DEVELOPING TEACHERS' RESEARCH LITERACY

INTERNATIONAL PERSPECTIVES

Editors: Pete Boyd, Agnieszka Szplit, Zuzanna Zbróg

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Prologue

PETE BOYD, AGNIESZKA SZPLIT & ZUZANNA ZBRÓG

There is overwhelming agreement, internationally, that the quality of teaching is a fundamental element of effective education systems. Within this consensus however, the contribution of teachers themselves is somewhat contested. A teacher might be positioned along a continuum between a technician, delivering evidence-based practice, and a professional, using research-informed judgment to decide what and how to teach. Clearly, the resources available within national education systems affect teacher recruitment, initial education, working conditions, retention, and continuing professional development. There are also significant policy and cultural differences between national contexts, for example the extent of centralised national prescription of curriculum content and the status of teaching as a profession within society. This book examines the concept of 'teachers' research literacy' by drawing on international critical perspectives on policy and practice in initial teacher education and in professional development for experienced teachers. The issue of teachers' research literacy is important internationally because it has considerable implications for policy, teacher recruitment and development, school leadership and classroom practice. Building teachers' capacity for professional inquiry and professional judgment within the development of research literacy is particularly important in our post-truth era. In this era, feelings or personal beliefs are often considered to be as important as the facts, and science denial has become part of ideological persuasion leading to a post-truth politics (McIntyre, 2018).

Part one of the book focuses on the concept of teachers' research literacy. In provisionally defining the central concept of teachers' research literacy in chapter one, Pete Boyd argues that a research literate teacher must have a capacity for professional judgment in deciding what and how to teach.

Within this, he discusses three key elements: the complexity of the field of education and of classroom teaching including the varying contexts in which teachers work; the philosophical issues of purposes and values underpinning education systems and teaching; and the contested nature of theory and research, ways of knowing, within policy and practice in education and teaching. Chapter one expects teachers' professional judgment to include everyday in-action decisions but also a capacity for professional inquiry, leading to the development of research-informed practice and change. In this chapter, a provisional working definition of teachers' research literacy is presented as: 'Demonstrating a reasonable understanding of the contested nature of 'ways of knowing' (epistemology) within the field of education, including appreciation of purposes and values and the interplay between research and practical wisdom in deciding what and how to teach, as well as practical skills in critically evaluating different sources of research evidence as an element of professional inquiry into practice.' To provide a broader systematic consideration of what we know about teachers' research literacy, Leah Shagrir in chapter two provides a literature review focused on seven carefully selected studies. She finds that despite the value and ambition of teachers regarding engagement with theory and research, many currently do not feel they have sufficient research literacy to support professional inquiry and development of research-informed practice.

Part two of the book focuses on development of student teachers' research literacy. It is worth noting at this point that language is a powerful influence on thinking. On principle we therefore prefer the terms 'student teacher' or 'beginning teacher' and 'teacher education', which lend themselves to the development of teachers as professionals. These terms seem preferable to 'trainee' and 'teacher training' which imply development of teachers as technicians. In chapter three, colleagues based in the Netherlands, Quinta Kools, Rutger van de Sande and Willem Maurits, investigate student teachers' professional inquiry stance through engagement with Design as research. These authors position 'Design as research' within the range of approaches to teachers' professional inquiry but argue for its distinctive advantages. For example, as an approach it considers all decisions made by the teacher to be an element of design and therefore open for discussion and change and it emphasises enactment so encouraging classroom experimentation and evaluation. The chapter offers a fresh perspective and approach to developing student teachers' research literacy through

professional inquiry. In chapter four, UK based colleagues Karen Blackmore and Jennifer Hatley critically evaluate the affordances of 'close to practice' research for the development of student teachers' research literacy. This approach emphasises collaboration in empirical research focused on an issue identified by an experienced teacher, with the student teacher in this case positioned as researcher. The Netherlands is a leading nation with regard to the development of teacher education and another team based there, Bregje de Vries, Hanna Westbroek, Wilma Jongejan and Anna Kaal, focus in chapter five on the development of student teachers' personal theories. In this empirical study they develop the definition of teachers' research literacy beyond interpretation of research literature using goal system representation to help student teachers understand and articulate their personal theories. In chapter six, colleagues based in the Caribbean, Jennifer Yamin-Ali and Murella Samburcharan-Mohammed, investigate the impact of action research journals on student teachers' developing research literacy. They contribute to understanding of teachers' research literacy by emphasising the emotional element of working through research-informed change in practice. The final two chapters in this section focus on the knowledge and learning of teacher educators. In chapter seven, UK based colleagues Elizabeth White and Claire Dickerson, provide and evaluate practical resources consisting of 'narratives of practice'. These stories are designed to enhance teacher educators' use of modelling to help student teachers connect theory and research to classroom practice. In chapter eight, colleagues based in Poland, Agnieszka Szplit and Anna Babicka-Wirkus, use a study of university-based teacher educators and a framework of critical pedagogy to analyse how critically reflective learning supports the development of professional inquiry and research literacy.

Part Three of the book focuses on the development of research literacy by experienced teachers. Policymakers often seem to prefer the more contained system of initial teacher education when claiming to address quality of teaching, rather than considering action to support the more complex continued professional learning of the majority of teachers who are in schools making a difference to children. However, in chapter nine colleagues based in Croatia, Dragana Božić Lenard, Josip Juraj Strossmayer and Ivan Lenard, evaluate the perspective of teachers towards a national policy that seeks to encourage lifelong learning for teachers through practitioner research. They find that teachers have a professional

commitment to lifelong learning, are familiar with research procedures and occasionally read scholarly literature. They do not feel they currently have a strong level of research literacy but are open to developing it and being involved in collaborative research. In chapter ten, within the UK context, Hilary Constable and Pete Boyd report on their study of 'master teachers' who have completed a part-time masters level programme. They find that these teachers demonstrate a research literate stance when reflecting on their studies. However, within the interplay of professional learning in their school workplaces the practical wisdom of teachers is privileged and critical engagement with the public published knowledge of relevant theory and research is constrained. In chapter eleven, UK based colleagues Jack Whitehead and Marie Huxtable consider how a Living Educational Theory Research approach supports teachers to develop their research literacy as they realise their educational responsibilities as professional educators. In this approach the lifelong study by a teacher comprises an evolving educational curriculum including development of research literacy. The final two chapters in this section focus on developing the capacity of experienced teachers for professional inquiry and their research literacy. In chapter twelve colleagues based in Israel, Smadar Donitsa-Schmidt and Ruth Zuzovsky, consider attempts to address low levels of teacher research literacy across a national education system. They identify tensions around the value of different forms of knowledge within teacher education but perhaps more significantly also recognise the influence of social status of teachers and their working conditions in relation to developing research literacy. In chapter thirteen, UK based colleague Bethan Hindley focuses on the need to develop the research literacy of school managers and facilitators of coaching and professional learning. Informed by analysis of teacher survey responses and review of the literature she argues convincingly for professional learning through school-based professional inquiry supported by research literate colleagues. In chapter fourteen, Zuzanna Zbróg argues for professionalization of teacher educators' pedagogical approach in response to a national policy requirement in Poland for higher education programmes to prepare students as researchers. These issues of collaboration and leadership of change contribute further to the critical development of the concept of teachers' research literacy. Teaching is arguably a collaborative endeavour and so teachers' research literacy might be considered also to be a collective capacity.

Overall, the different authors provide a range of perspectives on teachers developing research literacy through different forms of professional inquiry. Your engagement with chapters of this book may be selective and based on your particular contexts and interests, but we consider the synthesis of these international perspectives to be useful in developing a nuanced and critical perspective and definition of the concept of teachers' research literacy.

PART ONE

The concept of teachers' research literacy

CHAPTER ONE

Teachers' Research Literacy as Research-Informed Professional Judgment

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ABSTRACT

In this chapter I propose a concept of 'research literacy' as a central professional knowledge requirement of a teacher. Developing research literacy is positioned within a professional inquiry approach to high quality initial teacher education and provision of effective professional development for experienced teachers. The argument develops from a focus on the knowledge that teachers require to teach effectively and to contribute as professionals to collective leadership in developing education practice and policy. The complex interdisciplinary and multi-paradigmatic field of education is seen as lending itself to development of 'research-informed' rather than 'evidence-based' practice by teachers. Collaborative professional inquiry is proposed as a middle way for teacher professional development, beyond pragmatic top-down evaluation, that borrows tools such as ethical frameworks and systematic analysis of data from practitioner research. Such professional inquiry requires teachers to develop a level of research literacy, knowledge and skills they may use to critically evaluate different sources of research-based evidence, including randomised control trials, meta-reviews of research, qualitative research, narrative research reviews and most challenging to evaluate, professional guidance materials that claim to be 'evidence-based'. Both research literature and professional guidance are entangled with the plethora of blogs, websites, social media exchanges, and published books based on social media notoriety rather than scholarship, meaning that teachers need to be selective and discerning readers. However, teachers are not positioned as merely consumers of research and professional guidance, because they also contribute to knowledge in the field, via collaborative research activity and via development of practical wisdom through professional inquiry.

Research Literacy

In this chapter I will argue that teachers require a level of 'research literacy' to inform reasoned judgments they have to make as part of their day-to-day professional practice and to inform their professional contribution to collaborative school leadership and wider level development of practice and policy. Some external observers and naïve policy makers are convinced that education should be more like the field of biomedicine, with top-down identification of 'evidence-based' practice (Goldacre, 2013). However, the field of education is multi-disciplinary, including for example philosophy, psychology, history and sociology, and multi-paradigmatic, meaning that the same educational issue might be investigated from a range of different theoretical perspectives. Therefore, it is more convincing to compare the field of education to the field of healthcare, or even mental healthcare, where the 'evidence' is far more contested and the varied contextual settings for practice, as well as the characteristics of the individual practitioners involved, and the frequent need for professional judgments, are far more significant (Philpott, 2017; Philpott & Poultney, 2018).

In considering the concept of teachers' research literacy it is important that we critically consider the overlapping and sometimes conflicted purposes of education and the values that shape these purposes. Based on Gert Biesta's useful framework, three broad and overlapping purposes of education may be considered. First, a purpose of 'qualification' meaning knowledge and skills and to which we might add 'ways of knowing' within curriculum subjects (Boyd, 2018). Second, the purpose of 'socialisation' meaning for family, citizenship and employability. And third, the purpose of 'subjectification' meaning development as a unique individual (Biesta, 2010) perhaps with 'well-being' added as an explicit element of this third purpose. Building from these multiple purposes, many professional educators and other stakeholders consider that a significant purpose of education is to work towards social justice. From this value-based perspective, a central purpose of formal education is to tackle the attainment gap and broader inequitable outcomes in health, employment and well-being that exist in relation to social disadvantage and its intersectionality with factors including social class, children in care, race/ethnicity, gender, sexuality, religion, citizenship, and prior attainment (Tefera & Powers, 2018). The multi-disciplinary and multi-paradigmatic nature of the field of education, the contested nature of

ways of knowing within it, the significance of context and local practice, the complexity of teaching, and the role of values and professional judgments mean that the terminology and ambition of developing 'research-informed practice' is preferable and more appropriate than using the term 'evidence-based practice'.

In a major and useful report on teachers and research, the British Educational Research Association define 'research literacy' as referring to: 'the extent to which teachers and school and college leaders are familiar with a range of research methods, with the latest research findings and with the implications of this research for their day-to-day practice, and for education policy and practice more broadly (BERA, 2014, Appendix 2). This definition perhaps positions teachers in relation to the field of educational research and as consumers of research, rather than positioning them in relation to the field of education, in which they have a central role including as developers of knowledge. A provisional definition of research literacy that more centrally locates teachers might be: 'Teachers demonstrating a reasonable understanding of the contested nature of 'ways of knowing' (epistemology) within the field of education, including appreciation of purposes and values and the interplay between research and practical wisdom in deciding what and how to teach effectively, as well as practical skills in critically evaluating different sources of research evidence as an element of professional inquiry into practice.'

Internationally, a graduate level of such understanding and skills is widely expected of teachers although in some regions, including most of Europe, it would be expected to be at an academic 'Masters' level. It is important to note that this definition of 'research literacy' might equally, but rather more clumsily be termed 'theory – research – policy – professional guidance' literacy. The skills in critical evaluation embraced by 'research literacy' need to extend to research-informed (or not) public knowledge, published texts within the field that claim to be based on, or at least informed by, educational theory and empirical educational research. The term theory is particularly problematic because it ranges from grand 'Theory' in psychology and sociology to situated 'practical theories' that teachers use daily as 'ways of working'. Developing a level of research literacy sufficient to critically evaluate professional guidance texts that claim to be research-informed is particularly challenging, especially in an age of blogging and open access publication on the web.

This definition of research literacy for teachers is provisional and the rest of this paper is intended to provoke debate by proposing an outline view on the knowledge and skills a teacher should master in order to be considered to be 'research literate'. The main body of the paper consists of four sections. First, a section that focuses briefly on teacher knowledge, as this is proposed as a meaningful way to engage teachers in consideration of the nature of the field of education. Second, a section that focuses on teachers' critical evaluation of randomised control trial (RCT) research and meta-reviews of such studies, as these are considered by many observers and policy makers to represent a 'gold standard' of research evidence. Third, a section that focuses on critical evaluation of individual research papers including qualitative studies, as these form a large but difficult to interpret body of evidence in education. This section also considers the evaluation of research reviews because they are often an accessible way for busy teachers to access the huge and growing body of educational research. Fourth, the considerable challenge of critically evaluating professional guidance texts, hard copy or online, that claim to be underpinned by research evidence. This section acknowledges the influence of online blogs, websites and social media postings and the need for teachers to develop a discernment in judging the scholarly basis of a wide range of materials that may reflect ideological power struggles, simplistic but false dichotomies, and the 'post-truth' world. Finally, the paper discusses the position of research literacy in relation to teachers' professional contribution to everyday classroom practice and collective leadership of change in practice.

Teacher Knowledge

For teachers to develop a critical understanding of the field of education it is useful to approach from a challenging question: What does a teacher need to know, to be an effective teacher? Lee Shulman considered teacher knowledge to include at least 7 categories:

1) Knowledge of educational purposes and values – a philosophical perspective on education.
2) Curriculum subject content knowledge – including knowledge and ways of knowing.
3) Pedagogical content knowledge – the best ways to make the subject comprehensible to others.

4) Curricular knowledge – materials, sequences of learning, and connections across the curriculum.
5) General pedagogical knowledge – how to teach.
6) Knowledge of learners and their characteristics – knowing your learners.
7) Knowledge of educational contexts – from classroom and school to community and wider society.

(Adapted from Shulman, 1986, 1987)

This challenging range of knowledge illustrates the complexity of teaching and the inter-disciplinary nature of the field. Shulman's second category of curriculum knowledge deserves mention at this point because a large proportion of published educational research, even when focused on teaching strategies, tends to ignore this key contextual factor and is reported as a kind of generic finding. For example, consider the different relevance and value to a secondary school mathematics teacher of a generic meta-review of randomized control trial (RCT) research studies claiming that formative assessment has considerable learning power compared to an in-depth qualitative case study within a secondary mathematics classroom. From a social realist perspective, children should learn rich subject discipline knowledge and also tackle big social interdisciplinary issues such as climate change and poverty, but they should also be taught the social, dynamic and contested nature of such knowledge and should learn the different 'ways of knowing' within different disciplines (Young, 2019; Boyd, 2019). Teachers' engagement with research should not be limited to studies of generic 'interventions' such as formative feedback but also include in-depth study that is within the context of curriculum subject teaching and learning.

Internationally, and with different developments over time, initial teacher education has placed varying emphasis on Shulman's seven categories of knowledge. In England there is a considerable difference between initial teacher education for primary and for secondary teachers. This is not least because secondary teachers are curriculum subject specialists, normally with a first degree in that subject or a related field, and so they generally complete a one-year postgraduate course to qualify as a teacher. Primary teachers in England generally teach a class across the curriculum subjects, although they may act as a lead teacher across the school for one or two curriculum subjects. Many primary teachers in England complete a first

degree then a one-year postgraduate course whilst others complete a three-year first degree in Education that includes workplace learning and gaining qualified teacher status. A one-year postgraduate course for primary teachers, with around 50% of the time spent working in placement schools, clearly leaves limited scope for learning curriculum subject content knowledge, numbers 2, 3 and 4 in the list of Shulman's categories above. Such an intense course of teacher education may perhaps create an emphasis on generic pedagogical knowledge, number 5 in the list. In England, the USA and elsewhere internationally, there has been an emphasis on workplace learning and this has squeezed foundation studies for example in philosophy and sociology, numbers 1 and 7 in the Shulman list of teacher knowledge categories (Hartlep & Porfilio, 2015).

The range of knowledge required by teachers is formidable. The 'research literacy' of a teacher, as proposed in this chapter, must stretch across the breadth of Shulman's knowledge categories. This requires a critical stance towards a highly contested knowledge base as well as recognition of the contribution to knowledge in the field made by teachers through their participation in professional inquiry and research activities and their generation of knowledge as practical wisdom, ways of working in a particular setting, through professional inquiry.

Professional Inquiry

Teachers require knowledge and skills to support their critical evaluation of different types of research literature. However, although I support the usefulness of practitioner research by teachers as a contribution to knowledge and as powerful professional learning, I do not consider that all teachers need to be active educational researchers. I do propose that all teachers should develop sufficient research literacy so that they are able to contribute to collective professional inquiry, for which they need to borrow some features of practitioner research, including critical engagement with existing research.

