation to racialized social class and other intersectionalities [25]. Moreover, *testimonio* provides an alternative space for coming to voice, telling one's truth, and speaking back to the social powers of oppression [26]. *Testimonionio* is a catalyst for social transformation, where trauma facilitates social consciousness, collective memory, and the formation of theory with the responsibility to act [27–30].

2. Chicana Feminisms

Feminists study and theorize Chicana lives and their respective communities, focusing on political strategies for accessing social institutions and employment [31]. Within this understanding, they embody an oppositional consciousness for social change, countering cultural nationalist ideologies, while arguing for certain traditions of Chicana culture to remain intact, as they problematize heteronormative views in traditional Mexican family structures [32]. Urquijo-Ruiz, calling out such oppressive ideologies as a means for acceptance and inclusion, argues that these heteronormative values, norms, and beliefs ostracize and devalue the LGBTI community [33].

The New Mestiza survives in the contradictions of spiritually imagining, creating, and advancing a theory in the flesh, to uncover dialectics for social change where personal and cultural healing may be found [34–36]. In the in-between-spaces or positions situated along the interstices of multiple, social, political, and cultural systems [37]. Chicanas make a case for an inclusivity that promotes multi-cultural, multilingual, and multiethnic identities, whereby monolingual, bilingual, and multilingual identities are contested or affirmed in the holistic experience of socialization—a complex process in relation to region, class, and generation [38]. As Indigenous mestizas, Chicana feminists reject racialized social class, race, and gender as isolated spaces, but conceive of them as intersectionalities connected to each other [39].

2.1 Contestatory spaces

While critical education—ethnic studies, critical multicultural education, bilingual education—thrives, right-wing politicians have identified schooling as

a purview of whiteness [40, 41]. During such times, professionals have dismissed research findings that culturally responsive pedagogy has the potential to close the achievement gap [42]. For these reasons, the authors rely on pedagogical approaches that raise awareness in responding to diverse student populations who are preparing to become teacher educators [43, 44]. What participants and researchers have lived, seen, and endured provides the intersubjective consciousness to mediate an understanding of the cultural transmission of knowledge [45].

2.2 Epistemologies at the center

Embodied perceptions and our senses are central to understanding the world in relation to one another in the context of language or religion or any other system of power. Knowledge is conceptualized as embodiment of experiences that allows the extraction and creation of alternative forms of knowledge [46]. Thus, when engaging in critical learning, teacher/learners must necessarily re-examine historical traumas as they take into account the healing of the mind, body, spirit, and soul. For Paulo Freire education was an act of love and an act of courage, rather than a practice of objectivity in the delivery of content, as it is the engagement with a whole being [47]. Objectivity and professional distance reproduces inequalities and hierarchies in schooling. Scholars of intersectionality studies counter-argue for the creation of knowledge as a critical process that focuses on situatedness.

2.3 Excluded epistemologies

For those who are sociohistorically disenfranchised, it is critical to recognize that theorizing through lived experience is not a bias, but a foundation for analysis, whereby subjectivity is integral, rather than distant from knowledge production. Critical scholars argue that epistemologies attest to a realism that evidences the marginalization, oppression, and traumatization of communities of color [48]. Thus, epistemologies provide a narrative of events that derives from subjective knowledge grounded in personal and professional experiences [49]. Historical epistemological privilege the structures of social sciences where knowledge is created for and by those positioned inside structures of power [50].

2.4 Critically conscious epistemologies

Values norms and beliefs guide and mediate understandings of difference, which when left unchecked leaves space for selective perception and ethnocentrism [51]. Such beliefs, feelings, and thoughts are manifested in social structures that shape the socialization of students. Thus, it is critical to be mindful of the various disciplinary technologies that transmit society's core values directly, indirectly, and by happenstance—denial, collusion or collaboration with dominant thinking.

In the creations of knowledge, agents of socialization play key roles in the subgroups, hierarchies, and power relations within the social order [52, 53]. Within such spheres of influence, it is important to understand that consciousness is reproduced, not only through a person's contact with work, an ascription to social class, a racialized identity, but also through institutions that facilitate socialization through religion, schooling, language, and immigrant origin [54].

2.5 Critical epistemologies as instruments of knowledge

To understand the ways in which white supremacy and whiteness persist, it is imperative to identify and locate these practices in the present [55], beginning

with settler-colonialism, whereby whiteness is socially constructed through various forms of violence, as an established norm within the racial caste system of the nation-state. Such ideologies set the pillars of nationhood through slavery, genocide, and the colonization of minoritized groups. Whiteness is tied to European immigration, where Euro-Americans reinforce whiteness, and cash in on the privilege tied to such ideology, subordinating otherized groups [56]. In liberatory epistemological praxis, multiple subjectivities must be placed at the center in positioning the historical experiences of non-whites [57]. This necessarily implicates that mixed heritage people must work as agents of transformation while carving collaborative inside/outside venues for the creation of social justice and social change [58, 59].

3. Whiteness in education

Whiteness permeates in education and there is a critical need to further scrutinize, problematize and expose, and change normative discourses that continue to reproduce inequality in schooling. Whiteness is the sociohistorically transmitted ideology with which the government institutes and maintains laws that benefit white people, with privilege and advantage to resources over non-whites. Such notions are often invisible to its beneficiaries [60], given that these cultural and institutional practices are firmly embedded throughout US society and reinforced in "common sense" notions of white supremacy that normalize it as a dominant discourse [61]. These beliefs and practices have had a profound effect on the psyche of the nation and in its hierarchical ordering of humans based on the phenotypic, or physical attributes that racialize human beings.

The practices of schooling and pedagogical approaches utilized to teach homogenous students, meaning white populations, rely on the stripping of language, culture, and identity, perpetuating a common culture of domination through schooling practices that have long been argued as outdated [62]. Such archaic pedagogies are closely tied to the era of the Industrial Revolution, and the factory model or schooling chain command which confines a person's spirit in the name of economic productivity [63, 64].

For the aforementioned reason, in the preparation of educators there is a pressing need to expose white middle-class students to a critical history, so that they understand and are mindful of their whiteness as privilege, as well as how it is constructed by agents of socialization [65–67]. This is of critical importance, especially when interrogating ideologies that shape white middle-class teacher beliefs and attitudes, in relation to culturally responsive teaching, as it pertains to broader sociocultural and historical realities.

Critical Whiteness Studies (CWS) scholars have deconstructed whiteness, problematizing the ways in which institutions of higher education reproduce such ideologies in the curricula and pedagogical praxes that prepare educators, thus transmitting such practices in the maintenance of social control. An awareness of such power imparts notions of mindfulness. When white students are taught and guided to engage intercultural interaction, they are better able to deal with ideological tensions, which are then transformed into learning experiences [68]. Whiteness as racial superiority is the most vexing issue that needs to be dismantled in the United States [69].

Critical mindfulness of whiteness has the potential for building bridges of understanding, not only of the social location, but also of the positionality of white middle-class teachers [70]. Thus, gaining consciousness of the power dynamics regarding the organization of class, race, ethnicity, and gender is of uppermost urgency [71]. Intersectional scholars argue that students must come to understand

the ways in which such discourses protect curricula that is vested in normalization and upholds the status quo, which is transmitted as normalcy and common sense in the United States, while obscuring and denying their histories and contributions.

Schools with majority Mexican American populations continue to be socially stratified, where negative attitudes and low expectations reinforce deficit views of the population [72]. Such expectations have profound life-long effects making students feel disengaged with a long-term unequal distribution of sadness that burdens Chicanas/os where an unfulfilled desire to do well academically in schools fails them. The dominant curricula stifles dreams and diminishes aspirations, creating not only a depressive mindset but also increasing the educational disengagement of Chicanas/os [73–75].

Conceptualized as less able and capable of succeeding, which reproduces inequality, particularly when white middle-class teachers view discourses such as White innocence, disempowers Mexican American students. This "snow white" syndrome facilitates the reproduction of unconscious racism, which is promoted by ethnocentric and selective perceptions that stigmatize Mexican American students as less bright or committed to education. For these reasons, it becomes a pressing need for whites to understand the ways in which whiteness has been utilized as a tool of oppression, whereby a stressful learning environment reinforces a culture of fear that exiles them from the educational-learning process. This historical pattern regarding schooling, whereby the rhetoric of white innocence through altruism negates the schooling experience of minoritized students, reinforces inequitable education leaving intact the moral mandate of White policy makers, regardless of the harm inflicted upon students of color [76, 77].

As a critical necessity in their professional formation, educators must gain an understanding of the ways in which the ineffective schooling of minoritized students is actualized, as they cultivate the resilience of talking back and responding to oppression, from a place of complex and deep understanding such as utilizing white innocence as an investigative framework [78–82]. Future teacher educators must necessarily understand the ways in which whiteness persists in everyday interactions, particularly when teachers sidestep emotionally uncomfortable activities that pertain to class, race, whiteness, gender, and sexual orientation as points of discussion. The creation of an emotional comfort zones is necessary to create spaces that examine the privilege of whiteness and its consequences. Brave spaces for educators to resist, contest, and challenge the oppression of dominant groups in activities that reinforce the exclusion of non-majoritarian students [83]. This must be engaged in discussions that include all views. With pedagogical *conocimientos*, educators benefit with an instrument that allows them to recognize the persistent normalization of supremacist discourses of the "isms" in the structuration of schooling [84–87].

Future educators must reflect with clarity and courage on their consciousness to call out the cultural denial and silence that dehumanizes those who are perceived as inferior. Toward that end, critical pedagogues must identify and deconstruct pedagogical practices as they examine and interrogate notions of white innocence [88–90]. To unmask and pull out from under the sheets and robes of white supremacy in the 21st century, educators must focus on the learning experiences of minority groups. This is a demand for social justice, whereby critical humanizing pedagogies are enacted in the pursuit of the common good [91].

4. Teaching in predominately white institutions (PWI's)

The preparation of educators primarily take place in PWIs and often faculty of color experience microaggressions as ordinary slights of indignity [92]. These

interactions relay derogatory and hostile messages towards the individual or a group [93, 94]. Moreover, hostile views are often reinforced by deficit ideologies that depict faculty of color as less than qualified. Such notions are deeply embedded in racialized social class narratives, the culture, and the identities of faculty of color [95–97]. When these prejudices are not problematized during the early socialization of students through schooling, students are conditioned to see this as the norm when obtaining a university education at PWI's. With that, the reactionary impulses of symbolic racism remain unchallenged.

A pedagogical *conocimientos* approach is informed by our notions of deconstructing ideologies that are deeply embedded within the structure of schooling as mainstream norms [98]. This practice emerges from an understanding that acquired knowledge through lived experiences shapes academic training. In addressing the creation of knowledge, knowledge and praxes must be examined in the training of educators [99].

5. *Pláticas*/conversations

*Plática*s cultivate constructive dialogue in the classroom, and departing from *confianza*/trust, participants assertively acknowledge that each student is valued in the class and brings knowledge to the schooling space. Regardless of background, they have something to contribute as they gain understandings of oppression [100]. Student knowledge and their lived experiences give them the right to critically interrogate course content [101].

In engaging with teachers, students must qualitatively understand difference within the culture of schooling. *Pláticas*/Conversations, a Mexican expressive cultural form of communication, derive from stories unearthed and reclaimed from their ancestors and themselves. *Pláticas* are methodology that promotes students' stories and experiences as knowledge or as a pedagogy to express familiar cultural forms, while respectfully affirming these practices.

Pláticas become critical pedagogy when provoked to nurture critical consciousness in a community of learners' processual approach [102, 103]. Also, they are an instrument for cultural brokering that enables an insider to understand the way in which Mexican Americans communicate, how they identify, and the importance of respect for elders. *Pláticas* may be a pivotal component in transforming academic spaces, whereby a community of learners engages the personal and the academic while weaving it into an interdependent whole [104].

It has been documented that [Chicana/o originally referred to working-class Mexican Americans in the United States. From the early 20th to mid-century, the term was derogatory and reclaimed during the Chicano Movement in the late 1960's and early 1970's as a self-assigned ethnic identity]. Chicanas would modify the term to signify gender equality and acknowledge the contributions of Chicanas]. Chicanas would bring in past cultural practices into the creation of knowledge. Thus, to make visible Chicana/o intellectual knowledge, *pláticas* are useful and necessary as pedagogical tools of inquiry. To problematize early schooling socialization, *pláticas* facilitate the cultivation of parallel relationships with students, engaging perspectives that make comprehensive and inclusive the counterargument found within the contradictions of teaching and learning [105, 106].

Finally, when relying on *pláticas*, the dialogue that emerges departs from mutual respect, by agreeing to disagree [107]. A key perspective is that the development of dialogue cannot emerge in the absence of a profound love for people and the world. In the nurturing of such relationships, it is important to establish a rapport of inclusivity whereby students know the importance of their presence, whereby each voice is honored in the context of learning experiences.

Intersectionality is central in this pedagogical approach. Students learn to interrogate race, ethnicity, gender, class, sexual orientation, ability, and age to identify privilege, power, and difference within the various strata of society, to keep them 'actively engaged' within the *pláticas* [108]. By building *confianza* through reciprocity with *pláticas* and dialogue, an understanding of co-laboring is affirmed and strengthened. It calls for teacher/learner collaboration to understand underlying issues and dilemmas in the creation of knowledge. These pedagogical praxes build upon prior knowledge—individual, communitarian, and collective—to evolve into holistic approaches to learning [109].

6. Trauma Informed Teaching (TIEP)

Trauma Informed Educational Practice (TIEP) relies on trauma informed (TI) pedagogical strategies. With the objective of closely aligning the learning community with social justice and human rights, TI argues that institutions of higher education must be reimagined as therapeutic communities [110]. It begins with the premise of safety in relation to the physical and emotional well-being of the individual and the learning community, whereby trustworthiness is cultivated in the learning experience as a form of support and connection. Throughout this experience, TI adheres to inclusivity and a shared purpose, while acknowledging trauma and addressing it, to act critically responsive by finding venues for healing [111]. To practice a TI lens, empathy, compassion, and sensitivity, must be cultivated so as not to retraumatize the person, by retriggering or reactivating traumatic life events.

For a trauma informed care approach, educators must gauge the complicated ways that traumatic experiences may be affecting the lives of students. Trauma is not a noticeable or fixed entity, but vast and fluid in definition; it is attributed to being upset or in distress, such that experiences result in trauma related symptoms. In education, a holistic approach must be utilized where a definition includes but it's not limited to boundary violations, betrayal, neglect, abuse, powerlessness, vulnerability, and objectification, and in many instances it is normalized and sanctioned through trusted authority figures [112].

Educators must have access to pedagogical theories and tools for addressing trauma, particularly as it may commonly impede learning and development. This calls for the preparation educators with specific non-deficit trauma informed pedagogies, which encumber the complexity of the human experience in the engagement of teaching/learning interactions [113–116].

7. Equity literacy

Equity literacy calls for teachers to be mindful of the dialectic of the oppression and domination that resides within schooling and its aim is to disrupt such practices that limit equity for students and their educational experiences. To deeply engage learners, educators must be self-reflexive about their social location and positionality, and be mindful of what is available and effective in the teaching/learning preparation of minoritized students. As an educator who aims to be culturally affirming and responsive, oppressed groups must be brought to the center of discussion so as to counteract the dominant discourse, without placing them in the position of experts but as co-creators of knowledge.

For future educators to become equity literate, they must be ready to confront deeply embedded mainstream ideologies normalized in everyday practices.

Teachers must necessarily consider the ways in which minoritized student behaviors, mindsets, and emotions, challenge assumptions of institutionalized racial presumptions as well as inequitable policies [117].

To create an inclusive environment that equally engages student experiences, and to incorporate the broader community, it has been suggested that educator's study and query institutional diversity efforts that are being implemented. What will these diversity efforts fix? Where are resources being directed to address equity? What are the school's diversity professional development efforts built around? Is diversity woven into curriculum? [118]. It must be pointed out that when progressive initiatives are not mindfully implemented, those who work in the institutions collude to reproduce and reinforce the very ideologies they intended to address. With equity literacy, learners/teachers become aware about the ways in which voices are disqualitifed, oftentimes quelling social justice as they challenge inequity [119].

Educators must have the necessary preparation to interact with students, so as to relate in multicultural, diverse, free, and just societies [120]. Toward that end, teacher must value multiple cultures, and disrupts hegemonic ideologies to promote equity, while shaping student positionalities and social locations within a social justice lens [121]. As such, educators must problematize the meaning of liberty and justice for all [122]. This preparation must include a constructive approach to patriotism, rather than masking it with racism [123]. It takes an act of courage and love to teach those who stand outside the norm and are perceived different as a point of unity [124].

8. Pedagogical *Conocimientos*

Through Chicana self-reflexive methodologies such as *conocimiento* and *testimonio*, learners identify privilege, power, and difference, and reflexively speak to their lived experiences. Through self-reflection, they critically analyze structures and systematic arrangements that impact students at individual and collective levels [125]. As Méndez-Negrete posits, pedagogical *conocimientos*, in teacher/leaner interactions, engage self and other in the construction of knowledge as a social imperative that incorporates all cultures into the discussion [126]. Thus, teachers and learners engage themselves and others, thereby acquiring skills to participate and co-create as community-informed learners [127]. Méndez-Negrete illustrates the intersectionalities of critical consciousness in the creation of knowledge (see **figure** below).

PEDAGOGICAL *CONOCIMIENTOS* IN THE CONTEXT OF TEACHER PREPARATION
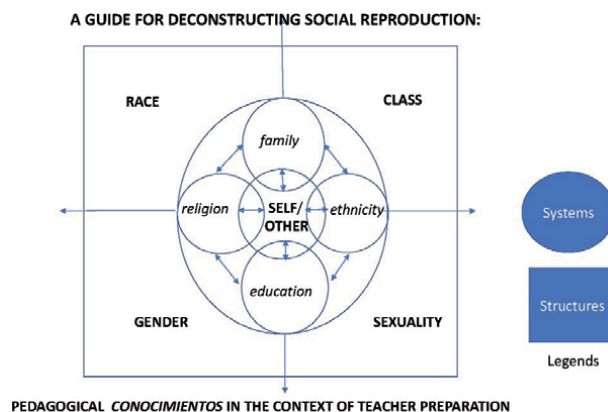
To become self-reflexive and counter the cycle of racialized classism and other positionalities, learners must engage their early socialization [128]. Complete an analysis of four generations of their families' historical legacies of immigration, language, work, education, and religion to uncover the domination/oppression dialectic of experience [129]. Initially, this process allows students to claim their history and find the gaps in the knowledge they carry, relying on self-reflexivity to reclaim their legacies, and thus liberating themselves from the traumas [130–132]. As educators engage teacher/learner endeavors, they uncover and critically analyze their legacies to recognize and unpack the privileges and oppressions they faced, as well as to understand their place in society, beginning with their relationship to immigration and migration, as well as the time it takes to lay roots in a foreign country and the losses it implicates to leave ones past behind, providing a common point of experience. Unless they are Indigenous and not immigrants because they've always been here.

To understand their working-class origins, teachers/students must also learn about their work history legacies, as it makes visible the sacrifices that have been made by previous generations. This has the potential to cultivate critical empathy and compassion in relating to the struggles of recent immigrants [133]. Language loss and devaluation is another teaching/learning tool.

Teachers may map their privilege in relation to their place in history, by understanding the human capital that allowed them to acquire their education. Finally, teachers may be able to engage ideologies that have influenced their beliefs about education which are directly related to religion. In the cultivation of critical dialogue through *pláticas*, and *conocimiento* as a self-reflexive methodology, students must engage their ancestral lived experiences, including their own upbringing, by writing about it and sharing these narratives with peers, but only when they have processed it and have become comfortable with the knowledge they have culled.

9. *Testimonios y Reflecciones*

Students talk about their lived experience in the context of their sociohistorical reality, often implicating their coming to knowledge about oppression, domination and subordination. Part and parcel of this dialogic implicates the ability to reflect on one's own experiences, as such [*reflecciones* are expressed as self-reflexive thought in the examination of their lives with the intent of creating change]. Within this approach, they are empowered by the narrative of their own experiences [134]. *Testimonio* is a vehicle for an individual act of having seen or personally experiencing a social state that departs from the individual to intersect with the collective [135]. Thus, they arrive at an epistemological consciousness regarding the critical importance for minoritized students to use their cultural intuition as an instrument that facilitates their social consciousness in the context of the intersectionality of experiences as community of learners [136, 137]. Such self-reflexive pedagogical and methodological tools offer the potential to unearth deeply embedded historical traumas and provides teachers/learners spiritual healing. Through *testimoniando*—or collaborative community discourse—learners/teachers come to self and community knowledge, enriching learning experiences through self-reflection. *Testimonios* serve to problem solve and advocate for others and their respective community rights [138].

Testimonio and *conocimientos* create the space for critical reflection and self-examination for students from diverse backgrounds to identify and ask meaningful questions that derive from the heart [139, 140]. This enables critical empathy in understanding and activates critical compassion and transformation through a heightened social consciousness for the common good and to change the world.

10. Discussion

Demographics changes into the 21st century will not render obsolete the traditional philosophies of schooling, particularly as these pertain to contemporary sustained factory model schooling that has closely aligned with notions of productivity where diverse immigrant languages, cultures, and identities are viewed as barriers. These pedagogical approaches have viewed student populations as homogenous units where teachers deliver content by lecturing, expecting students to regurgitate the acquired knowledge through rote memorization, whereby schooling is a favorable technology for the coercive assimilation of immigrants. Such practices have been found to be class biased and reproduce white-middle class privilege. Thus, social mobility through the promise of schooling has become a taken for granted outcome for the majority as the academic achievement gap widens. Currently, educational equality is a delusion.

Critical pedagogues, in addressing the social reproduction of inequality, propose equity literacy in the preparation of educators within credential programs. The legacies of Anglo-conformity and Americanization through schooling must be contested, problematized, and shelved as historical artifacts. Race, class, gender, language, sexual orientation sexual orientation, and perceived ability have been historically justified as barriers of exclusion and these practices must cease.

The historical relationship between student and teachers have generationally instilled fear and stress, with the dread of falling out of societal expectations, or of being labeled a failure in justifying a permanent underclass. These practices must be excised from the classroom, to create a liberatory practice of schooling that values each and every student as teachers/learners in the educational environment. To do this and humanize each other's histories and cultures, teachers/learners must recognize the differences amongst them, as they embrace a common point of engagement in the schooling of future citizens.

11. Conclusion

To mediate teaching and understanding, Chicana/o critical pedagogues emphasize the centrality of departing from divergent ways of knowing. They incorporate social justice in the context of intersecting oppressions, and rely on self-reflexive methodologies to humanize the learning experience.

Such pedagogical practices call for acts of love and healing when unearthing and expunging the internalized historical traumas and prejudices that have permeated throughout schooling institutions. Thus, to implement non-oppressive learning, educators must rely on self-reflection, as they examine their own historical trajectories. Engage self-knowledge as vulnerable humans moving towards the co-creation and cultivation of empowered community learners. This requires *platicando* or actively communicating and listening to access and validation of experiences of those who are marginalized as well as dominant communities, to serve as lenses for learning through equity literacy. Furthermore, educators must engage a critical empathy to understand the compassion to act for the common good, in partnership with learners [141–143].

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Chapter 18

Quality Inclusion of Young Children with Disabilities: Taking a Stance to Support Early Childhood Leaders

Sara Movahedazarhouligh

Abstract

In the educational lexicon, inclusion is not a term, rather a philosophy that values and advocates for every child's right to quality education and learning to develop their skills and realize their full potentials. Research over the past 40 years has demonstrated that inclusive education is associated with improved outcomes for children and students with disabilities. In early childhood (EC) education, inclusive education is in the best interest of all young children to improve their sense of belonging and membership, positive social relationships and friendships, and learning goals. As more EC programs, schools, and educational settings move toward including children with disabilities in general education settings, a need exists to better prepare EC professionals, most importantly EC leaders as gatekeepers of quality to better enhance and facilitate inclusive instructional opportunities for children with disabilities. This chapter focuses on EC leaders' role in developing, adopting, and supporting inclusive education with recommendations to implement and sustain quality inclusive education practices in EC programs and settings.

Keywords: early childhood, inclusion, inclusive education, young children with disabilities, early childhood leaders

1. Introduction

1.1 Quality inclusion of young children with disabilities: taking a stance to support early childhood leaders

There is no better time or place to implement and advocate for inclusive education and inclusive communities than in early childhood (EC) education. Inclusive education includes the vision that all children belong, are valued, and are celebrated can learn in the mainstream of their educational settings and their communities [1]. Research over the past 40 years has continued to demonstrate that inclusive education is associated with improved outcomes for children and students with disabilities and that self-contained settings fail to deliver on their promises of effective practices [2]. Quality inclusive education can help children and students with disabilities with academic [3, 4], communication [5], social and emotional [6, 7], and self-determination skills [8, 9]. Also, educating children and students with disabilities

in general education settings can increase learning expectations for everyone and results in greater empathy and acceptance of differences among all children.

Historically, children and students with disabilities were educated in segregated settings with little or no social or academic interactions with peers without disabilities [10]. In United States (US), federal legislation has supported the right of children and students with disabilities to be cared for and educated with typically developing peers since the passage of PL 99–457 of the Individuals With Disabilities Education Act (IDEA) in 1986. IDEA does not use the term "inclusion." Instead, it requires school divisions to provide a free, appropriate public education (FAPE) and offer a continuum of placement and education options to meet the needs of children and students with disabilities [10] . This requirement is known as the least restrictive environment (LRE) and does not distinguish between school-aged and preschool-aged children. The regulations state:

> Least restrictive environment (LRE) means that to the maximum extent appropriate, children with disabilities, including children in public or private institutions or other care facilities, are educated with children who are not disabled, and that special classes, separate schooling, or other removal of children with disabilities from the regular educational environment occurs only when the nature or severity of the disability is such that education in regular classes with the use of supplementary aids and services cannot be achieved satisfactorily (34 CFR 300.114 through 34 CFR 300.120).