Professional inquiry is positioned between pragmatic evaluation, which is widespread in high accountability education contexts, and practitioner research, which requires a high level of researcher skills and time, or support from a university-based research mentor (Boyd & White, 2017). Table 1 outlines ten iterative steps of inquiry and summarises, in the centre

column, key characteristics of professional inquiry by teachers as part of collective school leadership. As part of professional inquiry, it is important that teachers adopt a critical stance towards relevant public knowledge including published theory, research, policy and professional guidance. This characteristic of inquiry is highlighted by step 3 in Table 1. However, it is also important that teachers adopt a critical stance towards their own local practice, established ways of working in their school, so that change becomes possible. In this way, teachers' professional learning consists of a power knowledge struggle, an interplay between the two inter-related domains of public knowledge and practical wisdom (Boyd & Bloxham, 2014; Boyd, Hymer & Lockney, 2015). Public knowledge may be considered as a vertical domain, including theory, research evidence, professional guidance and policy documents but sorted to some extent through critical peer review and therefore hierarchical. Practical wisdom may be considered to be the horizontal knowledge domain, the situated ways of working of teachers and therefore segmented between different schools and other settings.

If we intend to develop professional learning through 'interplay' between theory or research and teachers' practical wisdom, then a good place to start would seem to be teachers' questions that arise from their own reflections around classroom practice and student learning. An initial teacher concern might be referred to as 'a stone in the shoe' and may be simply expressed as a starting point for inquiry such as 'I would like to improve …' or 'I want to change … because …' (Baumfield, Hall & Wall, 2013, p. 39). Generating even an initial teacher question may require a 'safe space' and a measure of discomfort (Amira *et al.*, 2017) if it is to avoid bland questions that merely evaluate the techniques of schooling rather than tackling challenging issues that may give rise to findings that are uncomfortable for the teacher or the school. A key step is to problematise and develop such an initial question to become a focused and manageable research question. In action research the teacher might ask 'what is going on?' in the first cycle and then make an intervention and ask, 'what if?' in the second cycle (Baumfield, Hall & Wall, 2013). Developing a teacher research question requires a thoughtful balancing process focused on improving your teaching, avoiding 'yes-no' questions, engaging with your deep-seated feelings, asking what is researchable and above all challenging your personal theories and resonating with your identity as a teacher (Inoue, 2015). A key step in developing a teacher question is to critically engage with relevant theory and research to position the inquiry

in relation to what we already 'know' and to consider published theories as potential tools through which to investigate the developing research question. Nori Inoue suggests that a teacher action researcher might adopt the East Asian concept of 'emptiness of self' which is a fluid and transitory approach to identity that embraces the possibility of change and growth (*Ibidem*, p. 47). A well-developed teacher question might include some element of challenge to the wider purposes of education, to social justice issues, and to school leadership approaches.

This critical engagement with 'external' knowledge, shown in step 3 in Table 1, is one of the characteristics of effective professional development for teachers highlighted by a useful research review (Cordingley *et al.*, 2015). This review also points out the need for a 'rhythm' to professional development that allows sufficient time for teacher experimentation and evaluation in the classroom. One of the most well-developed forms of professional inquiry is lesson study, which has been used for many years in Japan and has been adopted internationally (Lewis & Hurd, 2011; Dudley, 2014; EEF, 2017).

Table 1. Professional Inquiry: Ten Steps
(From Pete Boyd & Liz White, 2017, pp. 130–131).

Ten Inquiry Steps	Pragmatic evaluation	Professional inquiry	Practitioner research
1. Identify a focus and develop questions*	The issue for inquiry or at least the quality assurance framework is identified top down	**Even a top down issue is shaped by teachers who frame questions and come to own them**	The issue may be top down, but the focus and questions are developed through engagement with literature
2. Collaborate with other stakeholders	Collaboration is defined largely within formal teams and structures	**Engagement by teachers is to some degree voluntary and others, especially learners, are invited**	Research ethics and seeking co-construction of knowledge lead researchers towards collaboration
3. Engagement with public (published) knowledge	Some engagement with policy and professional guidance; increasingly may refer to research meta-review evidence	**Critical engagement with professional guidance and research evidence to refine your question and design**	Informed by critical literature review and more likely to include a well-developed theoretical framework

4. Develop an approach and inquiry design	Quality assurance processes provide or strongly shape the approach and design for evaluation of the techniques of schooling	**A critical inquiry stance begins to question purposes of education, social justice issues and/or leadership**	Systematic literature review and a formal research methodology underpin the inquiry design
5. Establish an ethical framework	Workplace organisation ethics and codes dominate and may generate contrived collegiality	**Professional codes and ethics, as well as a supportive workplace culture may create good levels of trust**	Gaining formal ethical clearance and working to research ethics guidelines create a strong framework
6. Collect data systematically	Often use existing sources and methods of data collection already designed for quality assurance	**Selected sampling may include student voice. Use existing evidence of learning and data collection tools**	May use secondary data and a range of data collection tools
7. Analyse data systematically	Some statistical analysis, for example of test results, but often a 'common sense' interpretation rather than critical analysis	**Some use of systematic data analysis based on researcher methods**	Sophisticated approach to quantitative and qualitative data analysis
8. Disseminate findings and gain peer review	Local dissemination and may be included in institutional quality assurance reports	**Local and wider teacher network dissemination, seeking some level of peer review**	Aiming for national / international dissemination and often peer reviewed research journal publication
9. Take action	Local action is likely and may inform practice across the organisation	**Local action is likely and institutional action possible, depending on level of support from managers**	Local action is likely. Wider influence needs support from managers and on publication of accessible guidance
10. Review the process and identify the next cycle	Evaluation systems are frequently revised but usually in a pragmatic way. Evaluation is usually part of a regular annual cycle	**Sustained cycles of inquiry will depend on the development of a learning community and manager support**	May depend on learning community, partnership with a research mentor, funding and support from managers

Within higher education, a body of work adopting an 'academic literacies' approach addresses the 'deficit discourses' about students often found within policy documents and informal academic debate (Lillis & Scott, 2007). The academic literacies approach adopts a sociocultural perspective (Wenger, 1998) and aims for epistemic quality of teaching (Hudson, 2018) so that tutors focus on enabling diverse students to join an inclusive learning community within the subject discipline and learn knowledge but also 'ways of knowing' (Boyd, 2019). In this way the academic literacies approach encompasses the development of research literacy, for example of student teachers. Andrew Northedge has written two papers that provide an accessible introduction to an academic literacies approach (2003a, 2003b). In the first paper Northedge argues for a middle way between teaching as telling (or lecturing) and teaching as light-touch facilitation:

> …we cannot persist with models of teaching as 'knowledge transmission', nor rely on unfocused student-centred approaches that leave the students floundering within everyday discourse.' 'Students need practice at participating both vicariously, as listeners and readers, and generatively, as speakers and writers, so that they can develop identities as members of the knowledge community and move from peripheral forums to more active, competent engagement with the community's central debates. (Northedge, 2003a, p. 31)

This ambition has resonance for teacher education and professional development that develops teachers' research literacy, includes foundation studies, and prepares teachers to contribute to tackling social disadvantage and addressing social justice in education (Thompson, 2017). In the second paper Northedge emphasises the teacher's subject knowledge expertise and uses a concrete example to illustrate three ways by which a teacher may support students' disciplinary literacy development:

> The teacher, as subject expert, has three key roles to play in enabling learning: lending the capacity to participate in meaning, designing well planned excursions into unfamiliar discursive terrain and coaching students in speaking the academic discourse. (Northedge, 2003b, p. 169)

By 'lending the capacity to participate in meaning' Northedge means that the tutor teaches a new concept to the students, then sends them out into the field, through a well-designed learning activity, to practice using that concept

to debate different solutions to a problem. In initial teacher education this emphasises the need for enactment, student teachers learning from classroom practice and reflective learning. In professional development for experienced teachers this is the rhythmic experimentation and evaluation identified as a characteristic of effective provision of professional development (Cordingley *et al*., 2015).

In the spirit of an academic literacies approach, the following three sections discuss critical evaluation of different forms of research publications. No doubt they will introduce some unfamiliar terminology or concepts to many readers and may provoke further reading on different aspects of research design, methodology, data generation and analysis. However, research literacy does not mean the same as research expertise, these sections are designed to be an introduction primarily for self-assessment. If, as a schoolteacher or teacher educator reading through, you feel reasonably comfortable with the range of ideas discussed, then you would seem to be self-assessing as 'research literate'. Perhaps you completed a first degree in a relevant discipline or have completed a masters level degree in education. No doubt you will have some areas of stronger knowledge and may wish to pursue some selected further reading and professional learning. Different pathways of previous study may have involved you more or less in analysis of numerical data, statistics, or in analysis of narrative data. If the three sections include many aspects of educational research that are unfamiliar or obscure to you, then you are self-assessing as requiring some further professional development of research literacy.

Randomised Control Trials and Systematic Reviews in Education

Although 'evidence-based' approaches in education, prioritising randomised control trial (RCT) research studies, have been foregrounded internationally over the last twenty years, it is important for teachers to be able to adopt a critical stance towards such evidence on two levels. First, teachers should be able to express a philosophical critique around the nature of evidence to inform teaching. Such a critique would highlight the need for teachers to consider the wider purposes of education, the complex and relational nature of teaching, the value of action research approaches, and the limitations

of the data on which large-scale quantitative studies are based (Malone & Padraig, 2020; Gale, 2017). Second, teachers should be able to critically evaluate a single RCT study and appreciate the limitations of a systematic review of such research studies, including the possible inclusion of meta-analyses. This section will focus on this second element and may seem quite technical, but the technical limitations of experimental research in education help to reveal its philosophical weaknesses.

An RCT study in education is an experimental design that generally tests the impact of a change in teaching by using an intervention group and a 'control' group and comparing them before and after the period of change in practice. When designed and conducted well, an RCT is a powerful form of research. A systematic review is a high-level overview of research on a focused question that identifies, selects, and evaluates all research evidence relevant to the question. It will have an explicit approach to selection of what the authors consider to be 'high quality' research and what they consider to be 'relevant' to the question. A systematic review may include a meta-analysis, which is the use of statistical methods to combine data from across the selected studies included in the systematic review and estimate an overall impact or 'effect size' of the intervention. When designed and completed effectively then a systematic review is a powerful and useful form of research evidence.

Fundamentally, it is difficult to design and implement an effective RCT study in the complex messy world of schools and classrooms. Experimental research methods generally rely on reducing the number of relevant variables, and yet a classroom as a laboratory includes around 30 varied and non-voluntary potential learners as well as an individual teacher with values, knowledge, repertoire of practice and personal characteristics. This laboratory is also influenced by an externally imposed curriculum, available learning materials, and its physical environment, as well as school, community and national level culture and policy frameworks. This context produces at least 4 significant challenges for design of an RCT (Wyse & Torgerson, 2017; Torgerson & Torgerson, 2003).

First, an RCT in education will often mean that some pupils receive an intervention, others in a control group do not. The fidelity of the intervention, meaning its consistency, is notoriously difficult to ensure in education and it normally requires a well-developed and relatively expensive package including professional development for teachers, specifically designed

teaching materials, and some classroom coaching and monitoring. Imagine trying to ensure the fidelity of an intervention such as 'formative assessment in primary History' or 'mastery approaches to teaching secondary maths'. This issue of fidelity of the intervention is a critical weakness of RCT studies in real world education settings. Vague outlines of the 'intervention' undermine the usefulness of educational research to schools and teachers and this effect is exacerbated if multiple studies are conflated and reported as if the intervention in each study was the same, as happens for example in a meta-review.

Second, an RCT in education will normally face a difficult decision concerning the control group. Often a research paper reporting on an RCT in education will include a throw away comment such as 'the control group continued to receive the established regular approach to teaching mathematics'. Comparing this design to biomedicine, this is seen as the equivalent of using a placebo pill or treatment. But such a 'do nothing' approach to the control group is highly problematic in education. To be of a suitable sample size, the control group will consist of several classes, involving different teachers, almost certainly across several schools. Now consider how secure you might feel, in assuming that this group are receiving something even vaguely consistent in their maths lessons. It might improve the study design if this control group were to receive an alternative intervention, for example in a study of a mindset theory intervention the control group might receive an input on study skills. There is an additional ethical issue concerning a 'do nothing' control group, because those children in the control group miss out. One way to resolve this, and help to encourage school participation, is to provide the intervention for the control group at a later date. However, funding bodies of large-scale RCT studies may wish to avoid this because they want to study the long-term impact of the intervention. Alternatively, the issue of long-term impact is important in education but is often ignored because the research funding body want published results within a relatively period.

Third, an RCT in education requires some measure of impact of the intervention and this normally takes the form of pre and post intervention tests, meaning at the beginning and at the end of the period of the study. The choice of test is critical because the measure used needs to be valid and reliable. Standardised tests are often used but identifying or designing valid and reliable tests that measure wider purposes of education, for example

orientation to maths as well as attainment, is challenging. Here we touch upon the underlying philosophical weaknesses of experimental research in education such as an RCT.

Fourth, an RCT in education should use randomized sampling but, unlike patients diagnosed with a specific medical condition, pupils are generally already allocated to different schools, classes, and teachers so that true randomized sampling is not feasible. For this reason, RCTs in education will attempt matching of samples. Just consider the challenge of using broad indicators to match two schools and then within them two classes of 12-year-olds and their maths teachers. One of these classes will be part of an intervention group and one will be in the control group. Now imagine building up a suitable sample size of at least 100 pupils in intervention and control groups, it is likely to involve several schools. It is not acceptable to have intervention and control group classes in the same school because of 'leakage' in that pupils and teachers will hear about and be influenced by what is going on in the other class. The use of matching as a proxy for randomized sampling is a difficult operational aspect of using RCTs in education.

Moving on to consider meta-reviews of RCT studies in education, it is important for teachers to appreciate how such studies generally report the impact of an intervention using effect size and then how a review or meta-review calculates an overall effect size. 'Effect Size' uses variation within the test results (estimated population standard deviation) as a yardstick to consider the difference between mean scores of the intervention and control groups (Coe, 2002). An effect size of 0.8 means the score of the average person in the intervention group is 0.8 standard deviations above the average person in the control group, so higher than 79% of the control group. Unfortunately, at the level of an individual study, 'the intervention plays only a partial role in the calculation of effect size' (Simpson, 2018). Also, when comparing studies, 'relative effect size can be a proxy for the relative effectiveness of interventions only in the highly restricted circumstances where all other factors impacting on effect size are equal' (Simpson, 2018). This latter point is significant, given the previously explained complexity of schools and classrooms. A research review or meta-review is devised by selecting RCTs that broadly claim to measure the impact of an intervention, recall the issue of fidelity previously discussed, and adds together their effect sizes to calculate and report the mean effect size. In addition to the challenge of fidelity, other issues in selection within a meta-review include

how dated some of the RCT studies might be as well as the economic and cultural context of the studies. There is also considerable debate about the magnitude of effect size that signifies a useful educational intervention (Torgerson & Torgerson, 2003).

All of the above concerns about RCTs in Education, as well as the issues around systematic reviews and meta-analysis, mean that an accessible and powerful research meta-review tool such as the UK Education Endowment Fund 'Teaching and Learning Toolkit' needs to be used by schools and teachers but in a careful, critical and 'research literate' way[1]. It is important for those using the toolkit to read the accompanying short paper provided on each intervention and to consider the details of the research underpinning the synthesis and overall effect size reported. Gert Biesta argues that judgments by teachers and other school leaders are influenced by facts, but crucially also involve values about the purposes of education. In this way judgment is research-informed rather than evidence-based: "The role of the educational professional in this process [of engaging with research] is not to translate general rules into particular lines of action. It is rather to use research findings to make one's problem solving more intelligent." (Biesta, 2007, p. 20). Teachers and other school leaders need to be aware of the limited philosophical basis of RCT research in education, as well as evaluating the technical limitations of individual studies. They seem to offer "scientific precision' but arguably: "RCTs can never deliver on this precision because they operate on a false premise: that the social world is the same as the physical world" (Gale, 2017, p. 9).

Individual Research Papers and Literature Reviews in Education

Teachers, as leaders of change in practice, may find a peer reviewed research journal paper that seems relevant to their current area of professional inquiry. Sometimes it may be a single empirical research study, but literature review papers are often useful as a good starting point for a professional inquiry. If you find and decide to engage with a single study paper further, the list of

1 https://educationendowmentfoundation.org.uk/evidence-summaries/teaching-learning-toolkit/

questions below are designed to help you to 'critically evaluate' the research, to identify its strengths and weaknesses and its relevance to your professional inquiry. In the case of a literature review paper, then question 4 must be expanded to consider the approach to selection and inclusion of studies as well as considering the quality and relevance of each study included in the review.