The LRE requirements under Part B of IDEA support the education of children with disabilities in regular classes alongside their typically developing peers in a regular EC setting where most children are typically developing [11]. Children considered to be typically developing are not identified as having a disability and do not have an Individualized Education Program (IEP) [12]. In the US, the National Association for Education of Young Children and Division for Early Childhood (NAEYC/DEC) developed a joint position statement to emphasize the impact of quality inclusion for policy, practice, and potential outcomes for children birth through eight years of age and their families (DEC/NAEYC, 2009). The NAEYC/DEC statement defines EC inclusion as:

> Early childhood inclusion embodies the values, policies, and practices that support the right of every infant and young child and his or her family, regardless of ability, to participate in a broad range of activities and contexts as full members of families, communities, and society. The desired results of inclusive experiences for children with and without disabilities and their families include a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential (p.2).

The Joint Position Statement (2009) highlights three main principles of inclusive education in EC, including (a) access: providing children with a wide range of learning opportunities, activities, settings, and environments, (b) participation: providing additional individualized accommodations and supports to children with more individualized needs to enable them to participate fully in play and learning activities with their typically developing peers and adults, and (c) supports: creating an infrastructure of systems-level supports to strengthen the efforts of individuals and organizations providing inclusive education services to children and families. These principles need to be utilized collectively to result in high-quality programs and services [13].

While the LRE requirement in IDEA is the same for eligible students of any age, providing inclusive EC education services is unique. EC inclusion differs from

inclusive placements and practices in K-12 grades. Some of the differences include the availability of EC programs that offer inclusive services than the K-12 sector, availability of different programs based on child's age (especially for two and three-year-old's), location of the programs that might happen in settings outside of the public schools (e.g., Head Start, child care, community preschool programs which creates wide variability in teacher training, education, and expertise and may impact program quality in programs settings outside of public schools), different teacher-child ratios and class size based on the type of the programs, and the curriculum in EC programs that differs from the educational curriculum for older children [14]. In contrast to the traditional K-12 curriculum, which is academically oriented and teacher-directed, the EC curriculum includes a balance of child-initiated and teacher-directed activities, focusing on all developmental domains [15].

However, despite the substantial body of evidence on the benefits of inclusive education for children with disabilities and the growing body of best inclusive practices, a large percentage of children with disabilities are still educated in separate classrooms or settings [2]. While the definitions of settings and reporting methods by states have changed over time, comparing the 1985 data to the 2015 data, the provision of special education and related services to children with disabilities ages three to five years in regular EC settings appears to have increased by only 7.2%. According to IDEA Part B state performance plan and annual performance report, for almost all IDEA disability categories, the percent of children, aged three to five years who receive the majority of their special education and related services in the regular EC settings in the programs is between 20–40% [16]. However, the goal for meaningful inclusion is that children and students with disabilities get to attend and receive the majority of special education and related services in a regular early childhood program and/or educational setting for 80% of their academic time.

2. Barriers to quality inclusion in early childhood

The primary challenges and barriers to inclusion in EC settings include EC personnel's knowledge, skills, and expertise, within and cross-agency collaboration, and beliefs and attitudes among EC personal and families regarding children with special needs [16]. Many EC professionals, especially those trained as general EC professionals and not dually endorsed in EC/ECSE, do not have the knowledge, skills, and resources to serve children with disabilities. IDEA requires that EC personnel either have the expertise or are supervised by someone who does [16, 17]. The other challenge deals with agency and cross-agency collaboration in EC programs, communities, and systems at local, state, and national levels [11]. The challenges include the agreements for EC programs to cooperatively provide services to children who meet the eligibility requirements to receive early intervention (EI) or ECSE services. Some examples of such collaborative arrangements involve shared responsibility, communication, shared assessments, and planning and shared resources [16].

Challenges of attitude and beliefs involve fears and inadequate or misleading information that can contribute to EC personnel and families' reluctance to include children in inclusive EC settings. EC educators and professionals with more positive attitudes toward teaching children in inclusive classrooms are more likely to implement evidence-based practices related to goals in children's IEPs, create accessible environments, and use appropriate strategies to promote positive developmental and educational outcomes for children with disabilities and their families [13, 16, 17]. Policies and procedure challenges including personnel policies (e.g., training, recruiting, and retaining personnel), fiscal policies (e.g., funding streams, state reimbursements, and legislations), and conflicting policies across programs

(e.g., Head Start, child care, state preschool, state quality ratings and improvement system, school district), are also among barriers to implementation of quality inclusion in EC.

Today, the common assumption for teaching children and students with disabilities is to consider their general education classroom presence. However, there has been a movement to emphasize the quality of learning taking place along with the quantity of time spent in general educational settings [4, 18, 19]. Placement in a general education setting alone does not guarantee improved outcomes. Adequate supports for learning and participation must also be in place [20]. The focal point in the current efforts to promote inclusion and access to the general education curriculum has shifted primarily from where children or students should receive their education to what and how they need to be taught and what outcomes should be achieved [21].

3. EC leadership and quality inclusion

EC leaders are best positioned to drive and bring about change in all children's education and lives and develop a vision and belief that inclusion is essential in their communities. EC leaders set the tone, manner and philosophy of EC programs [22]. The manner with which EC local leaders approach inclusion affects how personnel and families feel about inclusion and their capacity to provide quality inclusive education to children with disabilities. EC leaders are also best positioned to establish a unified purpose for quality inclusion in EC education by getting intentionally and strategically engaged in cross-agency collaboration and efficient and sustainable infrastructures across different EC settings. EC leaders can increase equitable opportunities for all children and their families by making the inclusion of children with disabilities a priority in their decision-making about program design and resource allocation. The EC leaders also play a pivotal role in quality inclusion by building and supporting a competent workforce with the knowledge, skills, and competencies to implement and sustain quality inclusive practices. In addition, EC leaders can deliberately shift policy to ensure the appropriate professional standards, embedded professional development, and dedicated system of supports that promote responsive practices, positive attitudes and beliefs about inclusion, and knowledge of disability among the key stakeholders that are so crucial to this effort [16]. Considering the pivotal role of EC leaders play in implementing and advancing inclusion, the recommendations below aim to help EC leaders better execute and sustain quality inclusion in EC programs and settings.

In this chapter, EC leaders refer to all change agents at local and program levels involved with leadership or administration positions to implement and provide educational and developmental services to young children from birth through 5 years of age in local educational settings. Local-level and program-level EC leaders' role in making quality inclusion happen is crucial and fundamental to young children and their families. No matter what higher-level decisions, policies, and procedures are available, the local leaders are the acting agents closer to practice and responsible for implementing, transferring, and translating the decisions, policies, procedures, and evidence-based practices into everyday practice settings.

The local-level EC leaders can affect financing, contracting, staffing, transportation, and curricular procedures that might affect EC inclusion. The program level EC leaders might include school district and community-based early childhood program officials such as child care, Head Start, school districts, and other early care and education settings that can impact financing, contracting, staffing, transportation, curricular procedures, and policies and procedures that either promote

or hinder EC inclusion [16]. The recommendations below aim to provide supporting strategies and initiatives for local EC leaders to build quality inclusive EC programs.

4. Starting with the vision

As the leader of an EC program, developing a vision statement for inclusion will help guide the leaders in designing and implementing his/her efforts toward more inclusive practices. It creates a consistency of purpose in the program. A vision by itself is generally vague. The leader articulates the vision in more specific terms through the mission and belief statements and establishes the goals, objectives, strategies, and action tactics [23]. For EC programs, as leaders reflect on the ideas, concepts, and values they have identified around EC inclusion, and their program's mission, they can use the vision and mission development results as guidance in developing an action plan to move forward toward implementing inclusive practices. Starting with the vision can be designed to help the EC leaders to:

- Think about specific strategies needed to meet the program's goals around inclusion.

- Decide who will take the lead on each strategy.

- Record the anticipated date of completion and note any progress made.

- Mobilize the resources of the program to enable the vision to be realized.

- Identify the major hurdles that are likely to be faced in implementing the actions.

- Monitor the progress toward fulfilling the mission and realizing the goals and objectives.

5. Effective determination of services

The LRE requirements under Part B of IDEA support the education of children with disabilities in regular classes alongside their typically developing peers in EC programs that provide early care and education to children birth through age five. Typically developing children are not identified as having a developmental disability/delay and do not have an Individualized Family Service Plan (IFSP) or IEP. IFSP is used in early intervention for children ages birth through two and their families and focuses on the child and family and the services that a family needs to enhance their child's development. IEP is used in special education for children ages three to 21 and focuses on their educational needs [24]. There are several settings where children may be placed to receive special education and related services that include home, regular EC classrooms, special EC classroom, service provider location, and/or community service provision settings. IFSP/IEP team must consider the continuum of placement options and determine the setting appropriate for the individual child. EC leaders need to monitor the process to make sure as a program:

- There is a multidisciplinary approach through collaboration and consultation during IFSP/IEP meetings between professionals from different disciplines and backgrounds, including ECSE teacher, EC teacher, educational assistant

> or paraprofessional, Occupational Therapist (OT), Physical Therapist (PT), Speech-Language Pathologist (SLP), Developmental Specialist, Family-Service Coordinator, Interpreter, Case Manager, Psychologist, Vision Specialist and Deaf and Hard of Hearing Specialist.

- The child's present level of academic achievement and functional performance is developed and documented. In EC education, this includes how the disability affects the child's participation in age-appropriate activities.

- Annual IFSP outcomes or IEP goals and objectives are developed to address the child's learning and development needs. For goals and objectives which cannot be met in a general education setting, IFSP/IEP team should determine in which special education or community settings the goal(s) and objective(s) will be implemented.

- The IFSP/IEP team considers the goals/outcomes as they determine services and placement.

- When determining the child's placement, no single model for service delivery to any specific population or category of children with disabilities is determined. The determination should be based on the needs of the child and the family, not what placements are readily available.

- When the IFSP/IEP team is determining placement options, the team considers the regular EC settings and classrooms as a priority and determine what accommodations, modifications, and supplementary aids and services are needed for the child's success before a child can be placed outside the regular EC program.

- IFSP/IEP team determines settings or activities to provide additional opportunities for interaction with typically developing peers.

- IFSP/IEP team determines a method to evaluate the appropriateness of the service(s) through ongoing assessment of the child's learning and development.

6. Establishing collaborative and cooperative partnership

Early childhood professionals are from diverse professional backgrounds such as general EC education, early childhood special education, occupational therapy, physical therapy, speech-language pathology, and psychology that requires them to use multidisciplinary approaches to draw on the skills and expertise of their peers to be able to provide better support to children and families. Effective collaborative and cooperative partnerships with professionals within multidisciplinary approaches emphasize the need for EC professionals from various backgrounds and collaborate to achieve the best outcomes for children and families [25]. Such approaches can only be realized where professionals communicate and plan in partnership, sharing their expertise and developing systematic and comprehensive approaches to children's learning and development. Professionals themselves also benefit from working in collaboration [26]. Collaboration provides opportunities for professional development through formal and informal learning from peers with diverse experience and expertise. EC leaders can facilitate EC professionals' collaboration opportunities by

creating communities of practice and learning communities that include a shared vision and understandings to achieve best practices. In communities of practice, EC professionals can find opportunities to build knowledge by participating in collaborative reflection about their methods and connecting with others who share a commitment to continual reflection and improvement. These opportunities arise from what EC professionals have in common with one another, a focus on the child's learning and development outcomes, and a commitment to provide quality services to children and their families. EC leaders need to make sure that as a program, they:

- Work collaboratively to share information and plan to ensure holistic approaches to children's learning and development.

- Understand each other's practice, skills, and expertise, and share their informed opinion when appropriate.

- Recognize the importance of transitions for children and their families within and across EC services and settings, and ensure that they understand the process and are prepared for these transitions.

- Ensure continuity for children's learning and development by building on their prior learning and experiences and share knowledge and expertise through collaborative partnerships with other practitioners, and contribute to new knowledge about EC learning and development.

- Understand the importance of communicating and planning in collaboration to respond to the needs of children with disabilities and their families and to ensure comprehensive, holistic, and continuous approaches to their education and development, and

- When sharing information, are careful to respect and preserve the privacy of children and families.

7. Implementing evidence-based inclusive models, frameworks, and practices

EC inclusive practices can be implemented in various settings where children with disabilities are included alongside their typically developing peers. EC Leaders need to put considerations for staffing, classroom configurations, and service delivery that have guidelines for class size and staffing standards, procedures for the ECSE classrooms' caseload, requirements for teacher licensure and/or endorsement in each program, physical space in the classroom, and other factors impacting teaching and learning practices. That way, they can ensure that all children's needs are met, including the unique needs of children with disabilities.

There are several classroom considerations for providing special education and related services in inclusive settings. Below is a list of common models recommended for inclusive education. EC leaders need to make sure collaboration among professionals and paraprofessionals, including related service providers, happens smoothly and professionally. Team members from different disciplines work together to plan and implement an appropriate educational program for the child with a disability. Below some of the current inclusive instruction models are presented. These inclusive instructional models apply to children with disabilities between three to five who transition to preschool settings.

7.1 Individual teacher model

In the individual teacher model, one teacher has a classroom including children both with and without IEPs. The teacher needs to be licensed and endorsed in either ECSE and EC for three and four-year-olds (add-on endorsement), early/primary education, PreK-3. The teacher is skilled in meeting the needs of both groups of children. Careful consideration is given to the class size/caseload, and the number of children with IEPs, including the level of support required [27, 28].