1) **What kind of publication is it?** Who is the author and what is their affiliation and role? Does it appear to be independent research? Does it appear to be peer reviewed in any way? Does the work use citation and referencing or otherwise make clear the research it is informed by? Is it on a university or government website for example .edu / .ac / .gov?
2) What is the **full Harvard style reference**? Write it down.
3) What is the **research question** or scope of the publication?
4) What **data collection method(s)** did the researchers use to collect their data? What were the strengths or weaknesses of the methods used? What other, perhaps better, methods could they have used to collect their data?
5) What **sample** (for example of participants) have the researchers used? What were the strengths or weaknesses of the sample, how could it be improved? What was the context of the study and how does it align to your educational setting?
6) What **ethical risks** did the researchers identify? Is there a convincing explanation of how the ethical risks were controlled? Do the researchers explicitly state that they gained formal ethical approval?
7) What was the **approach to analysis**? Is it clear how the researcher systematically analysed data to generate reliable findings? With qualitative research this should include a step by step explanation of the approach to coding and generation of themes.
8) What **significant contribution to knowledge** does the research make – new findings, development of theory or innovative methodology? Are the findings positioned with respect to previous research?
9) Overall, **explain any significant problems** with the researchers' conclusions or any important limitations to the research in relation to your professional inquiry?
10) What is the key **relevance** of this publication to your issue, context, argument and / or research project?

Applying these prompt questions to critically evaluate a research paper will initially be challenging, and individual teachers will benefit from collaboration with other interested colleagues and from partnership with a university-based research mentor. In reading research, teachers will need to give the researcher author a little benefit of the doubt over some technical aspects of research that are unfamiliar, and this seems reasonable if the paper is published within a peer reviewed journal. However, teachers should not underestimate the value of their own practical wisdom, developed through workplace learning in schools and classrooms. The aim is to engage in an open-minded power knowledge 'interplay' between the published research and your collaborative practical wisdom (Boyd & Bloxham, 2014; Boyd, Hymer & Lockney, 2015).

Some research papers will present clear and confident answers to the questions proposed here, others will seem weak in one or more areas. In reading and evaluating quantitative research a teacher will need to focus on design issues, as highlighted in the section on RCT studies, and rely to some extent on the peer review process to identify technical issues around statistical analysis. In reading and evaluating qualitative research the approach to analysis should be made clear within the methodology section of the paper, including the practical steps of coding and generating themes with reference to relevant methodological literature. The written presentation of analysis in qualitative studies is particularly significant because its transparency contributes significantly to confidence in the findings. As a reader you should be provided with considerable insight into the way that the researchers have interpreted illustrative quotations from the data. For an introduction to thematic analysis, which is a frequently used and flexible approach to qualitative data analysis, it is worth reading key papers by Virginia Braun and Victoria Clarke (2006, 2019) or, for a multi-media introduction, visit their website at the University of Auckland[2].

Having emphasised the importance of a thorough approach to qualitative analysis it is worth mentioning an example of an influential qualitative research paper that pushed the boundary between systematic data analysis and professional judgment. In their study of primary teachers in Scotland, Bethan Marshall and Mary Drummond, analysed classroom video of lessons as part of a larger project that included teacher surveys and interviews (2006).

2 https://www.psych.auckland.ac.nz/en/about/thematic-analysis.html

They were focusing on the development of pupils as autonomous learners as a principle of developing assessment for learning in the classroom. They involved teachers and other teacher educators in the process of analysing and judging the video lessons and after a considerable effort using systematic analysis turned to Eisner's concept of 'connoisseurship' (1991). In the end they simply watched a lesson video and made a professional judgment to classify those lessons in which the teacher's observed practice appeared to capture the 'spirit' of assessment for learning, meaning that it included the underpinning learner autonomy principle (Marshall & Drummond, 2006). This is a useful example of a highly cited and influential qualitative research paper because it shows how professional evaluative judgment may become strongly embedded within qualitative data analysis. This is the ambition of many educational researchers who pursue collaborative practitioner research with schoolteachers, to co-construct knowledge with practitioners that is socially and contextually robust (Cochran-Smith & Lytle, 2009; Boyd & Ash, 2018).

Developing research literacy is an ongoing project for a teacher. I would argue it deserves some priority, but it will clearly have to fit into a work-life balance and professional development schedule of a busy teacher. Published research is increasingly being published open access online and there are also increasing moves to give teachers access to research. Some, but certainly not all, research papers seem to be written in impenetrable dense academic language. However, with persistence it is usually possible to gain some understanding, if only sufficient to reject the paper as irrelevant and move on.

A literature review, published in a peer reviewed research journal, is often a useful resource for the teacher to quickly gain a grasp of previous research on an issue. Unlike a systematic review, a literature review tends to focus on a topic rather than a specific question. It should explain the methods used to search and select relevant research and should evaluate the reviewed studies to provide a summary of the main findings and scope for further research. Such a review should be thorough but clearly there may be new research studies available, so the date of the review is significant.

Policy and Professional Guidance in Education

It is difficult to judge an education policy text in relation to underpinning research. A single RCT was influential in justifying the inclusion of direct instruction on formal grammar into the Primary National Curriculum in England (Wyse & Torgerson, 2017). This RCT had no checks on the fidelity of the intervention, which appears to have been embedded grammar rather than direct instruction. The pre and post 'tests' consisted of a piece of first-person narrative and the project team, employing expert judges, found it difficult to gain agreement on grading. The sample was lower secondary school rather than primary school pupils, even though the study strongly influenced the primary curriculum document. Many education policy documents will claim, or at least imply, that they are 'evidence-based' but do not use academic genre of writing, including substantial citation and referencing, to demonstrate this explicitly to the reader.

In England the school inspection agency (Ofsted) has begun to publish research reviews as part of promoting an 'evidence-based' approach. A recent Ofsted review on teaching mathematics (Ofsted, 2021) was subjected to critical review in a paper published in the journal of the association of mathematics teachers. This review, written collaboratively by three academics and an education consultant, presents a careful critique which identifies four areas of weakness of the Ofsted review. These are that the Ofsted review: draws unwarranted causal claims from studies; Oversimplifies or overgeneralises the results of research; bases practice implications on poor quality studies; and omits substantial bodies of relevant research (Gilmore *et al*., 2021). The authors conclude that 'the recommendations in such a report cannot be considered to be research-informed' (2021, p. 38). It is possible to shroud ideological purposes and agendas with reference to selected research findings and this seems to add a political element to teachers' research literacy (Helgetun & Menter, 2020).

Professional guidance texts will also often claim that they are founded on research evidence. However, to increase their accessibility to teachers and other school leaders they tend to avoid academic style, conventions and in-depth discussion of methodology and data analysis, that are found more generally in research journal papers. Often the author will summarise the findings of a body of research, which means they are giving their interpretation, and then draw their own view of implications for practice

from this. The teacher as reader has a challenging job in critically evaluating the evidence-based status of such professional guidance texts. To some extent teachers might rely on independent reviews to help them in selecting a professional guidance text, but they need to beware of authors congratulating each other on the back of each other's publications. In the UK, the Chartered College of Teaching, a membership professional association for teachers, is actively developing as a broker of research for teachers by publishing peer reviewed professional journal articles[3], but is pursuing a difficult balancing act between the education research community, the blogsphere and school-based practitioners. The thriving 'blogsphere' for teachers, with increasingly high-profile bloggers who may be school-based, but may have shifted to full-time blogging, also publish hard copy texts that may seem on the surface to be scholarly. While many contributors across these networks claim that their professional guidance is underpinned by research, even with minimal evaluation this is often proves to be fragile. In addition, and adding further complication, there are considerable differences between academic researchers in education. It is important to note that Professors, such as myself, are just as human as bloggers and do live in a competitive world, with incentives to disseminate their research to increase citation and impact and promote sales of their books. Teachers should be particularly wary of commercial schemes that may come at a high price for schools and yet are based on publicly funded research that is available in published texts. It is important to ask if the commercial materials and/or training contribute sufficiently to the impact of the development in practice and to reducing the costs of implementing it compared to an in-house or network partnership project.

A more concrete example of professional guidance around an important aspect of classroom practice, that of 'dialogic teaching', will illustrate some of the dilemmas faced by teachers in selecting professional guidance sources. Research and professional guidance on the topic of dialogic teaching developed considerably from the first 2004 edition of Robin Alexander's slim volume, Towards Dialogic Teaching, now in its 5th edition, setting out a concise and convincing guide. This text was underpinned by critical engagement with research and the new editions reflected the ongoing research. It is important to note that the RCT research evidence base for impact of dialogic teaching

3 https://chartered.college/impact/

on learning depends on the fidelity of the approach as an intervention and is promising but not substantial (EEF, 2016). Informed by recent research, Alexander has recently published a much more substantial professional guidance text (2020). Alternatively, to get a broader overview of classroom talk and dialogic teaching, Rupert Knight's book 'Classroom Talk' offers a scholarly critical review and practical guide for teachers (2020). A recently developing critique of dialogic teaching includes the claim that it over-emphasises classroom talk and proposes a material-dialogic approach that acknowledges the agency and voice of materials such as textbooks or concrete manipulatives (Barad, 2007; Hetherington & Wegerif, 2013). To complicate the issue of dialogic teaching further, there has been an ongoing debate around 'direct instruction' that is often characterised by a false dichotomy between direct instruction and 'inquiry-based' teaching. However, direct instruction generally is where '…the teacher is actively engaged in bringing the content of the lesson to pupils by teaching the whole class directly' (Muijs & Reynolds, 2018, p. 36) and includes a characteristic of 'interactive teaching' meaning whole class discussion facilitated by the teacher. The problem with the current fad for 'direct' or 'explicit' instruction, which seems a reasonable approach for some teaching during a school day, is when it is proposed as a general approach for all lessons, all curriculum subjects and for lessons where the aims include higher level conceptual learning and problem-solving, for example, in the confidently entitled book by a successful teacher blogger 'The Truth About Teaching' (Ashman, 2018). Well-established and effective approaches such as Japanese inquiry-based teaching of maths are dismissed as part of vague references to 'discovery learning'. The question is how compatible dialogic teaching is with direct instruction and how a teacher finds their way through the complex literature to decide on to what extent dialogic teaching should become part of their repertoire of strategies.

Critical evaluation of professional guidance texts is challenging. This is made more complex when engaging with teacher blogs and other online teacher network resources. Teachers need to look at the background of authors, together with independent reviews, as well as the claims and citation in the text itself. The term 'post-truth' was Oxford Dictionary word of the year in 2016 and is defined as: 'relating to or denoting circumstances in which objective facts are less influential in shaping public opinion than appeals to emotion and personal belief'. In a useful and concise book on the topic, Lee McIntyre (2018) defines post-truth as: 'Facts are less important than feelings

in shaping our beliefs about empirical matters?' McIntyre shows how post-truth is connected to changes in news media and the growth of social media but also to 'science denial' for example in relation to smoking causing cancer and carbon causing climate change. In an era of 'post-truth' it may be useful to consider how teachers and teacher educators might develop 'responsive attunement'. It is too easy to get carried along with others, on social media or in a workplace, whereas 'Responsive attunement entails… *responding* to the particularities and complexities of a situation on the basis of *tuning in* to others and things in the social and natural worlds, with reflexivity.' (Dall'Allba, 2020, p. 32). Dall'Allba uses the term 'tuning in' to mean focusing in on what matters and how we might nurture such a capacity among students and teachers. A report based on survey data in the UK showed that a quarter of 8 to 15 years olds consider that a website listed by a search engine can be trusted and half of teachers felt school was not developing the level of critical literacy young people need (National Literacy Trust, 2018). The National Literacy Trust have developed learning resources for teachers to develop children's critical literacy, teachers and teacher educators need to consider supporting this work (National Literacy Trust, 2019). All of us are potentially too strongly influenced by theory and research that seems to be common-sense, which may be referred to as 'seductive theory'. The widespread demise of 'foundation studies' in initial teacher education programmes has implications for student teacher awareness of social justice issues (Hartlep & Bradley, 2015) but also perhaps means that they are less likely to develop an understanding of the big picture of educational research in relation to politics and democracy. Critical evaluation of professional guidance also requires teachers to ask questions related to their practical wisdom and current classroom practice: To what extent are we already doing this? What changes does it imply for our practice? What are we currently doing that we would need to stop doing to make this change?

It is difficult to develop, as part of research literacy, a strong grasp of this big picture of educational research and its value for informing practice in schools. It is worth some further reading and it seems appropriate to at least suggest some starting points here. To get an overview of the current zeitgeist, a perspective that is heavily influenced by cognitive psychology and convinced about the value of experimental research, an evidence-based approach that perhaps adopts a technical view of teaching, then it is worth selectively engaging with 'Effective Teaching: evidence and practice'

by Daniel Muijs and David Reynolds (2018). However, to balance that and help you to adopt a critical perspective, you might read through Gert Biesta's well-argued philosophical text 'Educational Research: an unorthodox introduction' (2020). Biesta argues convincingly that teachers and teacher educators need to understand educational research in relation to politics and democracy and 'scientific evidence' as a social process.

Conclusion

I have argued that education is a complex, interdisciplinary, and multi-paradigmatic field. Therefore, ways of knowing in education are more comparable to the field of mental healthcare than to the discipline of bio-medicine. In deciding how to teach, teachers and other school leaders, as well as policy-makers, should place considerable value on teachers contribution to knowledge generation through collaborative research activity, professional inquiry and the practical wisdom generated through evaluative practice. All stakeholders need to acknowledge the power knowledge 'interplay' between teachers' practical wisdom and public published knowledge, including theory, research, policy and professional guidance. Within that public published knowledge, experimental research including randomised control trial (RCT) studies and meta-reviews provide useful but limited sources of research evidence, alongside well-theorised and robust individual research papers including qualitative studies. Arguably, some teachers should be involved in co-creation of knowledge, through action research, preferably with a research mentor to guide them, or in collaborative practitioner research with professional researchers, who would normally be university-based. However, it is apparent that *all* teachers, and teacher educators, should develop a level of 'research literacy' that enables them to contribute to the critical evaluation of research publications as part of their professional contribution to leadership of change in practice. It follows that career development of teachers, including gaining formal leadership roles, should include a developing level of research literacy and that all teachers should have funded access to advanced professional education at masters level or beyond that includes development of research literacy. I have proposed a provisional definition of teachers' research literacy as: 'Demonstrating a reasonable understanding of the contested nature of 'ways of knowing' within the field of education, including appreciation of the

interplay between research and practical wisdom in deciding what and how to teach effectively, as well as practical skills in critically evaluating different sources of research evidence as an element of professional inquiry into practice'. I have argued that in a post-truth world a teacher's research literacy needs to include a critical perspective of the big picture, including an understanding of educational research in relation to politics and democracy and critical skills in interpreting professional guidance sources.

The nature and level of research literacy required by teachers clearly deserves far more development. In accepting that teachers' research literacy is a key area for development we are of course creating significant implications for the research literacy of teacher educators, based in both universities and schools, and for the content and pedagogy of teacher education. An accessible and useful overview that I would recommend to teachers and teacher educators is the concise professional guidance text 'Evidence-based Teaching' by Carey Philpott & Val Poultney (2018). To operationalise the concept of research literacy perhaps requires some of the infrastructure of learning outcomes and level descriptors as already exists in the assessment frameworks for well-developed masters level programmes for teachers that foreground practitioner research approaches. Further research and development is required to extend our understanding of teacher research literacy and to negotiate and consolidate a shared language for its discussion across the boundaries between schools and universities. Meanwhile, as a teacher, school leader, university or school-based teacher educator, education consultant, or as someone with influence on education policy, it is important to self-assess our own level of research literacy and consider how it might be further developed.

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CHAPTER TWO

Teachers and Research Literacy: A Literature Review

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ABSTRACT

This chapter presents a literature review of seven studies whose key concern is practitioners research and / or teachers' research literacy with reference to how literacy is expressed, and the benefits thereof for teachers. The chosen studies were published as articles in academic journals over the last decade.

From the findings and conclusions one can learn about the importance of skills and abilities among those who are research literate. The studies reveal that teachers possessing research literacy identify their research practice's contribution and identify changes in their professional views, practice, and strategies of teaching.

Findings show a gap between how teachers view the importance of inquiry and research as components of teachers' work and how teachers conduct themselves as researchers in their day-to-day work.

The key recommendation calls on teachers to acquire research literacy abilities, to integrate knowledge and skills required to conduct effective and systematic research, master research methods, know how to generate potential information and how to make changes in their ways of teaching. It is also recommended to maintain a sustainability in-school research cultures as part of the critical pedagogical approach views and programs.

KEY WORDS: research literacy, practitioner researchers, research culture, professional development

Introduction

It is accepted among educational researchers that teachers' professional development is important and beneficial for teachers, teaching practice and students – and therefore it should be continuous (Beijaard, Meijer & Verloop, 2004; Berliner, 2001). One of the ways in which teachers can develop professionally is to integrate research into their work and act as teacher researchers (Cochran-Smith & Lytle, 1990; Groothuijsen, Bronkhorst, Prins & Kuiper, 2019; Zellermayer, 2019). The literature has examined the topic of practitioners engaging in researching teaching from a range of aspects, such as how to integrate research into teaching, teachers' attitudes toward and perceptions of the assimilation of research findings and research procedures, the effect research steps have on their work as teacher researchers, and the like.