7.2 Reverse inclusion

In reverse inclusion, typically developing children are placed in ECSE classrooms so that both typically developing children and the ones with special needs can learn together in an inclusive environment. This option provides a way for children with disabilities to learn alongside their typically developing peers as role models when quality regular EC settings are not available. To qualify as a regular EC classroom, at least 50% of the children must be typically developing to provide peer models to enhance engagement among all children, provide peer interaction, and develop friendships. Providing only a few typically developing children may not give the same opportunity for learning, friendship, and growth and development. Further, the typically developing peer models must regularly attend the program to keep the class dynamic, consistency and frequency. However, it should be noted that implementation of this model is subject to the local education agency (LEA) rules and regulations [27, 28].

7.3 Co-teaching

In the co-teaching model, a general EC teacher and an ECSE teacher combine their knowledge, skills, and expertise and meet all children's needs in the classroom. Both EC or ECSE teachers may be in the classroom for all or some of the school day. Both teachers' goal is to share responsibility in the implementation of children with special needs' IEPs. Co-teaching includes several options for managing teaching time that includes:

Team teaching. Team teaching happens when both teachers (general EC and ECSE) deliver the same instruction simultaneously, with both teachers being responsible for the planning and implementing the instruction through separate lessons throughout the day. Team teaching helps clearly define each teacher's responsibilities and thus prevent misunderstandings and confusion in sharing responsibilities.

Parallel teaching. Parallel teaching includes both teachers delivering the same instruction at the same time with different groups of children. Creating instructional groups facilitates more individual participation and more direct teacher supervision.

Alternative teaching. In alternative teaching, one (either EC general teacher or ECSE teacher) takes responsibility for a large group of children. Simultaneously, the other teacher works with a smaller group who may need specialized attention and or instruction.

Station teaching. When using station teaching, co-teachers divide both the content and class. Each educator teaches the same content to one group first, and the second group receives the instruction later. Station teaching allows teachers to offer individualized instruction to smaller groups of children who need more individualized attention.

One teach-one observe. With this model, one teacher delivers the instruction, while the other educator completes student observation. The co-educators agree on the behaviors they will be observing and the method they will use to record their observations. Once the observation is conducted, they analyze the findings and plan or modify their instruction accordingly.

One teach-one drift. In this approach, one teacher takes the primary responsibility for delivering the instruction, while the other teacher circulates among the children providing targeted assistance where necessary [27, 28].

7.4 Itinerant model of collaboration

In an itinerant model, an ECSE endorsed teacher travels between classrooms or programs to consult with EC general teachers and/or to provide direct services to individual children as needed. Consultation is an essential element of an itinerant service delivery model and can be used to address children's physical access within settings, support for children's social inclusion, support for children's active engagement in activities, identification of and implementation of children's Individual Family Service Plans (IFSP) outcomes/Individual Education Program (IEP) goals, and modifications of supports [27, 28].

No matter what specific model of instruction delivery is chosen, based on the feasibility of the existing situation, EC leaders need to monitor to make sure as a program, they:

- Choose the best model to deliver the instruction and implement the model with fidelity.

- Plan and outline their instructional and organizational decisions and routines, know what the program's instructional content will consist of, how it will be delivered, by whom, and discuss what expectations they have for the children with disabilities' learning and development.

- Agree on how and when instructional planning will be done.

- Assist teachers in set-up the space for inclusive classrooms.

- Identify what will be evaluated in terms of children's learning and development, how will it be evaluated, who will do the evaluation and what criteria will guide their interpretation of the results, and

- Seek families' perceptions about the effectiveness of the implemented approaches.

8. Pre-service preparation and in-service professional development

EC workforce needs several experiences that promote their education, training, and development opportunities (Frantz et al., 2020). Professional development (PD) refers to how professionals move from awareness (knowledge) to action (practice) and the adoption of particular dispositions in their professional repertoires [29]. In general, professional development efforts have traditionally taken five forms: (a) formal education; (b) credentialing; (c) specialized, on-the-job in-service training; (d) coaching and/or consultative interactions; and (e) communities of practice (CoPs) or collegial study groups [30]. The preparation programs for preservice EC and ECSE

professionals provide knowledge and skills related to EC education within multiple coursework to prepare preservice educators in fields that involve education and development of young children (e.g., child care, developmental psychology, special education, or early childhood education). The in-service preparation or professional development programs for EC and ECSE professionals are provided while the educators are working in their career at EC/ECSE settings to support their professional practice and services for children and their families [31]. EC leaders must do their best to make sure that as a program, they:

- Provide high-quality professional development opportunities to enhance systems and individuals and engage the workforce in activities that are self-sustaining and growth-producing.

- Provide opportunities for workshops, program-based conferences, in-service presentations, live or Web-based lectures or discussions, live or video demonstration, behavior rehearsal, manuals, tutorials, and a host of other modes, synchronous and asynchronous, that impart knowledge and information of the workforce and attempt to affect professional practice.

- Reinforce evidence-based skill development and application practices through coaching, consultation, and collaborative partnership. Coaching opportunities might include independent and/or shared observations, action (demonstration, guided practice), self-reflection, feedback, and evaluation of the coaching process/relationship. Consultation opportunities might include systematic problem solving, social influence, and provision of professional support for immediate concern,

- Create communities of practice where groups of EC professionals come together based on a common professional interest and a desire to improve their practice in a particular area by sharing their knowledge, insights, and observations.

- Establish a positive, constructive professional development relationship with the workforce in the programs such as trust, shared goals, respect, flexibility, and commitment in planning professional development events and activities.

- Consider providing professional development opportunities that are useful for certain practitioners and professionals across distinctive and unique work settings and conditions (e.g., school-based early childhood center, home-based services, stand-alone private child care, federally or state-funded preschool program), age of children served (e.g., infants, toddlers, preschoolers), number of other adults in the setting, and adult-to-child ratio.

9. Parent partnership

A family-centered approach is a necessary component of a successful parent-professional partnership. The importance of involving parents as partners in their children's educational journey cannot be overestimated [32]. An effective partnership between home and educational settings benefits children, families, and programs to achieve positive academic and developmental outcomes for young children, their families, and communities. EC program leaders must understand the barriers that keep parents from being effectively involved in their child's education

and develop multiple avenues to work together so that everyone benefits and feels valued [33]. Quality family partnership is more crucial for children with disabilities, as parents of children with disabilities are a vital partner in the team to facilitate their child's learning, advocate for their child's unique needs, and communicate information that may benefit their child's learning [34]. The EC leaders need to build upon the strengths of families and support the efforts of parents to become more involved in their children's learning and make sure that as a program, they:

- Involve parents in setting goals for their child's learning program during the IEP/IFSP meetings.

- Value parents' opinions, concerns, ideas, and visions.

- Recognize that parents care very much about their children's learning and development.

- Recognize parents as critical contributors to their child's learning experiences.

- When planning learning activities for children, include parents' resources and talents.

- Find ways to know more about parents and the family by collecting information from parents (e.g., home visits, interviews, phone calls, and contributions to the child's portfolio). This information can be used to develop the child's learning experience.

- Keep parents informed about the educational status of their child by sharing information about how children learn and child development as it relates to the classroom setting.

- Communicate regularly with parents through print materials, phone calls, home visits, informal parent gatherings, and parent education workshops.

- Use problem-solving strategies when conflicts arise with parents.

- Appreciate and respect family values which may be different from their own.

- Maintain a warm, friendly, open, and responsive program climate that encourages parents to spend time there and feel belonged.

- Provide opportunities for parents to interact with other parents and program personnel (e.g., family rooms, parent discussion, and support groups).

10. Community partnership

The unique cultural, ethnic, and language aspects of each community and its rural or urban nature offer both opportunities and challenges for establishing responsive community partnerships in EC education [35]. Effective community partnerships establish mutually beneficial relationships for children, families, communities, and EC programs. Within community partnership, the EC program functions as a support center for the network of agencies and institutions committed to meeting community needs and expanding learning opportunities for all community

members [36]. Using the EC program as community centers is also a cost-effective, practical way to use one of the community's largest investments, and can result in increased academic achievement, improved learning climate. Besides, by tapping the tremendous expertise that exists in any community, community education helps bring the concept of inclusion closer to reality. Some examples for community EC partners include early intervention services, preschool special education services, Head Start and Early Head Start, Pre-K services, child care, family home care providers, private preschool, and families. EC leaders need to make sure that as a program, they:

- Identify agencies in their community that can interact with or could potentially interact with serving young children with disabilities and their families and establish ideas on how to strengthen the connection, build a more cohesive partnership, improve the process, leverage the strengths that exist, and any other areas of potential growth.

- Develop a process of ongoing communication and dialog between collaborating community partners to gain an understanding of the requirements each partner needs to meet, the procedures each partner follows to meet those requirements, and the agreement each partner makes to support efforts to provide inclusive services.

- Reach out to the community partners and communicate the importance of inclusive education for the children, families, and the community itself, and encourage their active involvement.

- Establish rapport and coordinate access to resources and services with businesses, agencies, and other groups, such as health care, cultural events, and tutoring or mentoring services for the EC inclusive programs.

- Identify, develop and use the leadership capacities of local partners for ongoing program and community improvement efforts.

- Use the physical, financial, and human resources that exist in the community to establishing close working relationships with community partners and fulfill the program's vision and mission regarding inclusive education.

- Modify the program's strategic goals to respond to the continually changing needs and interests of the community.

11. Conclusion

Quality inclusion of young children in early care and education settings requires assistance from a variety of agencies, disciplines, and partners. EC program leaders are critical agents closer to practice and responsible for program implementation and for supporting and guiding quality service provision to children with disabilities and their families.

This chapter aimed to assist EC program leaders in identifying, developing, and sustaining inclusive opportunities within high-quality early childhood programs for children with disabilities by addressing program factors that impact the service provision for young children with disabilities eligible for special education services. Although this chapter focuses on the inclusion of young children with disabilities

in educational settings, it is the shared vision of an ideal society that all people be meaningfully included in all facets of society throughout their lives. This can begin in EC education and care programs and continue into schools, workplaces, and the broader community and society.

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Chapter 19

Linguistic Diversity and Comparability in Educational Assessment

Helena Reierstam and Meeri Hellstén

Abstract

This chapter reports on recent mixed method research investigating the comparability between assessment in relation to linguistic and cultural diversity. It takes as its premise that assessment is an integral part of instruction that becomes a main component for attaining of equal opportunities. Therefore, assessment plays a key role in terms of the wider consequences at both individual and societal levels. One of the central functions of assessment is its measure of quality assurance and comparability for grading to such an extent that it is readily employed to indicate evidence of student achievement of standards and quality. This may sometimes present issues in terms of learner diversity. We focus on the challenges facing teaching in linguistically diverse learning settings in which a foreign language may be used as an alternative to instruction. Here we draw on a recent study from two separate multilingual learning contexts in Sweden. We shed light on the generic questions arising from such disjuncture in these linguistically diverse educational sites as evidence on a call for much needed scholarly attention on the quality aspect in assessment.

Keywords: comparability in assessment, target language, intended learning outcomes (ILOs), CLIL, language learners, diversity, quality education

1. Introduction

This chapter takes up on the issue of comparability of academic assessment in contexts of linguistic and cultural diversity. In schooling, assessment is an integral part of instruction and in a meritocratic society assessment of educational achievement becomes key to the attainment of equal opportunities [1] and its consequences for individuals as well as for society at large cannot be overlooked. The central function of assessment is a measure of quality assurance and comparability in educational grading and is used as evidence of student attainment in relation to standards [2]. A fair claim might be that assessment is probably one of the most critical aspects of the teaching and learning process, since the assessments made by teachers will influence both future prospects and further opportunities in students' lives and careers, but importantly may also impact on student motivation and well-being. Respect for learning is therefore accomplished when teachers have insight into their authority as assessors to provide fair and equitable assessment practices for all [3, 4]. Bal and Trainor [5] note that assessment which disregards issues of diversity and equity contributes to inequalities in outcomes. However, assessment

that is fair to all can also serve as a bridge to educational equity [6]. All of this amounts to assessment having implications at both individual and societal levels.

Language as a meaning making device is needed in order for students to validate their knowledge and make the cognitive thought processes inter-subjectively accessible to an assessing teacher. Language plays a vital role in accessing and communicating subject content and it is thus of paramount importance that all students are granted opportunities to use and learn how to use the language needed for learning and for the assessment purposes [7–11]. In a globalized society perhaps more students than ever are instructed in a second language rather than in their first language [12] due to reasons of migration but also incentives to meet the demands of an increasingly culturally and linguistically diverse global market. In order to meet the growing demands of diversity in our classrooms, The European Commission (2003) has advocated the use of novel teaching approaches, involving the use of foreign language as the medium of instruction within the subject curriculum with the added effect of promoting the spread of learning more languages. Knowledge of multiple languages is key to enhancing life and work of individuals, according to a recent report [13]. Subsequently, most universities have developed international curriculum options [14], leading to that many teachers find themselves engaged with students made up of different nationalities who sometimes fall short of native-speaker competences. It also means that English is often used as a lingua franca, with teachers as well as students, using a second or foreign language as the medium of instruction.