There are those who believe that different scopes and profundity of research thinking and steps can be applied by every teacher as a way of life central to their ambition to continuously develop professionally. Therefore, it is important for teachers to acquire tools by which to engage in research constantly – mainly about issues with which they have to cope in teaching (Cochran-Smith & Lytle, 1990). Engaging in research will assist teachers to better understand their work environment, cope with problems, avoid mistakes and produce new knowledge. Using research tools, skills to conduct research, and practically employ research findings, should be, in researchers' opinion, part of teachers' work and their professional worldview. To do this, teachers must master a number of abilities such as wording research questions, data and information collection, research planning, analyzing findings, exploring research contributions to actual teaching and know how to criticize attitudes and professional opinions researchers present. Mastering all these will provide teachers with research literacy and established professional insights, which are difficult to realize in any other way (Karnieli, 2010; Kirkwood & Christie, 2006; Meijer, Oolbekkink, Meirink & Lockhorst, 2013).

This chapter presents a literature review of seven articles whose key concern is practitioners research and/or teachers' research literacy with reference to how literacy is expressed, and the benefits thereof for teachers. The chosen articles were written by the researchers and published in academic journals over the last decade.

The chapter opens with a theoretical background examining how research literature had addressed these issues over the years. The theoretical background is made up of a number of sub-sections: definitions of the term literacy research, advantages research literate teachers have, and the role of stakeholders in education systems with reference to teachers' research literacy. The second part of the chapter presents the literature review conducted, including a critical and detailed comparison of the findings, conclusions and recommendations in reviewed studies. The last part of the chapter is a discussion about key questions arising from the literature review, a discussion whose aim is to raise pointers for teachers, researchers and education systems who will continue to research and enrich the world of knowledge about teachers' research literacy.

Theoretical background

Research literacy

Researchers have proposed a variety of definitions clarifying the meaning of the term research literary, while examining how this literacy is expressed among teachers. Beaudry and Miller (2016) define it as follows:

> Research literacy is the ability to locate, understand, discuss, and evaluate different types of research; to communicate accurately about them; and to use findings for academic and professional purposes…. Research literacy is not just one literacy: it is a combination of literacies that, taken together, empower educators to access, understand, and apply "what the research says" to both their academic and professional work. (*Ibidem*, p. 4)

They also added abilities such as identifying various research tools, knowing different research methods, tracing existing studies, assessing their contribution and critically discussing their findings (*Ibidem*).

Another definition focuses on the abilities of teachers to use evidence found in studies:

> Research literacy refers to the teachers' ability to use the scholarly record in sensible ways. It involves the ability to locate relevant information, the ability to subject this evidence to critical scrutiny, and the ability to synthesise it into a useful working theory. (Xerri & Pioquinto, 2018, p. 14)

Researchers have pointed out that teachers should be consumers of research literacy because educational research is intended to develop and improve the field as a whole. Those who are consumers of research literacy have a number of key abilities including: an ability to read research reports presented in different formats such as journal articles, conference presentations, slideshows, reports about educational institutions and systems and the like; ability to differentiate between qualitative and quantitative studies; ability to understand the meaning of statistics representing research findings; ability to know how research is conducted and what current needs, problems or concerns studies address (Shank & Brown, 2007); ability to trace and access educational studies; ability to use digital information resources, in search engines and data bases; ability to retrieve necessary information by critically comparing various information sources (Beaudry & Miller, 2016; Jemsy, 2018), and ability to possess knowledge of research concepts, research engagement, attitudes towards research and critical thinking skills (Jemsy, 2018).

On acquiring these abilities, teachers will have the opportunity to continue to develop abilities allowing them to conduct studies themselves examining the educational context in which they operate (*Ibidem*). Conducting research will contribute to teachers' continued professional development because research literacy is a combination of a number of literacies that greatly develop teachers' abilities, such as technological literacy, information literacy, verbal literacy, numerical literacy, visual literacy, statistical literacy and more (Beaudry & Miller, 2016; Jemsy, 2018). On acquiring these abilities, teachers will develop approaches and beliefs viewing research as part of their work. They will initiate studies, choose appropriate research tools, and become research-engaged professionals. Such professionals will be capable of finding answers to questions arising from their context and practice, professionally lead their learners to successes and strengthen their professional identity (Cochran-Smith & Lytle, 2021; Kirkwood & Christie, 2006; Meijer *et al*., 2013; Xerri & Pioquinto, 2018).

Advantages of acting as practitioner researchers

Researchers recommend to teachers operating as practitioner researchers to examine issues and subjects linked to their work practice world so that conclusions arising from these studies will be applicable and practical for them and serve as a basis to understand what changes they need to make to

their practice (Sorgo & Heric, 2020). They emphasize that it is desirable for educational research to be practice-oriented so that they will affect realities faced by classroom practitioners (Groothuijsen *et al*., 2019; Winch, Oancea & Orchard, 2015; Xerri, 2017).

> The teacher-researchers point out that research studies should be applicable and replicable not only in other context for research, but also in educational practice so that schools, teachers and students can benefit. Concerning 'cumulativity', the teacher-researchers are convinced of the value of practical knowledge in addition to scientific knowledge. (Groothuijsen *et al.*, 2019, p. 17)

Since there are teachers who do not see themselves as knowledge producers, and in order to encourage engaging in research and enjoying its benefits, the recommendation is that schools be concerned with providing a working environment enabling teachers to research their work (Kirkwood & Christie, 2006). Studies have found that teachers who systematically engaging in research by applying scientific research methods, profoundly understand educational processes occurring in lessons, and they strive to constantly improve them. They have overcome weaknesses in their teaching and improvements in their performance have also contributed to learners who have reached higher achievements. It has also been found that these teachers continue to expand their disciplinary and pedagogical knowledge, constantly try to discover new and relevant information in their specialist subjects, enhance their professional ways of decision-making, examine over time their teaching practices' efficiency (Jemsy, 2018; Karnieli, 2010; Meijer *et al*., 2013; Xerri, 2017), acquire professional tools helping them to relate to learners and their learning complexities, and acquire tools broadening their ability to manage learning (Saqipi & Vogrinc, 2020).

A range of studies examining teaching populations in various countries have explored teachers' positions and attitudes towards the idea of integrating research into their work. For example, in the United States, research was conducted on teachers who carried out reflective practice and examined their role as teachers, having values, and as builders of programs to improve teaching in classrooms. These teachers learned to identify the nature of problems with which they cope, how to develop focused research questions, use various research tools, assess, document, sort findings, and the like. It was found that conducting research served as a path to teachers' professional development,

had long-term effects and contributed to teachers implementing authentic, focused, and meaningful learning (Killingsworth, Crawford & Hickmann, 2010).

Researchers in England examined knowledge, perceptions, and engagement with everything linked to research among teachers who did not conduct research. They found that in general, educational research findings had little impact on decision-making steps in most teachers' practice. For them academic research-based information was found to be less easy to understand. A group including some of the participants, most being teachers in high schools and a few in elementary schools, declared that they were influenced by the research world. This group of teachers stated that they appreciated research activity, they engaged with research findings, and used these findings to improve their teaching practice (Nelson *et al.*, 2017).

Researchers in Slovenia examined what factors motivate or demotivate teachers integrating research as part of the educational practice. The findings revealed that the desire to progress in one's career or schools' policy towards research, were not key motivational factors encouraging teachers to pursue research activities. Although teachers showed confidence in their knowledge about research and means thereof, three quarters of teachers did not see these activities as part of the role teachers need to perform (Sorgo & Heric, 2020).

Researchers from the Netherlands described the results of three initiatives in which teachers learned how to research. The learning process took place in collaboration with university-based research institutes and during their studies, teachers began to conduct research. The research findings showed that all teachers developed knowledge and skills enabling them to identify research methods, lead research procedures, collect data and analyze research results. Teachers stated that further to teaching integrating research they developed critical approaches to how they function in their classrooms and felt a need to enrich their ways of teaching and their conduct in lessons. Teachers even stated that they gained better insights into the relationship between educational theories and their teaching practices (Meijer *et al.*, 2013).

Further to all these, researchers recommend that educational systems include evidence-supported practices and programs. Teachers need sound evidence and that it contributes meaningfully to actual ways of learning and teaching. One should strive to strengthen teachers' and education system

leaders' research literacy, literacy that will help them, and schools where they teach, to rationally choose programs and ways of teaching that will most correspond to their learners' needs (Kalenze, 2020).

> Flatly, strengthening research literacy across the education field has to be a primary target and guide…. Elevating research literacy, after all, does not necessarily mean making all educators experts with the educational research literature. More so, it means building practitioners' and leaders' skills to evaluate claims made by vendors, education "futurists" other educators, or whomever so they can make the best instructional decisions possible for their kids' needs… and if our ultimate goal is to get evidence-supported practices and programs fully working in schools, we will need all the research-literate skill we can get. (*Ibidem*, pp. 6–7)

The combination of insights into teacher learning in and from their practice, on the one hand, and the call for a more academic interpretation of teaching, on the other hand, is most evident in the initiatives that focus on teachers as researchers, on practitioner research.

Role of stakeholders and education systems

As mentioned above, the conducting research in school framework provides teachers with many advantages and at the same time influences students' achievement and the quality of school systems:

> When inquiry is a stance on teaching, learning, and schooling, there is an activist aspect to teaching. From this perspective, inquiry communities exist to make consequential changes in the lives of teachers and, as importantly, in the lives of students and in the social and intellectual climate of schools and schooling. (Cochran-Smith & Lytle, 2021, p. 4)

Research literature emphasizes that schools' stakeholders have an important role to play in connecting research and pedagogy (Jemsy, 2018; Sorgo & Heric, 2020), and therefore, they must encourage and lead teachers to pursue research and support development of teachers as professionals (Cochran-Smith & Lytle, 2021). Stakeholders must adopt a worldview of teaching while engaging with research as part of the teaching profession and should build models for teachers encouraging them to develop as researchers in a school context. Thus, they should create a school culture supporting

teachers' involvement as researching their work, clarify how important it is to integrate research undertaking among all the other duties teachers fulfill, and produce a work environment acknowledging and supporting research undertakings. All these will lead to fully meaningful professional learning among teachers as well as developing schools' professional achievements (Saqipi & Vogrinc, 2020).

> Taking their common quality concerns as a starting point, close collaboration between both stakeholders provides teachers with the opportunity to voice their divergent concerns. It simultaneously provides researchers with the opportunity to address teachers' concerns in all phases of a research project. This could decrease researchers' challenges concerning legitimacy and relevance of their work and increase teachers' use of research in educational practice, resulting in a more evidence-based educational practice. (Groothuijsen *et al.*, 2019, p. 19)

Although there has been an increase in attention devoted to practitioner research undertakings during teacher education in recent decades, the existing situation shows that even now, few teachers employ scientific research results to improve their practice (Saqipi & Vogrinc, 2020). Hence, stakeholders are called upon to publicize teachers' research, to make knowledge accumulated available to others, and ensure that outputs from research as assimilated and applied in schools (Karnieli, 2010; Kirkwood & Christie, 2006; Meijer *et al.*, 2013).

Researchers have found that one of the ways in which education systems can encourage teachers to conduct academic research is to include a research component in teachers' professional development programs. Programs practically integrating research activities provide teachers with opportunities to explore and improve their teaching skills, especially when they operate within suitable educational environment and cultures (Killingsworth *et al.*, 2010). Researchers have also proposed giving teachers intellectual and effective support from mentors with experience as professional researchers, or from colleagues with experience of assimilated research into their professional practice (Xerri & Pioquinto, 2018). Another likely way to encourage teachers to be researchers is to create in schools an atmosphere of professional safety and initiatives supported by stakeholders, to accompany teachers' addressing difficulties such as budgetary deficits or colleagues' refusal to cooperate (Killingsworth *et al.*, 2010). Schools should act as

learning communities with the material and moral support of authorities (Cochran-Smith & Lytle, 2021). They must allow teachers to conduct research as part of their work and not at the cost of their leisure time and recognize research activities they should undertake at every stage of teachers' career path. Schools can assist teachers upgrade opportunities to publish findings and conclusions reached in their studies, and create stages on which they can present professional views they have consolidated as a result of their research – stages such as conferences or journals (Sorgo & Heric, 2020).

Recommendations proposed by researchers aim to connect research undertakings with work in practice, by understanding teachers' needs. These connections will help bring teachers closer to appropriate resources, databases, and research centers, create networks between teachers as partners and partnerships between teachers and research bodies and experts from academia. All these will assist teachers improve their ways of teaching, make intelligent decisions in the course of their teaching, and conduct themselves in light of findings of practitioner research conducted by themselves and/or other teachers (Cochran-Smith & Lytle, 2021; Kalenze, 2020; Sorgo & Heric, 2020).

Researchers have pointed out that research enabling school culture is only a secondary factor encouraging teachers to conduct practitioner research and have explained that it is not easy to create such a professional culture (Sorgo & Heric, 2020). However, a research encouraging culture will make research practice part of ongoing working life. This working life will be full of opportunities to research and reflect on important and practical topics, while establishing and exploiting teachers' professional knowledge and experience (Xerri & Pioquinto, 2018). To assimilate such a culture, teachers need support and empowerment of a culture that takes their context, practice, learning characteristics and teachers' professional identity into account (Meijer *et al*., 2013; Xerri & Pioquinto, 2018).

Stakeholders in schools in which teachers have researched their work, have referred to an increase in teachers' research skills. Knowledge teacher have accumulated as a result of their activities have contributed not only to themselves, but also to schools and to expanding scientific knowledge in general (Cochran-Smith & Lytle, 2021; Meijer *et al*., 2013). Therefore, stakeholders are called upon to assist teachers as much as possible to become more diligent and better data-driven decision makers and create opportunities for them to expand their research literacy abilities. Instruction,

support and encouragement will lead to improving schoolwork planning and instill teaching staff with research literacy skills and sensibilities so that they can act as users of practitioner research for their work (Kalenze, 2020).

In conclusion, elevated research literacy in the whole education field will assist decision makers identify good programs, to prefer the right priorities, choose appropriate actions and track progress and use of time and financial resources allocated to programs. The task of elevating research literacy is also placed on schools of education educating future teachers, and on education system leaders responsible for teachers in practice. In order for the majority of teachers to find ways of becoming research literate, stakeholders must find systematic ways of promoting long-term research literacy in all fields of education (Kalenze, 2020; Sorgo & Heric, 2020).

Literature review

The literature review presented here includes an in-depth categorical analysis focusing on findings and conclusions of seven studies, not mentioned in the theoretical background. The studies were performed by scholars from various countries and cultures, focus in a wide range of viewpoints regarding the topic, and published as articles in academic journals in the past decade.

The perspective leading this analysis is an examination of these studies' contribution to the book's central topic – teachers' research literacy.

It is important to note that not all chosen articles use the term 'research literacy', but their central topic is the direct link between teaching and practitioner research and working features among teacher researchers. From the findings and conclusions of all the studies reviewed one can learn about the importance of skills and abilities among those who are research literate. Details of reviewed articles are presented in Table 1.

Table 1. Details of articles included in literature review

Year of Publication	Article Titles	Names of the Writers	References
2011	Like looking through a magnifying glass: Teachers researching their work	Harel, M. Sela, O.	*Studies in Education*, *5*, 102–132
2017	Building teachers' research literacy: Integrating practice and research	Evans, C. Waring, M. Christodoulou, A.	*Research Papers in Education*, *32*(4), 403–423
2017	Early career teachers' research literacy: What does it look like and what elements support its development in practice?	Evans, C.	*Research Papers in Education*, *32*(4), 540–551
2018	The use of interviews and focus groups in teacher research	Xerri, D.	*The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, *91*(3), 140–146
2018	Benefits and challenges of doing research: Experiences from Philippine public-school teachers	Ulla, M.B.	*Issues in Educational Research*, *28*(3), 797–810
2019	Teachers' conception and difficulties in doing action research	Tindowen, D.J. Guzman, J. Macanang, D.	*Universal Journal of Educational Research*, *7*(8), 1787–1794

For the review, a categorical content analysis was conducted for the purpose of meeting three research aims: the first aim of the review was to identify and ascertain from these articles central similar and different themes addressing the topic of teachers' research literacy. Another aim was to compare the conclusions researchers reached about teachers, educational institutions and education systems. The third aim, deriving from the first two, was to consolidate the review findings into recommendations to serve as milestones for those who plan on continuing to examine the topic of teachers' research literacy.

The three categories for analysis were predetermined according to the three research questions, first category – comparison between research findings analyzed; second category – comparison between research conclusions

analyzed and third category – recommendations that can be generated from the analysis conducted in the first two categories. Review findings will be presented below in three sections by category, each one answering one of the research questions.

Comparison between reviewed research findings

All the articles analyzed fundamentally share an unequivocal hypothesis that for teaching to be effective and lead to efficient learning and learner achievements – it must be accompanied by inquiry and research activities conducted by teachers. Researchers agree about the importance of teachers acquiring research literacy, which will lead to developing abilities to initiate, conduct and apply research as an integral part of their teaching work.

Content analysis revealed one recurring central finding in all the articles. It pointed to a gap, on which it is important to focus, and it is recommended that it should be reduced as much as possible. This gap is between how teachers view the place and importance of inquiry and research as components of teachers' work, and how teachers conduct themselves as researchers in their day-to-day work. When teachers' views of the place of research in teaching practice were checked – it was found that as a rule, teachers viewed it as important, making a huge contribution and should be used. However, parallel to these views, it became clear to researchers that owing to a range of difficulties and challenges, teachers avoided conducting themselves as teacher researchers.

This key finding emerging from the review strengthens similar findings emerging in studies published throughout recent decades, as can be seen from the above theoretical background. Hence, it becomes clear that studies published in the past, as well as contemporary ones, all emphasize time and again the gap between high levels of appreciation teachers ascribe to research-based evidence, and their forbearance from engaging with research (Kalenze, 2020; Procter, 2015; Saqipi & Vogrinc, 2020; Shank & Brown, 2007; Sorgo & Heric, 2020).