In relation to what has been outlined above, the challenges involved in teachers' assessment of students' subject matter knowledge in linguistically diverse classrooms where a foreign or second language is used as the medium of instruction need to be addressed. This chapter draws on a recent study [15] conducted in two different multilingual contexts in Sweden, which pinpoints generic questions in relation to assessment in linguistically diverse education in need for more scholarly attention. One justification for this derives from observed inconsistencies in ontology, policy and pedagogy, which will be discussed in the following. The inconsistencies relate to an interesting juxtaposition of two rather disparate concepts, *comparability* and *diversity*. Whereas comparability assumes a certain level of standardization in order to compare two similar or equivalent entities, diversity is defined as being composed of differing elements and variety. Hence, the pressing question arises if it is even feasible to find comparability in learning outcomes in linguistically and culturally diverse classrooms. How can learning standards, designed with the purpose to describe students' progress and make achievements comparable be applied in heterogeneous student groups? This is especially the case where cultural and linguistic diversity of students may be overlooked in generic language policies and practices for schooling. The quality of assessment is closely related to fairness in the judgment of learning outcomes as well as in learning opportunities, which means that linguistically heterogeneous student groups require new ways of integrating language skills assistance within the curriculum. At the end of this chapter some suggestions are discussed in relation to curriculum design, teacher assessment literacy, responsibility for academic literacy and the educational organization around these.

2. Background

As greater numbers of second language students appear at various levels in education, including college and university programs, there is a pressing need to create linguistically accessible instruction and learning. The term 'second language

students' (or L2 students) here refers to any student whose primary language is not the majority language of the country in question, or to students whose first language (L1) is not the language of instruction. This is the case in learning spaces where a foreign language is used as the medium of instruction to promote the learning of other languages [16, 17] or where a language, often English, is targeted and used as an incentive for increased internalization (e.g. [18]). Content and language integrated learning, CLIL or English medium instruction, EMI [19–21] are sometimes used to label such teaching approaches. Whereas the teaching of curriculum content is said to be the primary focus in EMI and language learning is seen as incidental, CLIL is often described to have more purposely dual focus, language and content [22]. However, this is not necessarily always the case. Studies show that CLIL approaches fail to identify specific language learning outcomes in content courses or adopt appropriate teaching and assessment designs which accommodate the student's language learner backgrounds [18, 23]. Therefore, in order to achieve positive outcomes in both language and subject content in CLIL contexts it is desirable that "CLIL teachers should be experts in the content area and also have deep understanding of the cognitive, socio-cultural and psychological elements of foreign language learning" ([24], p. 88).

Courses are ordinarily designed around subject content being broken down into learning objectives or goals, with explicit criteria and levels of performance which are used to assess the quality of students' learning. The criteria specifically targets subject specific learning outcomes. However, generic graduate attributes and academic skills are explicitly or implicitly embedded as expected outcomes within the subjects. The generic skills can be labeled as *transversal skills, academic literacy, language across the curriculum* or *content compatible language*, in contrast to *content-obligatory/subject specific language* (Fortune & Tedick, n.d.; [25]). Whereas the latter, content-obligatory language, represents more or less distinct subject specific concepts or disciplinary genre that are characteristic for a subject discipline (e.g metamorphosis, post-war period) the others include generic elements of academic language, often characterized by a high level of linguistic density and abstraction [9, 26]. Schleppegrell [9] notes that the academic language features are especially challenging for students and need to be addressed in order to help students construct and organize knowledge in the subject disciplines. It is a matter of empowering students through an appropriate pedagogy.

Based on the linguistic diversity in general education several voices have been raised claiming that all teachers need to be 'language teachers' in some sense (e.g. [6, 9, 10, 27, 28]). "Over the years we have found that teaching content in a language in which the students have limited proficiency differs significantly from teaching that same content in a students' first language. Teachers need a repertoire of strategies to ensure that students develop both content and language skills" ([27], p. 36). If teaching and modeling language is not part of the curriculum, an alternative approach may be to make modifications in the intended learning outcomes, what Barker [29] refers to as "an ill-advised lowering of standards or a necessary and pragmatic response".

Universal design for learning, UDL, evolved as a set of principles to make general education accessible for students with disabilities. The goal is to value diversity while promoting equality and inclusiveness by providing flexibility to adjust and cater for students' different strengths and needs [30, 31]. The name may be misleading since the term *universal* refers to the use of a variety of teaching methods, rather than one way, in order to remove barriers to learning and give all students equal opportunities to succeed. Edyburn [32] notes that when designing instruction for the academic success of diverse students, it is important to identify *when, where, why* and *how* learners will get stuck. UDL has been described as especially helpful for second

language learners where evidently language deficiency may be an important reason they are denied equal access to learning. Edyburn [32] notes that when supports are embedded already in the design of the curriculum, it reduces the likelihood of student failure and frustration as well as alleviating the stress for teachers to reactively create accommodations and modifications. When the UDL principles – to provide multiple means of representation, multiple means of action and expression and multiple means of engagement – are applied among language learners, the teachers will help the students to have an opportunity to build background knowledge, interact with information visually as well as auditorily. They will also provide rich scaffolding and support to help highlight the patterns of language and allow the students to have numerous opportunities to express their knowledge in meaningful ways (Novak, n.d.). The option to build in numerous, or different ways of communicating knowledge already at the initial planning of a course aligns with assessment validity theory which is further outlined below. UDL pedagogy has been identified as a way to provide fairer tests by using multiple ways of action and test items which take the students' diverse backgrounds into account, not relying on cultural information outside of what has been taught or presented in the test content [33, 34]. Fovet [34] notes that accommodations and inclusive pedagogy are often considered unnecessary for graduate students since they supposedly have already adopted academic strategies. However, as argued by Fovet [34], traditional forms of accommodations are ineffective with regards to the great diversity that can be found among students today. Haigh [35] further notes that teaching learners with different cultures, worldviews and aptitudes is an abiding problem in Higher Education which calls for a design for pluralism, especially in assessment, to reach educational inclusivity.

UDL explicitly forwards a framework for the design of lesson plans and assessments based on three main principles: to provide multiple means of representation, multiple means of action and expression, and multiple means of engagement. This can also be identified in other models used for the instruction of language learners. Two decades ago, Gibbons [36] for instance, spoke of scaffolding learning by using a genre-based curriculum cycle, starting by building knowledge together of the field, modeling text types, working through joint construction of subject specific genre before reaching students' independent writing. While the underlying UDL methodology is already employed by many, whether identified specifically as universal design or not, this is challenging for teachers for many reasons, one being time constraints, or as mentioned here, unfamiliarity with language teaching strategies. It is not only a challenge, but a threat to fairness and comparability in education if this becomes a matter of individual choice and experience, rather than a shared responsibility. As mentioned here in the introduction inconsistencies in the alignment of policy and pedagogy involving difficulties in matching intended learning outcomes and standards with student cohorts which lack expected academic skills at the outset need to be regarded as a shared concern in quality education. In the next section the theoretical framework and underpinnings adopted in this chapter are presented.

3. Theoretical framework

A fairness argument in assessment suggests there needs to be comparability of interpretations and decision outcomes across groups. While the theoretical framework used for this chapter leans on a validity and fairness perspective in educational assessment, the empirical data are based on teachers' assessment beliefs and practices in multilingual education. Never the less, teachers' conceptions are situated in context which is determined by policy documents, teachers' disciplinary

background and their experience of teaching language learners. Multilingual is here used as a generic term, including the use of two or more languages [37]. Policy is defined as a set of guidelines or organizational principles and operational practices that are informed by values [38]. The principles are expressed as educational standards and core objectives in various subject curricula at university level and the national curriculum in compulsory education. Therefore, three interdependent levels or perspectives need to be considered when looking at assessment, i.e. policy, teacher and pedagogy, where the latter represents how teaching is put into practice in the planning and sequencing of curricular content, in activities and assessment tasks. These three components, policy, teacher and pedagogy, are in turn influenced by the prevailing ontological and epistemological paradigm in society, which arguably are not always consistent. For the case of this chapter and study the ontological and epistemological perspectives of language are of particular interest. Ortega [39] defines two possible ontological perspectives on language: essentialist or non-essentialist. Whereas the essentialist perspective implies a monolingual worldview, based on traditional ontologies rooted in structuralism and named languages, using fixed developmental language dimensions to describe developmental stages, the non-essentialist perspective relates to what has been defined by Li Wei in 2019 as the post-multilingual era [40]. The multilingual turn means a shift away from named languages and represents an empowering ideology as can be found in the discourse surrounding translanguaging practices [41–44]. Whereas the essentialist view holds that there are named languages and traditional language categories cannot be ignored, the non-essentialist stance implies that language is rather seen as a process than a product and there is a reluctance to speak of deficient language.

The figure below attempts to illustrate how the interdependent components must be considered in combination and interpreted in relation to a surrounding ontological and epistemological paradigm which is discussed below. The figure was first inspired by a model used by Nikula et al. [12] and was developed by Reierstam [15]. The current figure was further developed for the case of this chapter by Reierstam and Hellstén, by including the reference to the ontological and epistemological stance (**Figure 1**).

Assessment often comes at 'the end' of a module or of a course. In constructive alignment theory (cf [45]), a backwards design is advocated which means that the intended learning outcomes are taken as point of departure, "starting with the end", when planning instruction [46]. It starts with defining what the students must demonstrate they know and how well they must be able to do it according to the standards, and this decides what teaching, assessment and feedback methods to use during the course. If the language elements of a course are not specified in advance they cannot be taught nor assessed, for the assessment to be considered valid and fair. Messick [47] identified a threat to making valid interpretations of assessment outcomes which he labeled *construct-irrelevant variance*. It means that adequate and appropriate inferences cannot be made about a student's subject matter knowledge if an assessment contains for example, language elements that the student has not been given an opportunity to learn before being assessed. Therefore, the equitable and fair assessment requires that students be assessed in ways that are consistent with how they were taught. Kane [3] makes a distinction between procedural fairness and substantive fairness where the first stipulates that all students taking a test should be treated in essentially the same way, that is, by doing the same or equivalent assessments under the same conditions. This also requires that accomplishment ought to be evaluated by using the same rules and procedures. Substantive fairness on the other hand, implies that score interpretations and use of assessment are appropriate across groups, which albeit may require different types of assessments and accommodations to better suit different needs of individual students.

Ontological paradigm


Epistemological paradigm
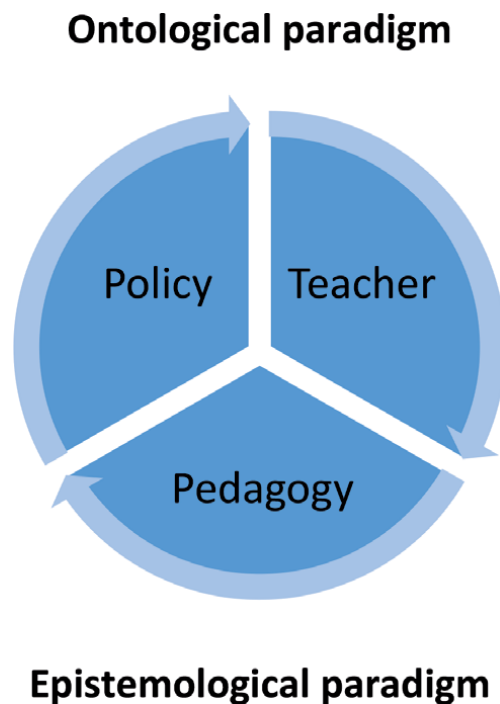
Figure 1.
Three interdependent components in curriculum design and teaching, situated in a current ontological and epistemological paradigm [15].

Effective teaching, learning and assessment practices are dependent on both the knowledge and the value systems adopted by educators ([4], p. 54). In linguistically diverse settings intercultural inclusive schools are more sensitive towards providing differentiated instruction and support to students in order to accommodate for the different needs and attributes of individual learners [4]. Teacher beliefs, particularly in relation to assessment is sometimes defined as "teachers' assessment literacy". To reflect on this, Abell and Siegel [48] developed a model to describe science teachers' assessment literacy in secondary education among language learners, a model which was used and modified by Reierstam in a recent study in Sweden [15]. The model which is presented below (**Figure 2**) includes four so called, knowledge elements: knowledge of the assessment purposes (Why?) knowledge of what to assess (What?), knowledge of assessment strategies (How?) and knowledge of assessment interpretation and action-taking (And?).

The assessment literacy framework above relies on teacher beliefs and an integrated view on teaching, learning and assessment. At the center lies the teacher's views of learning and assessment of the learner as these are believed to interact with the teachers' assessment practices. Biggs and Tang [49] note that "desirable student learning depends both on student-based factors – ability, appropriate prior knowledge, clearly accessible new knowledge – and on the teaching context, which includes teacher responsibility, informed decision making and good management." Teachers' previous experiences, knowledge and beliefs are shown to shape their views of how students learn and thus influence the teachers' priorities in practice. Entwistle et al. [50] describe beliefs as reflecting strongly felt ideas and implicit or tacit knowledge derived from experience and driven by emotions rather than from any predefined conceptual framework. Nespor [51] similarly states that beliefs can be argued to reflect personal truth and evaluative components that are guided by feelings rather than logic. Teacher beliefs are said to be associated with years of
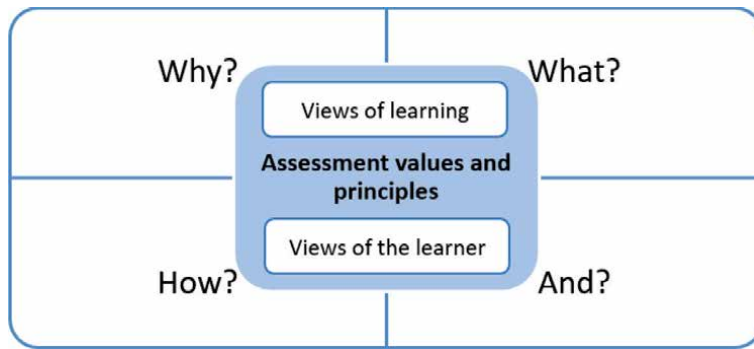
Figure 2.
The assessment literacy model. Used in [15], adapted after Abell and Siegel [48].

experience and professional education [52, 53]. However, Pajares [54] point out that there may be inconsistencies in teacher beliefs, which often depend on the role of contextual factors and the interconnectedness between the individual and the surrounding world. The possible inconsistencies in teacher beliefs and policy as described above, together with the argument that equitable and fair assessment hinges on equal access to knowledge, gives reason to believe that there is a lot to gain from finding empirically based descriptions of good assessment practices. The assessment literacy model as outlined above provides a structured way of describing some of the most critical key elements for more transparent assessment practices. There is no contradiction, as argued in this chapter, in identifying what the assessment requirements of the students are in order for providing essential and relevant learning opportunities and feedback along the way. At the same time it advocates for universal design for learning, positing flexibility in teaching and taking the individual students' backgrounds into account, as will be illustrated in a case in point from the Swedish context below. In the following, the assessment literacy model in **Figure 2** is used as a frame while presenting data from a study in Swedish multilingual contexts.

4. Case in point from the Swedish context

This part of the chapter presents data from a study in two parts investigating teachers' assessment beliefs and assessment practices in two multilingual contexts in Sweden. The first was conducted in content and language integrated, CLIL, schools where English is used as a medium of instruction in the content courses at upper secondary level, students aged 16–19. The second study covered teachers in contexts with newly arrived migrant students aged 13 to 19 [15]. Both studies included teachers in the social and the natural sciences. Between 2015 and 2017 there was an increase of older age migrant students with only a few years before they graduate, although Sweden has a fairly long history of welcoming immigrants. However, discouraging reports showing that among those who arrived in grades 6 to 9 only 28% qualified for upper secondary education. Questions of inclusion and how to help them succeed academically has become an urgent concern. At the time of the study every fourth student in Swedish compulsory schools had a foreign background and in the upper secondary the figure was 30% according to statistics [55].

The extent and scope of CLIL has been more difficult to define, since there is considerable variation in how the English medium instruction is implemented, but according to a recent survey around 4% of the upper secondary schools have

some kind of CLIL provision [56]. Although the CLIL programs attract motivated students with high language proficiency levels, teachers note that it is hard to know if lower achievements are due to the fact that the productive language skills are not there, or if it depends on limited content knowledge [15, 23]. In both contexts there are thus concerns with regard to fairness and accuracy in assessment since teachers acknowledge that the students risk being at a disadvantage, when using a non-native language as the medium of instruction. The main focus in the two studies were therefore how teachers perceive of language in relation to subject content, how it is dealt with before, after and in the actual assessment situation. The teachers' views of the students and their needs, the reported assessment principles and stated local policy were found to vary depending on school and the individual character-istics of the teachers, such as education and subject discipline. Whereas document analyses of assessment samples and teacher interviews were used in both studies (N = 12 in Study I, N = 13 in Study II), a survey (N = 196) was conducted in Study II. For the analyses of the survey data both descriptive and inferential statistics were employed to describe and compare teachers' beliefs. Qualitative content analyses were used for the interviews and assessment samples. For more see Reierstam [15].

4.1 Assessment values and principles

Without going into detail about the education system in Sweden, both of the above studies confirmed that there exists an accountability culture in Swedish schools [57]. Even though many teachers, especially among the migrant students, express a concern for the learners, the concern about reliability and legal justice in assessment was more pronounced. National guidelines from the National Agency for Education as well as recent research and literature advocate the use of the students' strongest language in the initial phase. *Translanguaging* practices, allowing for students to use all of their language resources are recommended. Although it is stipulated by law that newly arrived students should be provided study counselors who speak their language, many schools fail to do so. When asked who they collabo-rate with, teachers in the present study confirmed that there was little support from study counselors. Very few of the teachers reported to implement translanguaging pedagogy, most teachers agreed that the students need to learn Swedish. A couple of the interviewed teachers were a bit uncertain if the students are allowed to use any language to show proof of content knowledge, if so, they must they argued, but also agreed that this would be difficult for practical reasons. In the CLIL context some teachers were very determined to only use English, whereas others said that they allowed students to use either English or Swedish but they tried to stick with English. All of this relates to what was mentioned in the introduction about inconsistencies in language policy and vacillation between alternative ontological paradigms. On the one hand Swedish is considered the norm, or English for the CLIL incentive, on the other the communicative aspects with a focus on process rather than product, could be distinguished in some cases, as advocated in advice for the newly arrived migrants. Here it becomes a matter of the teachers' own interpretation about how language, and what type of language, is representative of the intended learning outcomes and how it is to be assessed.

When using oral follow-up for letting students elaborate on their individual answers as a didactic method of allowing for accommodation for their deficient language, the teachers expressed concern about their contributing to invalidating the student's performance: *"How do I know what the student's actual level is?"* This aligns well with the claims that in language testing, oral assessment is a field of its own, raising questions in terms of the validity and reliability of the dialogic co-construction between the student and the teacher [58, 59]. In the migrant student

context, teachers stated that they preferred for students to do the assessment in Swedish, as opposed to their native language, or with a translator since this would be out of their reach and control. In the CLIL context, the teachers were more flexible in letting students mix Swedish and English, since the teachers understand both languages and owing to the fact that there is no explicit language policy at upper secondary level which limits the use of English. (The English language has a unique position in Swedish society and it is stipulated in the Swedish School Ordinance that up to 50% of the instruction in compulsory schooling can be provided in English [60]. A pedagogy-driven, or learner-centered assessment approach was more common among those teachers teaching younger newly arrived students. Teachers with a double teaching profile, that is, a language (typically Swedish, Swedish as a second language or English as a foreign language) and a content subject, also showed statistically significant higher tendency towards this trend, as did the data showing a providing of language learning opportunities in the classrooms for such students. Teachers in both contexts expressed that they were not specifically interested in collaborating with language teacher colleagues or mother tongue instructors, if they were to collaborate with a colleague they preferred someone from the same subject discipline. Collaboration with colleagues in the same discipline has been noted to build assessment literacy in teachers [61]. A general comment noted from the teachers in the study, was that time constraints prevented them from having exchange with colleagues.

4.2 Why assess

The main purpose of assessment was seen in collecting evidence of attainment of knowledge and to have a basis on which to ascertain grading. Teachers also mentioned the formative assessment aspect and especially among the newly arrived migrant students, to communicate to students what is missing and how they are progressing. Teacher also showed an awareness of their responsibility to equip students for the next level of learning, required for gaining competence for writing in higher education levels. Several teachers noted that their students are quite satisfied with presenting their knowledge in the oral format, after getting used to not having to write, but the teachers stressed that they must learn how to write to qualify into upper secondary school levels. However, a majority of the teachers interviewed said that they prefer the written assessment formats (see below) since this shows more reliable results. There is a consensus among the teachers that students may prefer written examinations due to being used to this form of assessment in previous schooling. As noted above, the purpose of accountability seemed the strongest motive in assessment and teachers referred to the need to be able to meet the stated knowledge requirements in the subject curricula.

4.3 What to assess

The 'what' of assessment is closely linked to instructional goals. In Swedish education, the standards and knowledge requirements of the national curriculum together with national tests administered in many subjects, are explicitly claimed to safe-guard the equity in education regardless of the location of the schools in different parts of the country. As noted above, the importance of national curricula seems to be undisputed by teachers in Sweden. However, what is interesting from a language perspective is the relative uncertainty and the inconsistencies that prevail between what language is taken to mean in relation to subject content, and which language can or should be used by the students, as mentioned above. First of all, the *subject specific concepts* seemed to be perceived as 'subject content' by the subject

matter teachers and was reported as very important in assessment. However, in study II among migrant students, subject concepts were perceived as difficult for the students. *Subject-specific skills* (e.g. to argue, to reason and be able to draw conclusions) that are stated in the knowledge requirements were considered the most important for assessment. The *general academic language* as well as *subject-specific written or oral genre* were not reported to be as important for assessment, and yet many teachers stated that lack of language represented a problem when interpreting assessment results. Teachers also expressed challenges due to insufficient language in relation to higher-order skills which meant that attainment of the highest grades was considered difficult or even unrealistic. Most teachers in both contexts stated that they do not assess language.

The confusion as to what represents content and language becomes evident in contexts with language learners. Since standards are used which also include expected outcomes in relation to communication skills, the solution is to identify and map the language skills that are embedded in the curriculum. The solution then is to integrate language development within disciplinary teaching and learning [10, 29]. Some may claim that the solution is in finding assessment formats that avoid the use of language, and construct-irrelevant variance, but this seems unrealistic as can be seen below.

4.4 How to assess

While the intended learning outcomes and aim of the subject come first, the intended 'how' of assessment needs to be considered already at the outset. In a backwards design, where all students are to be given access and opportunities to learn the necessary skills and language, the targeted forms of presentation need to be included in the planning of a course. "[I]t is not the elements per se, but rather their organization and sequencing, expression, relative emphasis and degree of alignment that differentiate effective from ineffective subject design" ([46], p. 95). In a universal design there needs to be flexibility to cater for students' various needs, but it has also been stated that what is good for disadvantaged students is good for all. In this study several teachers said that they had noted that all students, regardless of first language, need help with their language development, even native Swedish speakers. Using an alignment and fairness perspective the how of assessment can be said to include both preparation for assessment, the actual assessment design and format, including accommodations and support used for language learners in this case as well as the grading process that follows. As noted previously the teachers in both contexts expressed a preference for written assessment formats, but especially teachers of newly arrived migrants said that they use "anything that works" to get some information about the students' content knowledge.

Teachers in both contexts mentioned oral assessment serving as an accommodation for poor written expression, which brings up concerns as to whether the oral assessment results might indeed equal written results, and whether students might have been given the opportunity to practice their oral expression during the course of study leading into the testing phase. Other accommodations that are typically suggested as reducing the negative impact of insufficient language proficiency include, for instance, allowance for the use of dictionaries, the use of simplified language or extended time (cf [62]). However, Abedi [63] raises concerns over the validity of certain accommodations, since studies show that they may affect the end results of second-language speakers and native speakers alike, thus representing a threat to the validity of test-results. Stobart [64] mentions three areas where equity should be considered in relation to fairness in assessment across groups: questions of access (differences in resources), curriculum (what is taught, why and how);

and assessment (appropriateness of form, content and mode for different groups). Regarding access and assessment, some of the teachers expressed that it is up to the students, or the language teachers, to learn/teach the necessary language, whereas others were doing their utmost to support the students. Especially teachers with a language teaching background, or who had collaborated with a language teacher colleague, reported to try to model language and used a universal design for learning. The variation between teachers raises concerns with regard to fairness and equity in assessment, which will be discussed below.

4.5 And? The consequences of assessment

It is well known, that language proficiency impacts the results of content-area assessments. Research shows that multilinguals, who hold the same ability levels with native speakers show lower probability of correctly solving test items in mathematics [65–67]. Kane's [3] distinction *substantive fairness,* which was described previously, means that different assessment procedures are required for different students in order to achieve comparable results. In a similar vein Gee [68] and Stobart [64] state that equity in assessment hinges on students' equal opportunities for learning. Wherever there are standards and intended learning outcomes, teachers need to consider what is required of the students in terms of language proficiency. It has been argued that the alignment between specific forms of learning, assessment format and how the assessment data/results are used has been disconnected [69]. In the Swedish case in point a variation in how teachers perceive of their role as language educators can be seen, how and if they prepare students with required language skills for succeeding in the assessment. There are also inconsistencies in language policy. Such can be found, both in what appears to be a confusion or unawareness about the different underlying ontological and epistemological foundations. The discrepancy exists between on the one hand, a non-essentialist disaggregated translingual view, apart from the named languages, and a traditional essentialist view which allows for predefined language standards and learning outcomes. No matter which foundations, consequences need to be considered in order to ensure equitable and comparable assessment practices, that is, to define intended learning outcomes (ILOs) in the target language (TL). This needs to be adopted both for the disciplinary language and the language of instruction, and needs to align the assessment format and procedures with the instructions (see **Figure 3** below). This amounts to a adoption of a non-essentialist ontology which allows any language to be used, as is prevalent e.g. in translingual practices. The translingual pedagogy therefore, requires other measures in order to achieve comparability of results, including analyses of its consequences for society and students' opportunities in life. These aspects present a gap in current research which need more input in order for empirically based robust practices to emerge.