This picture reflects the fact that over the years, there has been no significant change in the existing situation in education systems, and the fact that there has been no meaningful change of any kind leading to closing this gap. This raises important questions for educational personnel to discuss, and reference to this will be found in the final section.

Another finding arising from the studies relates to factors causing the gap presented above. A summary of these findings shows that the gap between teachers' perceptions about the benefits of integrating research into teaching and applying this view in practice derive from objective, individual, professional or systemic obstacles. Obstacles mentioned are insufficient research literacy (Evans, 2017; Xerri, 2018) and hence difficulty using and conducting research (Evans, 2017; Tindowen, Guzman & Macanang, 2019; Ulla, 2018), lack of time (Procter, 2015; Tindowen *et al*., 2019; Ulla, 2018), lack of budgets (Harel & Sela, 2011; Ulla, 2018), work overload (Tindowen *et al*., 2019; Ulla, 2018), scarcity in policies and supportive environment promoting research – both at school and overall, in the education system (Evans, Waring & Christodoulou, 2017; Ulla, 2018), and creation of a systematic school culture leading to research-integrated learning and establishing the place of teachers as researchers (Evans *et al*., 2017; Tindowen *et al*., 2019).

Researchers have raised another reason for the existing gap and that is teachers' anxiety of a situation in which conflicts of interests and ethical dilemmas are likely to be arise because of clashes between their role as teachers and their role as researchers. This clash is likely to make it difficult for teachers to make practical decision in real time (Harel & Sela, 2011).

In conclusion, it is possible to see in the reviewed articles that researchers labored to find ways of bridging the existing gap and helping teachers to act as researchers and to have a well-developed level of research literacy (Evans, 2017; Xerri, 2018). Some researchers aim their advice to teachers themselves and ways in which they should behave (Procter, 2015), and some aim at stakeholders leading education systems or teacher education systems (Harel & Sela, 2011; Procter, 2015; Tindowen *et al*., 2019). All those giving this advice start from an assumption that it is desirable for all teachers to have research literacy skills in addition to the other literacies they have by virtue of being professional teachers (Evans *et al*., 2017).

Comparison between reviewed research conclusions

From an analysis of the conclusions of the studies it is possible to learn that acquiring research literacy skills is an ongoing process occurring over time and in stages. At first teachers should act as research receivers (*Ibidem*). As receivers, teachers must adopt beliefs and approaches seeing the benefits of conducting research, persevering to expand their professional knowledge

by learning about up-to-date studies, recognize the relevance of research findings, use evidence research found in their day-to-day teaching practice, connect research knowledge to teaching, and the like (Evans *et al*., 2017; Tindowen *et al*., 2019; Xerri, 2018). All these will lead to teachers developing research literacy, building concepts about the role of teacher researchers, and effectively integrating evidence into their teaching practice (Harel & Sela, 2011; Procter, 2015; Xerri, 2018). For teachers to be research receivers, they must be allowed to achieve this gradually, with help and encouragement and over time.

At the next professional development stage, teachers will behave as research generators (Evans *et al*., 2017; Tindowen *et al*., 2019). To reach this stage, teachers must possess research literacy, in other words they should know how to conduct effective research and have the skills and competences required of researchers (Harel & Sela, 2011; Xerri, 2018), such as identifying existing problems and difficulties in their work context that should be explored, seeking and retrieving relevant information in research literature, collecting research data, analyzing research findings, formulating conclusions, sharing findings and conclusions, coping with ethical dilemmas, and the like.

The studies revealed that teachers possessing research literacy know how to identify their research practice's contribution and identify changes in their professional views, practice, building strategies of learning and teaching, consolidating their professional confidence and improving knowledge and students' achievements (Harel & Sela, 2011; Tindowen *et al*., 2019). Teachers with a well-developed level of research literacy know how to exploit the potential of receiving and conducting research to meet existing needs in their professional context in teaching and working with students, and even as a response to their professional development (Evans, 2017; Tindowen *et al*., 2019; Xerri, 2018).

The researchers concluded that integrating practitioner research as part of ongoing work, continuously, improves teaching procedures (Harel & Sela, 2011; Ulla, 2018), increases pedagogical knowledge (Tindowen *et al*., 2019), leads to teaching practice changes, bridges gaps between theory and practice, provides solutions to local educational problems (Evans, 2017), expands content knowledge and pedagogical content knowledge (Evans *et al*., 2017; Tindowen *et al*., 2019), and allows teachers to continue to develop (Tindowen *et al*., 2019). Teachers' research literacy leads to changes in

their perceptions of themselves as researchers (Evans, 2017; Harel & Sela, 2011), their understanding of leaning and teaching processes (Evans, 2017; Tindowen *et al*., 2019; Ulla, 2018), approaches to work with students (Evanset *et al*., 2017; Ulla, 2018; Xerri, 2018) and increases their awareness of school contexts (Evans *et al*., 2017; Xerri, 2018).

Recommendations of reviewed studies

Recommendations proposed in the reviewed studies can be separated into two principal types – one turns to teachers themselves and the other, to stakeholders leading schools and education systems. The key recommendation arising from the review calls on teachers to make efforts to acquire research literacy abilities. Teachers are called upon to integrate knowledge and skills required to conduct effective and systematic research, master research methods, know how to generate potential information and how to make changes in in their ways of teaching, corresponding to findings that emerged (Harel & Sela, 2011; Ulla, 2018; Xerri, 2018). The recommendation also includes a call to teachers to recognize how important and significant these all are, and act out of a belief and positive approach to acquiring research literacy as benefitting them, their students and educational institutions in which they work (Evans, 2017; Procter, 2015; Ulla, 2018)

In conclusion, the publications' review presents to teachers interested in becoming research literate solutions that are meant to provide them with differential and contextual answers, and even advice about research methods assisting effective research conduct such as focus groups, interviews, and action research (Tindowen *et al*., 2019; Xerri, 2018). If teachers are allowed the time and space to engage with research evidence, to be critical of it and reflect on it, there is a better chance they will be able change their practice based on research (Evans *et al*., 2017; Procter, 2015).

Another type of recommendation calls on education system leaders to provide a range of means to encourage and assist teacher acquire research literacy and turn them into research generators. The researchers proposed that some of these should be employed during the period of teacher education (Harel & Sela, 2011; Procter, 2015). One recommendation has the nature of providing top-down instructions, instructions determined by education systems and/or institutions responsible for education systems obligating teachers to conduct and receive research and acquire research literacy

(Ulla, 2018). Another recommendation is for research to become part of the requirements for teachers' learning on advance academic professional development programs (Harel & Sela, 2011; Ulla, 2018). A further solution is to establish cooperation between schools and academic institutions, where faculty members and teachers conduct collaborative research (Evans, 2017; Evans *et al*., 2017; Harel & Sela, 2011). An additional idea is to recruit experts, experienced mentors who will guide, help and accompany teachers over time (Evans, 2017; Harel & Sela, 2011; Tindowen *et al*., 2019). In the researchers' opinions, developing publication platforms for teachers' research such as academic journals, developing school cultures encouraging, sharing, and promoting research as part of school policy and the pedagogical approach of all systems and role-holders working in schools – are also likely to assist acquiring research literacy (Harel & Sela, 2011; Ulla, 2018).

It is recommended maintaining sustainability of in-school research cultures, a culture that is woven into all structures, processes and systems operating in schools as part of their critical pedagogical approach and will continue to exist over time (Evans *et al*., 2017). Likewise, it is recommended to present publicly all evidence of better student grades when their teachers act as teacher researchers (Evans, 2017; Kirkwood & Christie, 2006), create collaborations between colleagues (Evans, 2017; Xerri, 2018), provide space for reflection, disagreement and sharing practice topics and build a range of support networks within schools (Evans, 2017; Xerri, 2018).

In conclusion, the researchers who conducted the reviewed studies repeat the call of previous and other researchers emphasizing that for teachers to engage in research, they must be given a protected and supportive environment, allocated resources, and encouraged to initiate and conduct research. All these will enable teachers to be practitioner researchers mastering research skills and be research literate (Evans *et al*., 2017; Harel & Sela, 2011).

Discussion and recommendations

Analysis of the studies chosen for the literature review, revealed two central foci raising important questions, which need to be pinpointed and expanded upon in discussions among professionals in education. One central focus teaches that findings and conclusions emerging from studies conducted in previous decades, are similar to those emerging in the last decade. Studies

have indicated a gap between teachers' appreciation of research and research evidence, and the degree to which they agree to acquire research literacy skills and conduct research themselves. The studies revealed that very few teachers act as practitioner researchers even though it was found that research undertaking improves teaching methods and teachers' professionalism.

Another key focus emerging from the review shows that generally, in the world of education, practical steps have not been taken nor have there been meaningful modifications leading to narrowing this gap. Cases reporting closing this gap are few, and mostly occur as a result of local circumstances such as special programs or projects of education systems applied top-down (Evans *et al*., 2017; Ulla, 2018).

These two foci present a curious situation mainly in light of the fact that researchers found that acquiring research literacy skills contributes to teachers in various areas such as making pedagogical considerations, assessing learners' achievements, intelligent consumption of curricula, mastering class management tools, identifying learners' diversity, developing educational worldviews and theories, and more. Therefore, it is important for experts in education to discuss the questions why such a desired change has not taken place and why steps have not been taken to promote the acquisition of research literacy and research engagement among most teachers, as part of their teaching work.

It is known that conducting research is a complicated and not easy task requiring time, resources and skills, a task that is likely to produce conflicts of interests between teachers' work and their being researchers because of the need to expose themselves, their ways of working and difficulties and problems with their students (Harel & Sela, 2011). However, the wealth of benefits teachers with research literacy enjoy, and professional development as a result, are highly valuable in the educational world. Therefore, this is the time to call on professionals to lend a hand and lead a dramatic and important change. They are called upon to deepen this as a multi-stage long-term engagement. Our proposal is that in initial stages, experts will build programs, means, tools and practical advice, by which it will be possible to bridge the existing gap and lead to changes, which are clearly needed and necessary. In advanced stages, researchers will conduct further studies to examine the benefits of solutions applied and propose adjustments and improvements according to what actually takes place in the education field. Researchers who respond to this call will be able to base their work on a wide range of

research questions, some of which have not yet been explored scientifically. Below are a number of suggestions recommended to be considered, including proposals pertaining to different perspectives of the topic:

Proposals for the perspective that focuses on teachers and their needs – to make entry into the role of teacher-researcher easier, and reduce burden and commitment over time, it is proposed conducting short term and small studies. Proposals will be built to enable conducting studies that are not focused on practice, but on general topics likely to lead to intellectual development, expanding knowledge, or academic advancement of teachers. Arrangements will be made to propose topics recommended more to teachers at the start of their journey as researchers, and topics for expert teachers. It will be suggested that teacher examine a range of work areas and roles they have to carry out over and above teaching. A range of auxiliary tools, suitable platforms and friendly comfortable instruction tools will be developed by which it is possible to acquire research literacy at a personal rate, in stages and with guidance, and the like.

Proposals for the perspective that based on school organization and structure – to scrutinize which teachers are more suitable to being expert researchers and train them to lead other faculty members acquire research literacy. To produce a job standards norm for someone to be in charge of school research helping to create a in house community of researchers. To allocate special resources to conduct research such as: exchanging teaching hours for research hours, including time to conduct research as part of full-time position, allocate a fitting professional environment including building infrastructure, recruiting professional support, establish school research center/ authority/ unit available to the teachers, subscribe to databases, software, analysis tools, and the like.

Proposals for the perspective that focuses on the education systems – constructing a policy regarding research as part of teachers' role – and providing tools to assimilate and implement this policy. Constructing ways of encouraging teachers to research such as allocating research budgets, grants, rewards and promotional awards for practitioner researchers. Providing academic stages to publish and share teachers' research. Building research-networks for teachers to act in collaboration with colleagues from their and other schools, and the like.

In conclusion, examining the topic of teachers' research literacy in the literature review it is possible to learn that teachers' acquisition of this

literacy must be one of the fundamental aims of education systems and work plans built. It should lead to increasing the number of those who become professional practitioner researchers. The message is that teachers' research literacy should be seen as an important and necessary foundation, allowing teachers to gain professional confidence to find a balance between their desire to operate as -researchers, and their practical engagement as researchers.

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PART TWO

The research literacy of student teachers

CHAPTER THREE

Developing Student-Teachers' Professional Inquiry Stance through Design as Research

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ABSTRACT

In this chapter, we describe and evaluate the 'Design-as-research' (DARe) approach which we apply in our institute for teacher education in the Netherlands. After exploring the idea of teacher inquiry as a professional development strategy, we elaborate our search for a suitable approach for inquiry that fits the teaching profession. Stretching our view to other disciplines, we found that viewing inquiry as a design process offered new perspectives. In the Design-as-Research approach, an inquiry stance is combined with reflection and enactment. We describe our experiences with the approach with our student teachers. Our main conclusion is that this approach suits the nature of teaching and encourages continuous professional development.

KEY WORDS: Teacher inquiry, professional development, design as research

Introduction: setting the stage

In this chapter, we address the 'Design-as-research' approach which we apply in our institute for teacher education. Before explaining our rationale for this approach, we will first describe the context of our case.

We work at a teacher education institution at a Dutch University of Applied Sciences. This institute offers a four-year bachelor programme (240 European credits) to educate teachers for secondary and vocational education. During their 4 years of study, student teachers deepen their knowledge on the subject they are about to teach (for example mathematics, geography, or French as a foreign language) and they work on pedagogical knowledge and skills. Student teachers also spend a lot of time (about 60 credits) in internships in educational practice. Throughout their study, we aim to help student teachers develop an inquiry-stance, because we hold the opinion that this will serve as a professional learning strategy throughout their career.

In addition to educating student teachers for a teaching career, we also provide support in professional development trajectories for experienced teachers. Instead of offering fixed courses on specific subjects, in our trajectories, teachers are challenged to do inquiry focused on issues they encounter in their daily practice.

Teacher Inquiry as a means of Professional development

Over the last few decades, teacher inquiry (for example, action research) has been established as a prominent 'bottom-up' approach to both curriculum innovation and teacher professionalization (Cochran-Smith & Lytle, 1999; Cochran-Smith & Lytle, 2009; Fichtman-Dana, Thomas & Boynton, 2011). Teacher inquiry reportedly has the potential to contribute to improving the fidelity of implementing instructional innovations (Ermeling, 2010), the growth of teaching efficacies (Henson, 2001), and the development of teachers' research knowledge and skills (Meijer, Oolbekkink, Meirink & Lockhorst, 2013) to name just a few beneficiary effects. The potential of teacher inquiry seems to be associated with the principle that teachers' professional concerns and beliefs are taken as a starting point and that

teaching practice serves as focus point for their self-directed professional learning and for innovation.

Bolhuis (2012) elaborates the vision behind the idea that teacher inquiry is a professional learning strategy. In contrast to the idea that teachers are just executers of educational tasks that have been developed by others, nowadays, the vision has changed. Teachers are seen as professionals who are actively engaged in defining and developing education for their students/pupils. According to Bolhuis (2012), being a professional consists of seven responsibilities, which all have to do with inquiry or an inquiry habit of mind. The first responsibility is that professionals are able to justify their work and enactment to 'society'. Being active in inquiry helps to underpin and to account for their behaviour. The second responsibility is to be active in renewing one's own work and to keep one's knowledge up to date. Also, in this second responsibility, an inquiry habit is a key value. The third responsibility is to take responsibility for the quality of one's work, by assessing the quality. To do so, one must be able to compare observed and expected quality and draw conclusions. The fourth responsibility is to be an example for student teachers, by modelling an inquiry habit as a professional standard. The fifth responsibility is to be an active contributor to the knowledge base of the teaching profession. Being active in inquiry leads to new (practical) knowledge, that can be shared with others through presentation or publication. The sixth and seventh responsibility have to do with pupils/students. It is the responsibility of teachers to ensure that the voices of the student/pupils are heard and taken into account in practitioner inquiry in education, since their input is essential for finding solutions for practical issues. By inviting them to participate in inquiry pupils/students also notice that an inquiry stance is 'normal' in a profession, and they see how their teachers actively work on the quality of education. So, according to Bolhuis, teacher inquiry is part of the teacher's profession.

As mentioned earlier, teacher inquiry has been broadly recognized as a valuable aspect of the teaching profession. In the Netherlands, this can be inferred from the fact that every teacher education program includes modules aimed at learning to conduct teacher inquiry in some shape or form (Vrijnsen-De Corte, Den Brok, Kamp & Bergen, 2013).

There still is a lively discussion though, about the way this inquiry component needs to be framed. For a long time, scientific educational research served as the role model for the inquiry component in teacher education in

Universities of Applied Sciences in the Netherlands. The research assignment for bachelor students seemed to be a misinterpretation of the framework for qualifications for European higher education[1]. Andriessen (2013) addressed this problem and stated that students in Universities of Applied Sciences do not need to become researchers, but that they need an inquiry habit of mind (or inquiry stance), as a tool in their profession. Kelchtermans (2019) stresses the fact that the best way to prepare future teachers for the inevitable changes in their future teaching practice is to develop their ability for critical thinking and inquiry as stance. The critical analysis of their insecurity, uneasiness and practical discomfort offers powerful possibilities to develop their professionalism. Therefore, in our Teacher Education Institute, we want to prepare our student teachers for their future careers not only by equipping them with subject knowledge and pedagogical skills, but also by equipping them with an inquiry stance.