Figure 3.
Alignment of languages in education with intended learning outcomes, target language (TL) and future use. ([15], p. 224).

Based on the study in the Swedish context [15], This chapter has argued that the target language outcomes can and should be identified within curricula and they ought to be taught and modeled in order to provide equity and comparability in assessment. Below the findings from this case in point are applied to another context within similar circumstances and share a few suggestions for improved practice.

5. Applicability to other contexts

The issues discussed in this chapter are indeed applicable at all levels of education. This is justified by the increasing multilingualism and linguistic diversity within the global teaching and learning arena and has become ever more widespread throughout levels of compulsory education to university programs.

This chapter puts forward suggestions for improving curriculum design which encompass a consultative approach involving language teachers, assessment experts and academic developers. Improving teacher assessment literacy, calls for concerted efforts in focus on professional development and training in assessment across the curriculum. Lastly, the impetus of engaging the community of teachers across levels of education from primary to tertiary levels requires a raising of awareness about the benefits of generic skills and abilities for example, in academic literacy. This is an area which may have become shadowed in the current climate of quality assurance. Organization around educational quality calls for efforts across the community of educators by way of concrete strategies, measures and their implementation across the diversity of dimensions. In this process, the issues of equity are of paramount importance for maintaining and regenerating an assessment culture that reaps its strength from socially just and diversity focused global language communities.

6. Concluding remarks

This chapter is based on an assumption that fair assessment cannot be considered in isolation of either curriculum nor students' educational opportunities [64]. This study posits that fairness and comparability in assessment hinges precisely on fairness in the access to subject content learning, including its forms of language use. This means that students must be given opportunities to learn the language skills that are required in the how and what of assessment. As Stobart [64] claims, we may never achieve fair assessment, but we may be able to make it much more fair-minded. In order to do that, this study agrees with suggestions that every teacher across the educational spectrum, needs to also be a language teacher, in a sense. Secondly this chapter suggests that there are inconsistencies in policy and practice, which need to be systematically addressed, as Lachat [70] claims educational standards might not improve student achievement unless they are accompanied by policies and practices that directly address inequities in resourcing. Here resourcing refers to the teachers' assessment literacy and language teaching strategies. Regardless of whether time constraints restrict teachers' opportunities to teach academic writing in every single course, teachers must be equipped with a readiness to model certain elements of language or academic oral or written genre and register. Therefore concurring, with the universal design for learning, UDL and fairness theory, this chapter suggests that planning for support at the point of designing of the curriculum, as opposed to waiting until needing to make reactive modifications to it, will considerably help reduce the stress among students as well

as their teachers across the board. It will also help increase the quality in education, teaching in more responsible and responsive ways, and hopefully it will have a positive effect even on assessment outcomes. Teacher education therefore, must enable equipping teachers with an awareness of the requirements placed upon equitable assessors in and for linguistically diverse classrooms. This implies measures on how to align the language requirements that are integrated in the course objectives, with multiple means of representation in order to both build upon and communicate required curricular knowledge. It is also relevant in this respect, to critically reflect on whether the common forms, or modes of assessment are appropriate for all learners. At an organizational level, different questions need to be addressed; e.g. why we teach in a particular way, who is responsible for fostering generic skills, what knowledge and competences are advocated and assessed in curricula - maybe this calls for a paradigmatic change in the curriculum guidelines? Such guidelines might harness the changes currently shaking the foundations of a globalized educational future.

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Preparing Practice-Based Researchers for Diverse Classrooms: A Pathway for Teacher Education

Catherine Lammert

Abstract

Twenty-first century educators are faced with new dilemmas, as well as new opportunities. In response to the increasing racial, cultural, and linguistic diversity of students, some school districts and states have implemented policies mandating particular curriculum. However, evidence increasingly shows that teachers who are effective in diverse classrooms are adaptive and responsive rather than strictly adhering to scripted curriculum. One proposed solution is preparation to conduct practice-based research as part of teaching. Practice-based research is a method of studying ones' own teaching that draws on action research, design-development research, and transformative research. As a method through which teachers define questions, explore solutions, and share successes in professional communities, practice-based research holds tremendous potential to support teachers in diverse classrooms as they work to teach in culturally sustaining ways despite external pressures. This chapter begins with the history of action research and the tradition of teachers conducting research on their practice. Then, examples of practice-based research in literacy teacher education settings from a review of the research literature are provided to demonstrate the challenges, opportunities, and design features for this work. The chapter concludes with recommendations for teacher education policies, for teacher educators, and for practice.

Keywords: action research, diversity, preservice teachers, literacy

1. Introduction

Teacher educators are faced with myriad challenges as they prepare the next generation of classroom leaders. One particular challenge is learning to teach in ways that equitably serve students from diverse racial, cultural, and linguistic backgrounds, particularly as teachers are often very different racially, culturally, and linguistically from their students [1]. In the U.S. education context, outcomes in achievement continue to favor white native English speakers [2]. In addition, teachers increasingly face curricular constraints, mandates, and policies that dictate the ways in which they leverage resources, engage in particular pedagogies, and monitor student performance [3]. Although these policies are often written with the intention of standardizing schooling to ensure all students have access to equitable

experiences, when policymakers attempt to control every aspect of teachers' practices, it can limit teachers' ability to be responsive to students' interests and needs. This problem becomes even more pronounced as research suggests teachers' practices must become more adaptive—not less— to meet the needs of diverse learners [4, 5]. In addressing these challenges, one facet of teacher preparation that invites teachers to define challenges and design solutions is practice-based research [6]. The possibility of conducting research on ones' own teaching holds tremendous potential to help teachers engage with the political, professional, and personal aspects of teaching [7]. In this chapter, the history of and methods for research conducted by teachers is reviewed. Then, a systematic review is conducted to demonstrate the ways in which this type of preparation can function. Finally, suggestions for teacher preparation are provided.

2. Background on research conducted inside of teaching

In 1946, Kurt Lewin [8] proposed action research as a challenge to experimental research that "produces nothing but books" (p.35) and served only to "diagnose" (p.37) rather than provide solutions to societal challenges. Growing up in a Jewish family in pre- World War Two Germany, Lewin learned through personal experience that when leveraged by those in power, research could serve as a way to legitimize the marginalization of particular ethnic groups. In conceptualizing action research, he took a more equitable, situated perspective and attempted to engage practitioners across professional fields in being part of the process of finding strategies for action.

Given their location as sites of inequity and equity, action research eventually came to be situated inside classroom contexts. Although there were a few early trailblazers, the teacher-researcher movement primarily rose in the United Kingdom in the 1970s and 1980s [9], and in the 1980s and 1990s in the U.S., spurred by notable scholarship [10]. However, in the U.S., momentum stalled in the 1980s and 1990s as calls to standardize teacher education and enhance accountability led to increased state-level control [11]. At the same time, and as a form of resistance to the ways research was being used with authority to control teachers' and teacher educators' practices, some teacher educators argued that preparation for research ought to be a necessary component of teacher education to support quality teaching and professionalize the field [12]. These arguments have continued into the present day.

2.1 Purposes of conducting research inside of teacher education

Noffke has described three main roles research can play in shaping teacher education: political, professional, and personal [7]. To Noffke, teachers' research can be used in ways that reveal that the political nature of teaching as research creates sites to explore questions of power, fairness, and ethics. The professional aspects of research relate to the growth of classroom practice in ways that use action research to bridge the traditional theory/practice knowledge gap. Finally, the personal elements of research reveal the potential for action research to lead to self-knowledge and fulfillment, deeper understanding, and greater sense of belonging as a teacher. Noffke did not suggest that the political, professional, and personal aspects of learning to conduct research as part of teaching must be engaged with separately or in any particular order. Instead, the purposeful overlap of these elements in teacher education has the greatest potential to create lasting change in teachers' understandings and practices.

2.2 Practice-based research: an innovative framework

Practice-based research, which has recently been reconceptualized by Sailors and Hoffman [6], draws on action research [8], design/development research [13], and transformative research [14] framings. In this type of research, teachers begin by asking questions about things which feel unresolved in their practice, and they start by closely observing the ways in which their teaching is currently working to identify the underlying structures. This re-searching around an environment that is well known to a teacher is a key element of action research, since it invites teachers to challenge their own assumptions about what is effective, and for whom, in their teaching. At this stage, teachers begin collecting data, often in the form of student work samples, notes, and audio or video recordings of their teaching, and they begin analyzing this data to look for possibilities for change. Once they identify an alteration or intervention that could make their teaching more equitable, they put it to work and collect further data on the elements of the intervention that are working well, and those that they could further change. Teachers continue engaging in iterative cycles of growth and reflection. Sometimes this work leads to teachers sharing their findings in collaborative communities with one another, or the field more broadly, but constructing generalizable findings is not the purpose of practice-based research. Practice-based research is similar in many ways to teacher and practitioner research [10] in that it is research done by teachers, typically in their classrooms and within the contexts in which they work. However, one distinction is the iterative design of practice-based research combined with its intentional focus on realizing more equitable possibilities. This type of research highlights that teachers are never finished in their quest to create more equitable and responsive spaces for racially, culturally, and linguistically diverse students. As teachers identify challenges and find ways to make their practices more equitable, additional challenges will invariably arise, and will need to lead to further changes in teaching practices. Practice-based research is both powerful and necessary because it creates the potential for ongoing critical reflection and growth.

3. A review of literature on practice-based research

In order to uncover what is already known about the utility of conducting research on ones' own teaching as part of teacher preparation, a systematic review of literature was conducted. Consistent with the timeframe in which the teacher-researcher movement began to face resistance, this review is bounded from 1990 through 2019. To focus on a content area that is most commonly controlled by external mandates, assessment policy, and external pressures [3] this review focuses on preservice literacy teachers. Drawing on Noffke [7], this review is based on the research question: How have teacher educators engaged with the political, professional, and personal dimensions of preservice literacy teachers' research?

3.1 Method

Following Cooper's [15] integrative review guidelines, included studies (1) were peer-reviewed journal articles and reports of research which drew on empirical data (2) included explicit research questions or described a research focus, as well as a description of methods, data sources, analysis, and findings; (3) were published in English, and (4) focused on preservice literacy teachers conducting research. The area of interest was established using a combination of three sets of search terms: preservice teachers (i.e., university students seeking initial certification to teach),

research (i.e., action, practitioner, or teacher research or inquiries), and literacy (i.e., reading, writing, dialog, and English Language Arts). These terms were used to search three major databases between the years 1990 and 2019. Through this process, 454 abstracts were examined, and 82 studies were ultimately determined to be relevant to the research question.

3.2 Analysis

Analysis began with listing each study's participants, program focus, description of research engagement, methods, secondary purposes of the study (e.g., the development of data literacy) research questions, and findings. Each study was also coded for three *a priori* categories consistent with Noffke's [7] definitions of research as inviting opportunities for political, professional, and personal growth. Studies were coded as: (A) politically engaged if the authors described their purpose as supporting preservice teachers' knowledge and practices for serving racially, culturally, and/or linguistically marginalized students; (B) professionally engaged if the authors described their purpose as supporting content, curricular, and/or pedagogical knowledge for teaching; and (C) personally engaged if they were framed as supporting teachers' identity development, self-actualization as decision makers and/or sense of belonging in the field and with colleagues.

3.3 Description of studies

The 82 included studies all took place in literacy teaching contexts where English was the primary language of instruction. These studies were conducted most commonly in the United States of America, but also included those from Canada, Great Britain, Australia, Spain, Chile, Mexico, Turkey, China, Namibia, and Israel, Common designs were a study conducted by a preservice teacher as a single-semester course project, or a two-semester capstone or portfolio that spanned multiple courses in a final teacher education program year. The vast majority of studies involved teacher educators conducting action research on their own practice while studying their students' uptake of action research for themselves.

3.4 Findings

Analysis revealed that 46 of the 82 studies (56%) engaged with political dimensions of teaching, 65 (79%) engaged with professional dimensions, and 67 (82%) emphasized the personal. (**Table 1**). Further detail in each category is provided.