Search for an approach for inquiry that fits the teaching profession

Around 2003, student teachers in our institute had to study a problem or an issue in education, with the use of educational research methodology, data gathering, analysis and writing a report. This 'practitioner research' was scheduled in the last year of the bachelor programme as graduation assignment and proved to be a nuisance for a lot of student teachers. They struggled to find a research question, had difficulties in gathering data and struggled to write a report. This was not only a problem in teacher education, but also for other students of Universities of Applied Sciences in the Netherlands. As mentioned above, the report from Andriessen (2013) helped us to change this vision and make a shift from 'research' into 'inquiry'. Following this idea, we wanted to develop an inquiry approach that fits the teaching profession and that is an attractive approach for our student teachers. In an effort to stimulate inquiry as a way to empower teachers to improve their practices, we searched for models that try to reshape teacher inquiry into processes that (1) feel more native to teachers, so they are easily embedded in how teachers operate in daily work and (2) prevent associations

1 ecahe.eu/w/index.php?title=Framework_for_Qualifications_of_the_European_Higher_Education_Area

with social-scientific research as exemplary for teacher inquiry. In developing our approach, we combined ideas on inquiry and professional development of teachers from different authors.

Fichtman-Dana (2015) inspired us with her views on teacher inquiry. She stresses the importance of teacher inquiry being a part of the teaching profession and not a separate activity. She also stresses the fact that teacher inquiry is not a linear process, but 'teacher inquiry is a continuous cycle that all educators spiral through throughout their professional lifetimes – a professional positioning or stance, owned by the teacher, where questioning, systematically studying, and subsequently improving one's own practice becomes a necessary and natural part of a teacher's work' (Fichtman-Dana, 2015, pp. 163–164).

This 'continual cycle' that is mentioned by Fichtman-Dana reminded us of the interconnected model of professional growth of Clarke and Hollingsworth (2002). This model represents the professional learning process of teachers. In their model, Clarke and Hollingsworth (2002) describe teacher learning as a process of reflection and enactment through four domains, namely the external domain, the personal domain, the domain of practice and the domain of outcomes (see Figure 1).

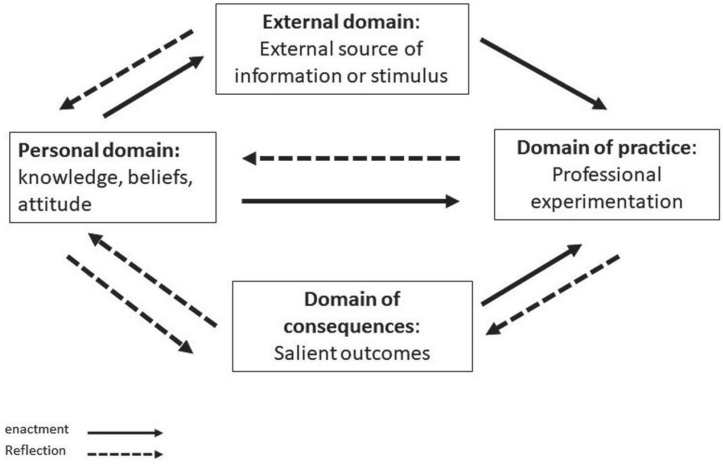

Figure 1. Interconnected model of professional growth (from Clarke & Hollingsworth, 2002, p. 951).

The process can start in each of the four domains. The *external domain* represents all kinds of different external sources. This could be a scientific paper or theory, a lecture or workshop, input from an expert, or an input from a colleague or a pupil. The *domain of practice* is the educational practice where the teacher is working with the students. The *domain of consequence* refers to the outcomes of the domain of practice, this could be pupils results on an assessment, or their reaction to a certain teaching approach, or their motivation in class. The *personal domain* is the domain of the teachers attitudes, beliefs, opinions. Between the domains, there are arrows for 'reflection' and 'enactment'. A reflection arrow between two domains, means that reflection takes place. For example, a teacher can reflect on new knowledge she heard in a workshop (external domain) and change her ideas about instructing pupils (personal domain). The arrows for 'enactment' represent the acting that results from reflection. For example, based on her new insights, (personal domain) the teacher decides to change the way she instructs pupils in her practice (domain of practice).

The model of Clarke and Hollingsworth is a model about professional learning of teachers, it describes that teachers learn through continuously moving between the domains via reflection and enactment. The model thus represents the continuous cycle that Fichtman-Dana describes, it offers a framework to 'map' the inquiry stance and helps to envision the way this inquiry stance works as a process. In her paper, Fichtman-Dana (2015) elaborates three components of an inquiry stance for teachers, which further demonstrate the connection with the teaching profession and teachers' professional learning. The components are:

1) 'Data collection' takes place as part of the teaching (instead of apart from teaching). There is a lot of data available in the work of teachers, for example: classroom observations, student work, digital pictures, video, reflective journals, weblogs, surveys, quantitative measures of student achievement, critical friend group feedback, and literature (Dana & Yendol-Hoppey, 2014). Some forms of data, such as observation or student work, closely connect to and are easily associated with the natural and normal acts of teaching and learning that occur in the classroom on a daily basis. Fichtman-Dana (2015) stresses that when a teacher approaches inquiry as a stance, data collection more and more becomes a normal and natural part of teaching.

2) The role of inquirer and the role of teacher become seamlessly blended and integrated with one another. As an inquirer, the focus is on systematic exploration of the issue at stake. As a teacher, the focus is on using this information to improve instruction and teaching. A classroom conversation with a pupil about conceptual understanding of mathematics is both an interview AND input for a new way to explain the concepts.
3) The underlying premise of the inquiry is to create better learning opportunities for the pupils, to improve teaching practice. This component stresses the fact that teacher inquiry is not a goal in itself, but it is a means to improve teaching and education.

Towards a new approach for teacher inquiry: Design as Research

In our search for inquiry approaches that seem a better fit to the nature and dynamics of teachers' daily pursuit of creating learning opportunities for their students, we started looking for examples in disciplines other than those stemming from the educational domain. Our attention was captured by ideas about inquiry as proposed by a long line of authors from the design disciplines, especially architecture.

We would like to stress here that the idea that educational practice could gain from studying ways of working and learning in the design disciplines is certainly not new. Over the years, different authors have pointed this out from different perspectives and for different aspects of design. Schön (1985), for instance, proposed that professionals' development of 'reflection-in-action' could benefit from learning in "design studios", modelled on common practices in architecture education. Tripp and Bichelmeyer (1990), to give another example, proposed a "rapid prototyping" design methodology for education, originating from software engineering.

More integral notions of design as an approach to educational research have also been presented (e.g., Brown, 1992; Van den Akker, Gravemeijer, McKenney & Nieveen, 2006; Barab & Squire, 2004; Wang & Hannafin, 2005). It is important to note here that, in general, the models presented in these publications stem from the assumption that academic researchers play a key role in the process of designing and researching.

Reasoning from the idea that inquiry is an important activity for education professionals to undertake, we would like to propose the concept of 'Design As Research' (DARe) as a design-oriented approach to teacher inquiry. As advocated above, teacher inquiry should be closely connected to the daily practices of teachers and the dynamics of the professional activities they conduct. Over the last few decades, authors have advocated the notion that teaching could be viewed upon as a design profession, and that teachers could be considered designers (e.g., Simon, 1996; Schön, 1983; Laurillard, 2012).

In the traditional design disciplines themselves, a debate has – and still is – taken place on relations between design and research. Especially in the field of architecture this seems to be a long ongoing debate. More specifically, contributors to this debate propose that design should be considered an intellectual enterprise; a form of scholarship (Cross, 2001). The concept of 'design as research' (Lawson, 2002; Zimmerman, 2003; Ehn & Löwgren, 2004; cf. 'research through design', Gaver, 2012) is used in this context to argue the value of design as an inquiry exercise.

Travelling further back in time, Nobel laureate Herbert Simon was perhaps one of the most influential authors who reflected extensively on the nature of design, mainly from the field of engineering, and its relation to traditional (mostly natural) sciences. In his work 'The sciences of the artificial' (first edition published in 1969; references in this text are made to the third edition which was published in 1996), he describes a 'designer' as "[e]veryone […] who devises courses of action aimed at changing existing situations into preferred ones." To illustrate that his definition is not limited to the field of engineering, he continues:

> The intellectual activity that produces material artifacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state. […]. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are all centrally concerned with the process of design. (Simon, 1996, p. 111)

Note that Simon mentions the specific case of 'schools of education' as an example of a professional field concerned with design. More recent, Laurillard (2012) has made efforts to elaborate on this line of thought for the field of education, more specifically for the teaching profession. She states

that "[t]eaching is not a theoretical science that describes and explains some aspect of the natural or social world. It is closer to the kind of science, like engineering, computer science, or architecture, whose imperative it is to make the world a better place" (cf. Lawson, 2002). She thereby supports the position that by nature, teacher inquiry based on a social scientific research paradigm seems to have limited correspondence with the dynamics of daily teaching practice. Waks (2001) stresses this further by pointing out in his analyses of Donald Schön's view on the matter that in professional practices, practice and knowledge construction are intertwined and not separated:

> Schön […] rejects the idea of reflection as a 'time out' from practice for scientific inquiry. For Schon, practitioners (such as architects, engineers, and industrial designers) have their own 'esoteric' knowledge codes woven right into their practices. Practice is a knowledge affair. (Waks, 2001, p. 40)

Indeed, it seems plausible to assume that the professional interest teachers have in advancing student learning transcends their interests in understanding student learning per se. This doesn't mean that we would advocate a depreciation of teachers' knowledge of student learning. Instead, we propose that constructing knowledge should be an organic part of the teaching profession, and that intrinsically, designing is an adequate way for teachers to use and to expand this knowledge.

The Design As Research (DARe) approach

In our Design As Research (DARe) approach, all aspects of the teaching practice are seen as a an element of design. For example, a didactical intervention like welcoming students at the door of the classroom as a starting point for classroom management is a design element. But an idea for the instruction of a mathematical issue into a lesson plan is also a design. The meaning of the word 'design' is stretched beyond the classical meaning, where design mostly refers to a 'product' like a lesson or a tool. In our approach, all kinds of decisions that teachers make are seen as 'design elements'.

In the DARe approach, teachers are seen as designers, who design their actions based on information from practice and their reflection on that. In fact, the DARe approach encourages teachers to apply the model of Clarke

and Hollingsworth (2002) to elaborate issues they encounter in their teaching practice. Reflection and enactment are the connecting activities between steps they take.

In our graduation program student teachers apply the DARe approach to work on a pedagogical issue they encounter in their teaching practice. Student teachers are working on their own dilemma, but they do have meetings in so-called Learning Design Studios. A Learning Design Studio consists of a group of student teachers and a teacher educator. The group-meetings are an important element in the DARe approach. In the meetings, student teachers present their dilemma and their thoughts about the next step they want to take to unravel the dilemma. The other student teachers in the group offer critical peer-feedback. Specific conversation protocols (see for example School Reform Initiative – A Community of Learners) are used to make sure that the conversation between the student teachers is a professional in-depth dialogue. The teacher educator is facilitating the process by posing feedback questions like 'what did you do, what are your findings?', 'what does this mean to you', 'what will your next step be? Why? What do you expect?'. The group meetings function as milestone moments, where student teachers critically reflect on their process and decide on next steps.

Our experiences with the DARe approach

When student teachers in our institution have reached the end of their bachelor's program, they work on their graduation work. In many bachelor's programs this is a traditional graduation research. Traditional research often starts with formulating a good, refined research question, often based on a theoretical framework. Formulating a good research question takes a lot of time. When we started with our students with the DARe-approach for graduation products, we noticed that the images of traditional educational research dominated. This means that the students will first focus on reading literature and formulating a research question. However, within DARe, this this traditional phasing is not necessary.

As first step in DARe, we ask the student teachers to come up with a professional dilemma that is currently going on in their educational practice. To open up this dilemma, we use conversation protocols. For example, we

might use the 'Passions' profiles[2], in which eight teacher profiles are described. Each participating student teacher chooses the profile that suits his/her beliefs about the teaching profession best and explains this to the others. They also give an example of their teaching practice that relates to the profile. After that, an in-depth conversation takes place about the way the profile affects their teaching. They then reflect on the new insights the discussion gave them. After a dilemma or topic has been defined for the graduation product, we encourage the student teacher to formulate a starting question. This starting question is the first question that the student teacher has in unravelling his dilemma. This is not a stylized, neatly formulated research question as we know it in traditional educational research.

Because DARe is based on an iterative approach, the step after formulating the initial question is not a fixed one. This means that the initial question can lead to all kinds of different actions. For example, trying out something, reading literature, interviewing students or interviewing colleagues. Every action is equivalent, so there is no preferred approach or sequence. Often the steps that the student teacher takes can in one way or another qualify as research steps using research methods.

Because the student teachers are taking more and more steps on their way to unravel the professional dilemma, they are gaining a better understanding of the dilemma. This can cause student teachers to drift further and further from the initial question that they initially formulated. While in much traditional research a research question once formulated is fixed, this approach [is more like reflexive qualitative research] where the question that the student teacher poses in the professional dilemma is continuously in development. Because this deviates greatly from the research traditions known to the student teachers this often results in great uncertainty. It is the task of the supervisors to offer the student teachers something to hold on to and to give them confidence that they are taking meaningful steps in getting to know more and more about their dilemma. In successful DARe approaches, we have regularly seen that the initial question during three quarters of a year developed into other aspects which still related to the professional dilemma.

In our opinion, being able to define a professional dilemma dissected from professional practice, unravelling it by taking different steps, designing

2 See 'Passion Profiles Activity' schoolreforminitiative.org

and trying out materials, is much better suited to the nature of teaching than traditional educational research. This makes it perhaps a more reliable indicator of the student's functioning as an educational professional than completing a traditional bachelor's thesis.

Hesitation: Action as the first step

When student teachers have formulated a professional dilemma from their practice, they start working with this dilemma. As an example, we take a student teacher in chemistry who is struggling with pupils who cannot form images when chemical reactions take place. Often the student teacher has already (unconsciously) observed pupils in class while working with chemical reactions. Based on these observations, the student teacher has also identified this dilemma in his practice. Because teachers are generally pragmatic by nature, the student teacher often already has ideas about the teaching materials he wants to develop in order to help his pupils. Why should this student teacher first have to do an extensive literature study on this theme when it may not help him much further? It is also possible to encourage the student teacher to design a lesson as a first step and to try this out together with his pupils as a second step. This can be done in smaller pilot-like settings. During the trial, the student teacher collects data on the basis of which adjustments can be formulated for the designed lesson. It can also be interesting to consult literature on this point, to evaluate the designed lesson. The evaluation confronts the student teacher with the shortcomings of his design. This provides information to the student teacher about incorrect assumptions or design principles of the designed lesson. These incorrect assumptions or design principles can be adjusted with insights the student teacher gains from the literature at the next stage of inquiry. When a student teacher incorporates this into a redesign and tests it again, he has developed an understanding of designing a lesson around a particular theme, the first step being action (design).

Designing as a first step often leads to hesitation for both the student teacher and the supervisor. Student teachers and supervisors would like to make the perfect product in one go, although this actually never works. Evidence-based work to base a design on scientific insights also obscures. But why should this necessarily happen beforehand? A design can also be made, tested, adjusted and tested against the literature. Another argument

here is that scientific insights are not always acquired nor appropriate for the target group or context in which the student teacher works.

Example of a DARE approach 'Distance learning during the corona crisis'

In September of the academic year 2020–2021, student teacher Elise will start her final year of her teacher training. This final year is all about completing her studies and consists of teaching as a prospective teacher in a structure where learning in the workplace is central. During this final year, Elise also works on her graduation assignment which consists of elaborating a practical dilemma with the DARe approach.

The year 2020 has been dominated by the Covid-19 virus. As a result of this virus, the schools in the Netherlands were closed from March to May. During this lockdown, education for secondary school students was provided completely digitally. In September 2020, at the start of the school year, the Covid-19 virus situation seemed reasonably under control, schools were open as normal.

So, at the start of her final year, Elise expected to perform her role as a teacher as she had learned in the previous three years: physically teaching a group of students in a classroom. When the situation around corona deteriorated in October and November (the second wave) the schools were closed again and Elise had to start teaching distance learning. Designing this distance learning resulted in various professional dilemmas with different questions: How do I organize my online lessons effectively? To what extent do I need to alternate activities to keep students' attention? How long can digital activities take to be effective? In addition to these educational issues, there were also pedagogical issues such as: How do I keep in touch with my students during distance learning? How can I support students who are not doing so well? Although Elise felt uncomfortable with the situation at first, she and her supervisor realised that this new challenging situation provided an excellent starting point for her graduation assignment. The above dilemmas and associated questions provided starting points for a quest in which Elise always takes a step to better "grasp" the dilemma. Let's take a closer look at the steps Elise took.

Elise's first digital lesson was designed fairly intuitively. It was a lot like her physical class in the classroom. While conducting the lesson, Elise took

notes about notable things. She also asked the students to complete a short evaluation at the end of the lesson. The completed evaluation was data for Elise to make adjustments in her digital lesson. She gained more insight into working principles of digital lessons. Elise also found a blog by a Flemish pedagogue. In the blog he described the scientific insights of the moment about the social component within distance learning. The pedagogue had also included links to the original studies, which was a great source for Elise to delve further into. Through the interaction of trial and error, evaluation, reading literature, reflection and redesign, Elise gained more and more insight into distance learning in an investigative way. In February, Elise asked her supervisor when the process for the graduation assignment was actually finished. The conclusion of both Elise and her supervisor that the process was never really finished (although there was enough work done to consider the assignment as completed). By constantly collecting new data while trying out lessons, new insights are constantly emerging: professional development is endless.

Discussion

Our Design as Research (DARe) approach differs from the ten steps of inquiry proposed in chapter 1 because the steps in chapter 1 are shaped by a typical social science research approach. We do use a form of step 1 in the table 'identify a focus and develop a question' but that often includes a practical step of 'design and try out a strategy or task'. We do include an equivalent to step 3 in the table, 'engage with public (published) knowledge', but that is not always before the initial design activity. In fact, elements of all ten steps are recognizable, but in the DARe approach, there is no fixed order for steps to take. The DARe approach is more direct, more practical and more informed by professional judgment than the inquiry approach proposed in chapter 1 (in this book). Although we think the practical approach is beneficial, there is a risk that the approach becomes too practical. The ten steps (Pete Boyd & Liz White, 2017, pp. 130–131) of inquiry might be helpful in offering a framework to address ethical and social issues (step 5) and thus enrich the DARe approach.

Conclusions

In this chapter, we have described our thoughts about teacher inquiry as a professional development strategy. Throughout a teachers career, professional dilemma's concerning teaching practice will continue to occur. In order to find practical solutions for these issues, an inquiry stance is essential. In this chapter, we elaborated our vision on this inquiry stance, suggesting that this stance equals the process of professional growth, as described by Clarke and Hollingsworth (2002). We developed these ideas into the Design As Research (DARe) approach, which we have incorporated into the curriculum of our institute for teacher education. Student teachers in our institute work with this approach. Being able to define a professional dilemma dissected from professional practice, unravel it by taking different steps, designing and trying out materials is much better suited to the nature of teaching than traditional educational research. We hold the opinion that this makes it a more reliable indicator of the student's functioning as an educational professional than completing a traditional bachelor's thesis. We feel encouraged in this opinion by the fact that our approach is very popular amongst experienced teachers. At the moment, we facilitate 20 Learning Design Studios in which groups of about 8 to 10 teachers work on their own professional dilemmas, applying the DARe approach. The approach suits them and helps them to improve their teaching practice.

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CHAPTER FOUR

The Distinctive Affordances of Close to Practice Research: An Argument for its Deployment within Postgraduate Initial Teacher Education

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ABSTRACT

The purpose of this chapter is to explore whether undertaking a scaffolded form of classroom-based research could support postgraduate university–school initial teacher education partnership programmes. Our design for supporting student teachers to execute a Close-to-Practice (CtP) based empirical study is described including methodological and philosophical underpinnings. Close-to-practice (CtP) research is defined as research that 'focusses on defined by practitioners as relevant to their practice, and involves collaboration between people whose main expertise is research, practice, or both.' (BERA, 2018). In the case of this study, issues were decided in collaboration between student teachers and schools. In terms of evaluation of the efficacy of such an approach, a qualitative methodology was undertaken, comprising of a critical discourse analysis of student teacher written research reports. Discourse analysis revealed that several sociocognitive processes took place during, and as a result of, student teachers engaging in CtP research, including explorations of identity, polarisation to collective groups, articulation and examination of beliefs and values and negotiation of existing power relationships and structures. In addition, the data showed that many aspects of undertaking a small-scale research study supported student teacher pedagogical knowledge acquisition and professional development. Student teacher

testimony also revealed they valued this mode of learning and developed positive attitudes to educational research in the widest sense. This study has clear implications for the design of initial teacher education programs and the continued professional development of teachers, in England and potentially further afield.

KEY WORDS: initial teacher education, Close-to-Practice (CtP) research, student teacher professional development, research literacy, critical discourse analysis, sociocognitive approach

Introduction

Becoming a primary teacher is a complex and substantive process which involves student teachers negotiating educational, professional and personal challenges. Unlike their secondary school counterparts, they are required to teach across the entire primary curriculum as well as taking responsibility for the social and emotional development of young children. These endeavors involve securing a range of knowledges (Shulman, 1986) as well as developing professional competencies, for example managing classroom behavior and undertaking robust and systematic assessment.

Throughout all this, it is the expectation that student teachers make practical and professional judgements that are based on "best practice" – a multifarious construct which contains elements of classroom wisdom linked to theoretical underpinning. This process is by no means an easy undertaking and student teachers require explicit modelling of both pedagogical and academic practice and the nexus between these elements. In other words, they need to be afforded opportunities for them to reflect on the importance of classroom based research as a stimulus and support for their ongoing practice. In this chapter we present a model used to facilitate student teacher engagement with classroom-based research, which will be explored with respect to it's potential to foster and nurture the development of primary teachers' research literacy. The model proposes the adoption of a Close-to-Practice (CtP) approach (BERA, 2018) by which we mean research that "focusses on issues defined by practitioners as relevant to their practice, and involves collaboration between people whose main expertise is research, practice, or both." (BERA, 2018). It melds the benefits of undertaking a small-scale empirical research project, common to many undergraduate

programmes (Rowley & Slack, 2004), with enhanced scaffolding to afford student teachers the opportunity to make sense of learning experiences, both practice based and academic. As an added motivator, the model allows student teachers to develop knowledge and competencies associated with becoming a subject specialist in a curriculum subject of their choice.

Throughout this chapter we endeavor to describe and critically analyse the processes by which student teachers undertake small classroom based research projects, whilst being mindful of our position as research supervisors and teacher educators. In this way, we undertake a double layer of research by using critical discourse analysis of the student project reports, detailing their classroom based studies. In doing so we aim to address the following research goals:

(i) To understand the impact of CtP research on a developing teacher identity.
(ii) To undertake a critical sociocognitive discourse analysis of student teacher project reports.
(iii) To explore the implication of the findings to initial teacher education, in terms of developing policy and programmes.

The purpose of small-scale classroom-based research

A review of the literature suggests that student teachers derive significant benefits from undertaking small scale empirical based research studies during their initial teacher education (Dobber *et al.*, 2012). The benefits are multi-fold and pertain to three main domains; being able to reflect on ongoing practice, gaining teacher knowledge, and developing an ability to assimilate and embed current research into teaching (*ibidem*). In order for these key areas of learning to be effective, it has also been argued that student teachers need to develop appropriate research knowledge and positive attitudes to educational research (Van der Linden, 2015). Studies show that student teachers are able to use research as a lens through which to view practice (Rowley, 2004; Burn *et al.*, 2007); findings refined by Hiebert *et al.* (2007) who highlighted that inquiry-based research, facilitated the analysis of evolving teaching practices by student teachers. Specific reflective gains are also reported by Parkinson (2009) and Cochran-Smith *et al.* (2009), in that

classroom-based research promotes teacher reflection on responsiveness to learners needs. With respect to acquiring teacher knowledge, a large multi methods study involving Dutch student teachers demonstrated that not only were student teachers able to denote significantly more pertinent concepts associated with effective class-based practice after completing a research study but that they reported increased perceptions of self-efficacy (Van der Linden, 2015). Niemi's study (2011) of master's level Finnish student teachers also showed positive indicators of professional development including increased professional knowledge bases (e.g. instruction design) and increased command of the curriculum, whilst Byman *et al.* (2009) highlighted the role of classroom-based research in acting as a pedagogical content knowledge facilitator and general organiser of teacher knowledge. In a wider sense, Hammerness *et al.* (2005) demonstrated that student teachers who had been given the opportunity to undertake classroom-based research, reported overall greater feelings of preparedness for teaching. Other proponents of this research-oriented teaching approach (as defined by Healy & Jenkins, 2006), assert that empirical research can promote the adoption of an "inquiry-based stance" for teachers (Cochran-Smith & Demers, 2010). This stance may be long lasting throughout a teaching career and empower teachers to construct and evaluate new pedagogy and act as agents of curriculum change.

Indeed Cochran-Smith and Lytle (2009) highlight that such is the transformative nature of this engagement with inquiry, teachers may see classroom practice as a site of significant ongoing professional development through their career.

Close to Practice student teacher research

Our research orientated teaching model involves student teachers undertaking a small qualitative research study, co-constructed with teachers and children in an area of the curriculum they have a particular interest in. This reflects CtP research which involves "collaboration between people whose main expertise is research, practice, or both." (BERA, 2018). It is postulated that this approach may include many motivational aspects of learning according to self-determination theory (Ryan & Deci, 2000) and have a positive impact on student teacher learner identity. By affording student teachers the opportunity

to develop connectedness to their school placement setting, develop subject mastery whilst adopting a degree of autonomy through acting as an insider/outsider researcher, it is argued that this process is both motivational and academically and professionally instructional.

To support student teachers to become successful emergent researchers, increased scaffolding was given in terms of research methodology. This was specifically achieved by encouraging the adoption of an interpretivist CtP approach. A structured approach was therefore offered to boundary the student teacher's choice of methodology, but it was then open for the student to determine the exact mode of their delivery. Further, whilst the student teachers initially identified a topic and a productive way forward for their research, they were encouraged to formulate a research question through discussion with the children/teachers at their learning context. The research question was then further discussed with their research supervisor to ensure that the question was effective, whilst maintaining this co-construction with the children/teachers.

Student teachers placed children at the centre of the research and then endeavoured to interpret their actions, words or work with the child. This constituted a more inclusive stance, allowing emergent or struggling writers, children with special educational needs and those who struggle to express themselves verbally, to participate equally in research with their more able peers. Further support was given in terms of providing a limited choice of four well defined data collection tools namely:

- Semi-structured observations.
- Purposeful interactions (akin to Spicksley, 2018 – walking interviews).
- Children's work scrutiny.
- Document analysis.

These data collection tools widened the breadth of what could be counted as 'data'. Rather than limiting children to answer questions set by the 'expert' researcher who wants to discover a predetermined aspect of knowledge (such as when using questionnaires), they were inquiry based. Being more explorative in nature and being done in partnership with other adults and children, these tools avoided common ethical dilemmas associated with who could collect data. They centred on the primacy of children and teacher's voices and hence their best interests, as advocated by BERA guidelines (2018, no. 23, p. 14).

Four data collection tools

In this section the four data collection tools are briefly described.

1. Semi-Structured Observations

This data collection tool involved the careful and systematic observation of children in a learning context. Student teachers were reminded that there may be a wide interpretation of a learning context, for example outdoor education, after school club or children's playground activity. The key underlying rationale for this method was that it adopted an authentic appreciation of children's learning without the predetermined perspective of the researcher. It had the additional advantage that observation was used frequently in schools (often in Early Years Foundation Stage) and that student teachers are naturally observant people. Some student teachers (often in liaison with class teachers and curriculum leads) opted to create a semi-structured, simple observation schedule with some key criteria they would look for.

Case Study: **Semi-Structured Observations**
In an upper KS2 science class, children were using mobile technology (iPads) to record and analyse their data in a scientific investigation of chemical reactions. The student researcher in negotiation with the children and class teacher chose the focus of how they used apps during their experimentation.

The researcher decided on four criteria she wanted to look for which formed her semi-structured observation schedule:

- *which app was used to describe the methodology of the inquiry (e.g. Explain Everything)*
- *which app was used to record the chemical reaction (e.g. iMovie)*
- *which app was used to collate the data (e.g. Popplet, a mind-mapping tool)*
- *which app was used to analyse and present the data (e.g. Comic Strip).*

A criterion of 'anything else interesting' that emerged from the children during the course of the observation was also added. This enabled the researcher to go in with a focus in mind but also allowed the research to be led by the children.

2. Purposeful interactions

This approach was similar to data collection tools such as 'walking interviews' (Spicksley, 2018) and 'tours' (Clark & Moss, 2011) where children directed a researcher on a tour of their setting, or the researcher talked to children while walking through an environment. Our approach was based loosely on these but was broader and simply involved talking to children or asking them to do something in an environment of interest e.g. Forest School, outdoor play area or other school building. For example, while walking through an area the researcher may choose to stop at particular points of interest and ask children some simple open prompt questions, or ask them to draw an image, or write descriptive sentences. Alternatively, the child may lead the researcher through the area and choose their own places to stop, telling the researcher why that place is important or significant for them.

Case Study: **Purposeful interactions**

In a mixed year 2 and 3 class, the student researcher asked the children to choose a spot in the outdoor play area and draw on a piece of paper or answer one or two prompt questions on a Postit note as follows:

- *Draw your favourite spot in the playground.*
- *Why is this your favourite?*
- *Why have you used these colours?*

This was also adapted to more closed spaces, including the book corner where children were asked about their favourite books and book characters.

Both these approaches supported purposeful dialogues which were more open and child-led, since the student did not ask questions in the vein of a pre-determined interview or questionnaire.

The student researcher was mindful that they needed to liaise with other practitioners about particular aspects of the methodology in order to capture authentic data. For example, that the teaching assistant and teacher must not prompt children to say certain things but could act as encouragers (or a scribe if need be) for the children to express whatever they were thinking and or feeling.

3. Children's work scrutiny

As part of normal curriculum work or as part of a specific activity the student researcher may ask children to complete and collect examples of their work. This may be in the form of drawings, pictures, models, mind maps or music compositions. Some of these pieces of work found their roots in Arts Based Educational Research (Clough & Nutbrown, 2019) which was a useful starting point for students wishing to investigate this data collection tool. Their main advantage was that the pieces of work could provide insight into children's unspoken worlds, the things they perceive but which they sometimes could not fully articulate. Spenceley (2012) describes images as a form of self-expression and notes that

> Modern children frequently draw to express that which they do not possess the language to express. (Spenceley, 2012, p. 191)

Work scrutiny also included examples of written work from older children.

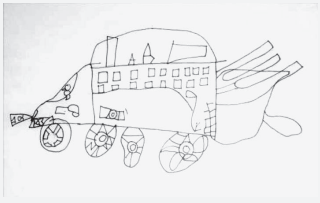
Case study: **Children's work scrutiny**

Children in a mixed Year KS1 class were asked to design a four-by-four vehicle, after their visit to a farm. The student researcher asked children to think about the needs of the farmer and the animals they had seen. Children were encouraged to discuss ideas with each other (which were recorded by the student researcher) about how the farmer organised the farm and looked after the animals, prior to the design stage. The student researcher also discussed children's designs with them. Using questions such as

- *What have you drawn here?*
- *Tell me about your design.*

At the end of the design technology lesson, the student researcher collected examples of children's drawings and identified themes, categories and underlying messages about children's understanding of the design brief, to inform their research question.

Example of a child's design work



In case study overleaf, triangulation (a means by which data is judged as credible because you have more than one source (Denscombe, 2017)) occurs through data collection. For example, the data consisted of the child's design work (work scrutiny) and a discussion about their design choices (purposeful interaction). In this case the two data sets complemented each other.

4. Document analysis

This tool had its roots in a 'Systematized Review' which has a specific methodology associated with it involving a broad and thorough critical examination of existing research on a chosen topic. Our approach represented a pared down version of a systematized review. Student researchers were required to document their decisions regarding what literature to include and exclude in order to ascertain what the body of existing research says about best practice within their chosen area of study. In order to help student teachers navigate the burden of a wide open and potentially unending literature search on their chosen topic, curriculum specialist tutors chose one book which they felt gave an overview of their subject area. The student used the book to draw out themes for greater investigation in the literature. Depending on what the student teacher found in their search and what constituted the body of literature 'out there', they narrowed down the themes from the book to two or three themes for more detailed investigation. Focussing on each theme, the student found more studies which contained 'evidence' of best practice pertaining to that theme. In this way student teachers were required to apply critical decision making and choose criteria to decide what to include and what to discard, making their reasoning clear. This data collection tool was not intended to be an extended literature review but rather a more systematic way 'data' (studies chosen) were collected and evaluated in order to critically present a conclusion and recommendations. Student teachers were made aware of the need to consider that in starting with a particular book author, they must add critique and express alternative points of view on the issues to avoid over emphasising one perspective.

At Masters level, student teachers were able to use this as a platform to access a wider breadth of literature, present a record of their database searches and results, attain a depth of criticality and provide a systematic account of their decisions for including/excluding studies. They tended to

use a table to record their searches, which were presented in their research assignment with appropriate commentary.

Case Study: **Document analysis**

A student teacher's research question was:

What are the factors that are perceived to contribute to the success of outdoor education?

The specialist tutor recommended a book by a Finnish author which provided a general overview of outdoor education. There were chapters on, for example, outdoor play, core curriculum delivery outdoors and assessment approaches. The student teacher made a mind map of each theme which was basically each chapter title and then searched for literature on each theme. She found more research on some themes than others. Those she couldn't find literature on, she discarded and made a note. This left her with three themes to focus on in more depth, she identified a few subthemes, which helped her to begin to focus in on the main messages from the literature. She detailed her thought processes through another mind map to help her keep track of related themes and annotated this with key references and ideas she wanted to note.