3.4.1 Political facets of teachers' research

The 46 studies included in this category emphasized the liberatory potential of research to have a positive impact on students from marginalized communities. Eight studies in this category were designed with the intention of using research to prepare preservice teachers for work in urban schools with racially diverse learners [16, 23, 24, 27, 40, 49, 80, 97]. Others were designed to support groups of students such as English Learners who primarily spoke other languages [18, 31, 52, 54, 70, 87] or low-socioeconomic-status rural students [64]. In some studies, the political dimensions of teaching were accessed through research involving caregivers. Lazar [50] explored how preservice teachers' research that involved interviews with their students' caregivers might lead them toward more sophisticated understandings of the strengths and needs of families from marginalized communities. Lazar found that some preservice teachers began the program with fixed ideas about

Study Authors, (Year)	Political (46/ 82)	Professional (65/ 82)	Personal (67/ 82)
Abbate-Vaughn (2006) [16]	X	X	X
Amir et al. (2017) [17]		X	X
Athanases et al. (2013a) [18]	X	X	X
Athanases et al. (2013b) [19]	X	X	X
Athanases et al. (2015) [20]	X	X	X
Barnes (2006) [21]	X	X	X
Basmadjian (2008) [22]	X	X	
Bennett et al. (2016) [23]	X	X	X
Berghoff et al. (2011) [24]	X		X
Brass (2014) [25]	X		X
Broaddus (2000) [26]	X	X	X
Brock et al. (2013) [27]	X		X
Charbonneau-Gowdy (2015) [28]	X		X
Clayton and Meadows (2013) [29]		X	
Davis et al. (2018) [30]		X	X
de Oliveira and Shoffner (2009) [31]	X	X	
Dikilitaş and Wyatt (2018) [32]		X	
Duffield and Townsend (1999) [33]		X	X
Dunlap and Piro (2016) [34]		X	X
Everett et al. (2008) [35]			X
Ferguson and Brink (2004) [36]	X	X	X
Gore and Zeichner (1991) [37]	X	X	X
Grisham et al. (2000) [38]		X	X
Grugeon (2005) [39]		X	
Hagevik et al. (2012) [40]	X	X	X
Hayden and Chiu (2013) [41]	X	X	X
Hoppey (2013) [42]		X	
Kindle and Schmidt (2011) [43]	X	X	X
Kindle and Schmidt (2019) [44]		X	X
Knight et al. (2000) [45]		X	
Kosnik and Beck (2000) [46]	X	X	X
Kucan (2001) [47]		X	
Landay (2001) [48]	X		X
Lawrence et al. (2017) [49]	X	X	
Lazar (1998) [50]	X		X
Levin and Rock (2003) [51]		X	X
López-Gopar (2014) [52]	X	X	X
Love (2009) [53]		X	
Lysaker and Thompson (2013) [54]	X	X	X
Mastrilli and Brown (1999) [55]	X	X	X

Study Authors, (Year)	Political (46/ 82)	Professional (65/ 82)	Personal (67/ 82)
Mayor (2005) [56]		X	
McGee (2011) [57]	X	X	X
Mencke (2013) [58]	X	X	X
Merino and Holmes (2006) [59]	X	X	X
Meyer and Sawyer (2006) [60]	X	X	X
Monroe et al. (2007) [61]		X	
Moore et al. (1999) [62]		X	X
Moran (2007) [63]		X	X
Norton-Meier et al. (2009) [64]	X	X	X
Olmedo (1997) [65]	X	X	X
Phillips and Carr (2007) [66]		X	X
Picower (2007) [67]	X	X	X
Price and Valli (2005) [68]	X	X	X
Quiocho and Ulanoff (2004) [69]		X	
Ramirez et al. (2016) [70]	X	X	X
Rinke and Stebick (2013) [71]			X
Rosaen et al. (2008) [72]		X	X
Rosaen et al. (2009) [73]			X
Salerno and Kibler (2014) [74]			X
Salerno and Kibler (2015) [75]			X
Scherff (2012) [76]	X		X
Schieble et al. (2015) [77]	X	X	X
Scott et al. (2013) [78]		X	X
Simon (2013) [79]	X	X	X
Simon (2015) [80]	X	X	X
Smith (2005) [81]		X	
Sutherland (2006) [82]		X	
Thwaite and Rivalland (2008) [83]		X	X
Valli (2000) [84]		X	X
Velluto and Barbousas (2013) [85]	X	X	X
Villacañas de Castro (2014) [86]	X		X
Villacañas de Castro (2017) [87]	X		X
Wastin and Han (2014) [88]		X	X
Watulak (2016) [89]	X		X
Whitaker and Valiterra (2018) [90]	X	X	X
Wickstrom (2013) [91]		X	X
Wolf (1996) [92]		X	X
Xu (2000) [93]	X	X	X
Yan (2017) [94]			X
Yayli (2008) [95]		X	X

Study Authors, (Year)	Political (46/ 82)	Professional (65/ 82)	Personal (67/ 82)
Zeichner et al. (1998) [96]	X	X	X
Zoss (2014) [97]	X		X

Table 1.
Emphasis of political, professional, and personal dimensions, per Noffke [7].

families' lack of commitment to education, while others took more of a curious, inquiring stance, both groups of preservice teachers became more responsive and recognized more of their students' families' strengths throughout the experience. In Lopez-Gopar's [52] study of English language student teachers in Oaxaca, Mexico, preservice teachers participated in critical ethnographic action research projects involving interviews with cooperating teachers, K-12 students, and school administrators about their views regarding English, Spanish, and Indigenous languages. The preservice teachers became more appreciative toward linguistic diversity over time, but perhaps more interestingly, as the K-12 students became aware of the focus of the preservice teachers' research, they began to shift their views to become more appreciative toward their peers' use of Indigenous languages. Overall, the studies in this category show that one purpose of practice-based research can be to engage teachers with the political dimensions of teaching in ways that encourage them to be more reflective and supportive of students from marginalized backgrounds.

3.4.2 Professional facets of teachers' research

The 65 studies framed as emphasizing the professional aspects of learning to teach focused on using research to help teachers understand content, construct curriculum, enact particular pedagogies, and assess the value of their teaching. In these studies, research was incorporated to help preservice teachers make sense of complex dimensions of curriculum and teaching, such as Response to Intervention [42] classroom dialogue [47, 53] or to learn to more effectively teach reading, particularly for students with disabilities [56, 61].

In Yayli's study [95] of English teachers in Turkey, preservice teachers worked together in groups of six to observe and work with one mentor teacher and placement classroom. The preservice teachers kept reflective journals and collaboratively wrote a case study of the mentor teacher's practices. Although some initially reported negative views of their mentor teachers, they became more sympathetic as the semester went on and they realized more of the practical aspects of teaching. Furthermore, they became critical of how much of the theory they learned in their teacher education program was derived from university-based studies in the U.S., rather than domestic. Instead, the preservice teachers referred to and quoted one another's research while discussing the theory-practice relationship during coursework. As a whole, these studies show that learning to conduct research as part of learning to teach is not a distraction from developing knowledge of curriculum and pedagogy. In fact, conducting research actually supports teachers' understandings of their professional work.

3.4.3 Personal facets of teachers' research

In 67 studies, the purpose of conducting research was to strengthen preservice teachers' identities as educators, to strengthen their resolve that they belong in the profession, to support their growth as critically reflective practitioners, and

to encourage them to see themselves as agentic and capable. These studies largely emphasized the value of building reflective relationships with other teachers in which it was safe to discuss practices that did not yet feel secure, to name questions and challenges, and to work together to envision alternatives. For example, Barnes [21] found that co-engagement in research, in which preservice teachers observed and interviewed cooperating teachers, supported strong relationships between them that enabled preservice teachers to envision themselves persisting in a teaching career. Another prime example came from Levin and Rock [51], who worked with preservice teachers who conducted action research projects in the previous semester's coursework to work alongside mentor teachers in iterative cycles of research. Mentor teachers had a professional development workshop to prepare them for the experience, and the teacher educators intentionally resisted defining for the pairs what role(s) they would each take; instead, they emphasized the value of dialog, having a common mission, and sharing in the work. Levin and Rock found that ultimately, both preservice teachers and their mentor teachers took up identities as researchers together. In general, these studies showed that a researcher identity can co-emerge with a teacher identity, and that both are supportive of teachers' personal growth.

3.4.4 Summary of findings

Each of Noffke's [7] purposes for including research was present in at least half of the studies reviewed, suggesting that these three purposes for research have persisted in popularity from 1990 through 2019. There was also overlap between the different purposes of research. For example, it was rare to see studies that emphasized the political facets of research, or the professional facets of research, without connecting these to teachers' personal growth. However only 32 studies (39%) made use of all three purposes of research simultaneously, indicating room for researchers and teacher educators to more fully integrate the uses of research into developing teachers personally, professionally, and politically as they rise to meet the needs of diverse students in 21st-century classrooms.

4. Recommendations for teacher education

It is clear through this review that teacher preparation that emphasizes the value of conducting research inside of ones' practice has the potential to support teachers in effectively serving racially, culturally, and linguistically diverse students, and to help them challenge external constraints on their teaching. When a focus on research is a foundational aspect of teacher education programs, rather than just an assignment or a topic to be covered in a single course, it has the potential to reshape the ways teachers engage in their work as professionals. In addition, the literature suggests several specific recommendations for policies, teacher educators, and practice.

4.1 Suggestions for policy

While standardization measures were initially promoted as tools to increase equity by ensuring all students receive comparable instruction, it has become increasingly clear that equity comes from responsive teaching that is catered to the unique needs of each individual based on their racial, cultural, and linguistic positions in the world. The studies included in this review, as well as more recent work [98, 99] suggest that learning to enact this type of teaching is strengthened

by teachers' own inquiries into the complexity of their practice. Rather than standardizing curriculum, one possibility would be to construct policies that encourage teacher preparation programs to ensure their graduates have engaged with research as a foundational aspect of teaching before they move into in-service work. Wherever standards for teacher preparation exist, they must attend to the role of conducting research in learning to teach. In addition, mandates that assure in-service teachers the time and resources to continue to conduct practice-based research on their teaching, particularly in the challenging inductive years, would support more equitable outcomes for students.

4.2 Suggestions for teacher educators

The literature from the past 29 years suggests that many teacher educators have found value in bringing research into teacher education. The continued use of research for personal, professional, and political growth of teachers is merited, and clearly, there is room to expand the ways in which teachers' own research engages with the political. In particular, new frameworks such as practice-based research [6] have obvious potential to reshape the ways preservice teachers learn to resist external controls on their teaching and create spaces that honor the racial, cultural, and linguistic diversity of their classrooms. Across studies, it was clear that research works best when it is a framing that guides teacher education programs, rather than a single assignment. Additionally, its value is best demonstrated by teacher educators who actively study their own practices and make this process transparent for preservice teachers. Ensuring a research focus at the program level has unlimited potential to strengthen teacher preparation.

4.3 Suggestions for teachers' practice

In order for teachers to provide effective, equitable instruction to their students, they need to develop mindsets and toolsets to ask questions, seek solutions, and measure the successfulness of the changes they make to their practices. The literature in this area suggests that building communities of dialogue and reflection with other teachers engaged in research can strengthen teachers' sense of belonging in the field, help them refine their practices to make them more effective, and can push them to attend to questions of diversity more thoughtfully. In realizing these possibilities, it is important that teachers be encouraged to build relationships with colleagues in which they can share their practice-based research. In addition, it has been noted that sometimes teachers who begin conducting practice-based research experience a drop in their self-efficacy and confidence as they uncover issues in their teaching that they had not previously realized [98]. However, this literature base suggests that pushing through these challenges through inquiry can support teacher learning and ultimately produce teaching that is more responsive to diverse learners' needs.

5. Conclusions

In this chapter, the value of practice-based research [6] was examined as a potential tool to strengthen teacher preparation in the contemporary context. The rich history of teachers conducting research on their own practice suggests that asking questions about and studying ones' own teaching can lead to the construction of more equitable possibilities in education. It is also apparent that in the face of current reforms and mandates, studying one's own teaching can help teachers

resist external pressures on their work that would otherwise prevent them from teaching in responsive, student-centered ways.

In reviewing the published literature on the uses of research in preservice literacy teacher education from 1990–2019, it is apparent that research is most often functioning as a way to support teachers' personal development of identities as professionals who have a sense of belonging in the field. This is not an insignificant goal, since teachers who develop the identity of professional educators are more likely to be dedicated to reflection and critical processes such as research. Research also commonly serves to help teachers examine their curricular and pedagogical decision-making and strengthen their ability to provide instruction. In this way, research can serve as professional learning that is directly embedded in the contexts in which teachers work.

While these uses of research are commendable, research is less commonly serving to contribute to more equitable outcomes for students by pushing teachers to more deeply attend to their students' ideas and interests, and to help them notice sources of inequity that might serve as barriers to student learning. Thus, a clear implication for teacher educators is to increase the use of research in teacher education for political purposes. This shift has the potential to help preservice teachers develop critical and reflective capacity necessary to teach adaptively in diverse 21st-century classrooms [4, 5].

Finally, this review suggests that preservice teacher education with a foundation in research become the norm if it were supported by dedicated time and resources through policy and programmatic design. When used as a foundational framework for teacher education, rather than just a course assignment, research experiences can make a vast different on outcomes for teacher learning, and ultimately student experiences. This review of research overwhelmingly suggests that the adoption of practice-based research in teacher education programs would serve to strengthen engagement with the political dimensions of research and lead to more equitable outcomes in diverse 21st-century classrooms. It is for all of us together, as policy-makers, teacher educators, and teachers, to walk through that door.

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Edited by Maria Jose Hernández-Serrano

In the face of unprecedented disruption from the COVID-19 pandemic and the rapid acceleration of digital technologies, it is necessary to rethink the competences required by teachers for meeting new and flexible learning demands. Teacher training is an area constantly evolving along with emerging social challenges that are transforming educational institutions and agents. This book provides teachers with skills, innovative solutions, cutting-edge studies, and methodologies to meet education and training system demands. In our changing world, preparing teachers worldwide for the challenges and shifts of this era involves the opportunity to exchange theories, practices, and experiences such as those contained in this book.

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