She then took a critical look at the research and made further decisions about what to include and discard. In her write up, she made these decisions and her reasons explicit at every stage. In her discussion, she presented the strengths/weaknesses of the research she had found and the quality of the evidence they presented. She interpreted this also in light of wider research such as what was presented in the media, finding for example that there was some suggestion that Forest School should be limited to Early Years education. In her conclusion, she was able to critically present that on balance outdoor education was successful because of three themes she identified, which she judged to be presenting valid evidence. She then presented a final conclusion and recommendation.

In addition to stipulating the use of the four data collection tools we also gave enhanced scaffolding for the data analysis stage as described in the following section.

Scaffolding for qualitative data analysis

Students were provided with a basis for the qualitative analysis of the data from the four data collection tools. The basic tenants of open coding were modelled for them for both texts and images. They were encouraged to view the analysis as being driven by the data. For example, through work scrutiny, the student teacher may have several annotated drawings from different children each of which contain reference to 'friends' as a preferred way of learning. This forms the first theme in the data which the student teacher assigns an open code to, and so on. On reviewing the drawings for a second time, the student teacher may notice some of the mind maps refer to 'asking a peer questions'. These two pieces of data could then be compiled under an emergent theme of 'collaborative learning'. This would be referred to as 'inductive coding' (emerging from the data rather than using a predetermined set of codes), which could be referenced. Triangulation could be achieved in this case by the semi- structured observation of children working in pairs or small groups or discussion with them about this mode of learning (purposeful interaction).

The following section details how the effectiveness of our model for CtP based student teacher research was evaluated with respect to supporting aspects of student teacher professional development.

Evaluation of the model using critical discourse analysis

The potential of this close to practice model, which involves collaboration between people whose main expertise is research, practice, or both.' (BERA, 2018), to contribute effectively to teacher education was evaluated by undertaking a critical discourse analysis of research reports written by a sample of nine student teachers enrolled on a Postgraduate Certificate in Education (PGCE) programme. A specific analytical focus was adopted on sections of the reports where student teachers explored and reflected on the impact of undertaking classroom-based research on their developing pedagogy and professional development. The analytical approach is detailed in the next section which explains means and philosophical underpinnings.

Context and Conceptual Approach

PGCE students are training to be teachers and as such in practicum inhabit the complex social world of the school, which is infused with the norms, language and behaviours of teaching. These complexities originate and are negotiated between people in several ways. They are in part implemented in a top down fashion from government, namely the Department for Education, whose requirements dictate the operational world of the school and teacher behaviour. Like all policies however, this guidance – unless statutory such as that of safeguarding – is interpreted in different ways by school leaders and teachers. For example, the duty to promote Fundamental British Values is dictated by government yet schools have been found to implement this in different ways (Maylor, 2016). Complexities also emerge at the level of school leadership as they interpret government policy, guide the mission statement of the school and instigate a culture of management which influences teachers. Complexity also emerges at the level of teachers, who bring their own values, beliefs and interests to their role and negotiate how these can be enacted within the culture of their workplace. Into this complex web of social life enters the student teacher. Student teachers are *in practicum* for a limited period. Often without any prior knowledge of teaching and its complexities, they enter their placement schools with high ideals and aspirations for the children in their care. It is not unusual for students to state that they want to 'change the lives' of the children and influence futures; it is rare to non-existent for a student teacher to demonstrate an awareness that the school is a multifaceted social world and that their position within it will require subtle negotiation. Student teachers have to make sense of these various complexities and their relationship to them quickly if they are to succeed. A further intricacy for the student teachers is the masters level research they are required to undertake, where they are asked to adopt the position of academic researcher and complete a small-scale research project while they are teaching in school. This simultaneously positions them as both student teacher and student researcher; they are to a large extent an 'insider' as a teacher yet also an objective 'outsider' as a researcher; another level of complexity that must be negotiated in a relatively short time scale.

Furthermore, academic research at masters level requires them to adopt a critical stance. They are not simply doing research to describe elements of practice and just improve their specialist knowledge, although these are

products of their research, but they are adopting a critical orientation in order that they may identify what works and what does not work as well, so that they may be informed for their future practice.

Ultimately, they aim to improve, yet to question and to try to improve what does not work often means that student teachers must interact with structures of power. The aforementioned complexities, some dictated by government and some negotiated at the school and classroom level, are infused with different values and norms and "norms and values are general and abstract components of underlying ideologies" (van Dijk, 2016, p. 83). It is these underlying ideologies that can often be challenged by a critical stance.

All of this complexity and the need to navigate it successfully within a relatively short timescale places a large cognitive load on the student teacher and as such, their cognitive processes in how they interpret and make sense of their place within these structures and ideologies is salient and will influence the subsequent discourse.

The complex social world of the school, the ways that student teachers make sense of their experience (their cognition) and the way that this is communicated through the discourse in their assignments, forms what van Dijk (2016) has called the 'Discourse-Cognition-Society triangle' and positions our approach within the socio-cognitive approach to critical discourse studies.

Our researcher positionality

Taking a critical approach to our discourse analysis was important on two fronts. Firstly, it provided room for the student teacher's discourse to reflect issues of power and social change which may have emerged from their critical reflections on the impact on their own personal and professional development. It therefore enabled us to get closer to their lived realities rather than analyzing a text at face value. Secondly, as student teachers and teacher educators, and both as researchers, we were positioned within the same academic orientation. This aligned us as members of the same 'epistemic community' with a shared understanding (van Dijk, 2016, p. 66). This understanding is not equal however. As experienced researchers and teachers, we have a greater 'natural knowledge' of the epistemic community (van Dijk, 2014, p. 6) than the student teachers and so we are well positioned to interpret their discourse, although we acknowledge that we do so through our own mental

models which are informed by our own knowledge, opinions and experiences (van Dijk, 2014 in Askewa & Bone, 2019). This is a benefit to our analysis because it enables us to ask questions of the data, particularly in relation to the wider ideological discourses present in education and knowledge of the inner workings of schools, but it also may bias our interpretation of student discourse to that which fits our current mental models.

Thus, to ensure a rigorous analysis of the data, we have used an analytical framework involving 'structures of discourse' (van Dijk, 2016) and this is explored below. Having instructed the student teachers to adopt a critical stance towards their research, we acted within this shared understanding and did the same.

Preliminary critical discourse analysis of the texts

In this section we highlight our preliminary analysis of the support materials and assessment guidance given to student teachers prior to them writing their assignments, with respect to elements which we think were relevant to a socio-cognitive analytical approach.

The assignments consisted of research reports of between 3000 and 4000 words in length located within the genre of an academic text. As such they included the specific features one would expect – titles, headings, introduction, literature review, methodology, analysis, discussion and conclusion, which formed the schematic organization or 'superstructure' (van Dijk, 2016, p. 72). In some cases, assignments contained features typical of academic discourse such as predominant use of the third person and articulation of the study methodology in the past tense with a passive stance. It was important to note these features because they were expected of the genre and were not necessarily the intentional choice of the student teacher. As such, our analysis did not focus on the grammar of the genre, but on those 'structures of discourse' (van Dijk, 2016) that were salient to highlighting the impact of the student teacher's research on their professional and academic development. This development involves the ways in which the student's personal experiences and knowledge, their 'mental models' (Ibidem), interact with and are potentially changed by the 'shared social knowledge' within the epistemic community (Askewa & Bone, 2019). The structures of discourse included 'identification' showing whether the student identified as a teacher, a student teacher, trainee or an outsider, enabling

us to infer their professional self-concept (seen through use of 'I', 'we' or 'them' for example); 'polarization' showing whether there was a positive representation of one group (e.g. children) and a negative one of another (e.g. teachers), allowing us to again see how they positioned themselves and understood their position in relation to the social field of the school, the degree to which they emphasized a positive self-description and a negative description of others; whether they spoke in terms of professional or societal 'norms and values', and how much they referred to 'symbolic resources' such as knowledge and status (van Dijk, 2016).

Notions of 'power' interplays in school and education more widely, were also of interest since they may have signified student teachers attempts at trying to embed themselves within established power relationships within school and the wider educational landscape. With respect to the latter endeavour they may have seen themselves as 'agents of change' as a result of their professional development and resultant changes to their mental models or they may have internalized existing power relationships and become 'habituated to the status quo' (Lim &Cheetham, 2020, p. 5) arguably denying the potential of their critical approach to achieve social change.

Findings: Student teacher perspectives

The following sections describe the findings of the discourse analysis and are organized according to the four main themes from the structure of discourse mentioned above that emerged throughout the data: Identity; Polarization; Values and Beliefs; and Power structures/relationships. The findings are presented with the concerted endeavour to preface the student teacher's voices whilst allowing for critical commentary from the researchers whose positionality has already been described.

Identity

In all cases discourse analysis of the texts revealed that student teachers believed that undertaking a CtP research project had enabled them to develop a positive professional identity. It was interesting to note that often throughout the text it was possible to discern a maturation in identity as the research report developed, representing a change to the student's mental

model. For example, Trudy, a teacher with a science specialist interest, identified herself primarily as a *practitioner* but then in the conclusion changed that to *teacher* arguably denoting a change in perception of her self-efficacy or increased sense of agency. In another case a student teacher with an Early Years specialism described herself as a *trainee* but then went on to express that she saw herself as a *teacher* in the future.

Identification in some cases seemed to be mediated at least to some degree as a result of the student teachers undertaking the CtP research project as articulated by an EYFS specialist student teacher:

> This research has revealed that my creative background is a strength within my teaching practice… I have had the opportunity to model and support children to develop their creative thinking skills. I could potentially impact curriculum design and a whole school ethos in my future practice, championing that "teaching creativity is not binary to knowledge" (TES, 2019).
>
> (Alice, EYFS specialist)

Here the student teacher not only expressed a positive identity as a teacher [my teaching] but through reflection and engagement in research had negotiated and reconciled the often perceived dichotomy of promoting creativity versus knowledge acquisition and as such illustrated advanced pedagogical thinking. She believed she could contribute at a whole school level by championing creativity as a pedagogic approach and engaging with future curriculum design. She also illustrated her developing research literacy by mobilizing a pertinent piece of current academic opinion. A further change in Alice's mental model is shown by her reflection that she has used her 'background' in her current teaching and recognises the potential this has for her in her 'future'.

In a second example of strong identification as a teacher (effective teaching strategies) from William a student teacher with an interest in digital literacy, he is fulsome in his evaluation of the impact of undertaking a small CtP study as follows:

> Furthermore, this study has helped me reflect upon effective teaching strategies, develop my critical and scholarly thinking and allowed me to consider the link between theory and practice. Conclusively, I now feel that being knowledgeable in these areas will allow me to adapt my

> iPadagogy[1] alongside the changing educational face and provide an enhanced learning experience for all pupils.
>
> (William, ICT specialist)

Here William expressed an emphatic (conclusively) positive professional identity which incorporated both pedagogical knowledge (enhanced learning experience) and research knowledge (critical and scholarly thinking, theory). He suggested this has been an iterative process (I now feel) and arguably to some extent transformative. This again shows a change in his mental model as he adopts some of the shared knowledge and beliefs of the epistemic community, further identifying himself within it.

The prevalent student discourses around identification centered on students seeing themselves transition from trainees or students to teachers, in the majority of cases this was seen to occur as the research process was undertaken and was evident in the assignments towards the discussion and conclusion portions of the documents. Phrases such as *I now feel as a teacher* or *I will use this knowledge during my teaching to…* were prevalent and indicated a significant change in elements of professional identity. Changes to their mental models can be clearly seen as they adopt shared beliefs and new knowledge inherent within this epistemic community.

Polarization

There were several instances where student teachers demonstrated a knowledge of governmental policy and guidelines and how these were translated in schools, and wished to align their practice with these. They seemed to be able to negotiate their professional responsibilities as student teachers alongside developing an understanding of effective practice, as illustrated below:

> One of the main findings during this appreciative inquiry was the school is already doing an excellent job… and strives towards meeting their target of 'reading for pleasure.' I have taken the opinions of the children into account and provided feedback to the school. My data shows the

1 iPadology refers to a specific pedagogy associated with the mobile technology use of iPad tablet computers.

> children are making good progress with their reading and have many reading opportunities both in school and at home.
>
> (Rebecca, Literacy specialist)

This quotation is consistent with an earlier section in Rebecca's assignment where she expressed a wish to work collaboratively with teachers, parents and the school (*provided feedback to the school*). After she had analysed her data, we see polarisation. Polarization is defined as showing whether there was a positive representation of one group and a negative one of another. Rebecca has moved from inhabiting her own space as a student teacher to becoming part of a collaborative group, which was informed by policy.

Specifically, as a result of undertaking her appreciative inquiry she had not only acted as a facilitator of the children's explorations but also achieved a greater sense of partnership with the setting, through shared understanding.

In the case of Ursula, a History specialist student teacher, she discussed at some length the wish for her research (*my project*) to be co-constructed with the school in order that it was of interest to the staff and children and pertinent to curricular requirements.

> I then arranged to visit the school in order to discuss my project with the pupils and staff. This discussion reassured me that the Headteacher, the class teacher and the children were interested in my research and that it was relevant to the topic … Before I began my research, it was important that the pupils had the opportunity to ask questions and aid in co- construction of the activities that they would be involved in should they decide to participate. The class teacher and I discussed the benefit of engaging with their current topic in history.
>
> (Ursula, History specialist)

Further on in the assignment she articulates a willingness to broaden her perspectives with respect to practice and compare her findings and ideas through a process of documentary review as follows:

> this research project aims to analyse the effects that this change in practice has had and compare these, by way of a document review, with the views of other academics, researchers and government officials.
>
> (Ursula, History specialist)

Undertaking a CtP project encouraged her to make contributions to and reflect upon a body of educational research and policy. It led her to embrace the complexity and nuance, conferred by policy change and how these impact on practice and *vice versa*. In doing so she has arguably moved her position from a single student teacher to one who is now part of a larger group of educationalists and policy makers – in the sociocognitive approach she has changed her mental model and now represents herself as a member of the epistemic community. Overall, the adoption of a positive stance to their own research and that of others, enabled student teachers to polarize from being involved in their own elements of teaching and research to becoming part of a collective inquiry based group of teachers/ researchers.

Values and Beliefs

Given their initial teacher education, unsurprisingly several student teachers research assignments contained representations of their professional beliefs and values. A prevalent theme was that of empowering children to develop their own voice and affording opportunities for that voice to be effectively heard and acted upon. In some cases, this was mediated by exploiting the existence of representational structures within school, for example encouraging children to share their ideas of their own learning at the School Council or on a more modest level within their own classroom, as articulated by a later years English specialist:

> It would be great to continue to centre the child's voice and ask what they think could encourage them to read for enjoyment more… in summary, I agree with Brien: that, "the child who is fortunate to be immersed in a world of high-quality texts shared with an enthusiastic adult is ideally situated to learn".
>
> (Ellie, English specialist)

This well considered reflection suggested that the student teacher believed in the primacy of the *child's voice* and the child's ability to develop agency (*they think*). In addition, it could be argued that reflecting on her observations during her study and forming links with existing knowledge [Brien, (2012)], demonstrated increased research literacy skills.

The expression of professional values was also linked in several cases to an aspiration of student teachers to create positive and secure learning

environments. In one case Nadia a student teacher with a particular interest in mathematics articulated her thoughts about her classroom as follows:

> I agree with Seeger (2011) that everything in the classroom produces meaning, and I believe that emotional security allows a safe learning environment in which to take intellectual risk and embark on a meaningful and personalised learning journey.
>
> (Nadia, Mathematics Specialist)

It is not clear exactly at what level this *security* is instrumental, but it may suggest that Nadia wishes her learners to possess *emotional security* but also to an extent herself, since she mentions *intellectual risk* a phrase perhaps associated with adult learners more prevalently, although not exclusively, rather than children.

Reviewing the data as a whole, there were many instances where student teachers had made links between their values and beliefs and research ethics. The most prevalent considerations were focused on ensuring participant [children's] comfort; phrases such as *maintaining a safe learning environment* and *emotional security* demonstrated strong student teacher awareness of BERA (2018) research ethics guidelines.

There were also examples of student teacher's commitment to keep all stakeholders up to date with the organization and logistics of the study as well as ensuring the key outcomes of the research were disseminated to interested parties.

Power structures/relationships

Analysis revealed that there was significant evidence of student teachers demonstrating an understanding of power relationships within classrooms both as a student teacher and as a researcher.

The former case is illustrated by Trudy a student teacher with a science specialism:

> By reflecting-in-action I asked the children to recreate the cardiac relay themselves rather than going over it again myself. The children successfully did so, demonstrating their learning together with the necessary teamwork and cooperation skills.
>
> (Trudy, Science Specialist)

This quote and previous discourse from Trudy implied a change in practice as a result of undertaking the research study; she has understood that it is not all about her actions but rather also what the children do. This is clearly linked to developing agency but also the careful negotiation of power within the classroom. Following the discourse throughout Trudy's transcript it was possible to discern that she moved from being a teacher who used her power to intervene and create change, to one who saw children as having more agency and capability than she initially thought.

With respect to exploring power relationships associated with research, this is illustrated by an English specialist student teacher who advocates the use of purposeful interactions with children (participants) rather than undertaking more formal interviews as a means to obtain more authentic and meaningful data:

> Interviews are known for having a structured, rigid format, whereby "the interviewer retains control of the agenda by asking mostly closed questions" (*ibidem*, p. 74). I believe an interview, then, would hinder the reliability of my results, as the child may feel awkward, inhibited and the situation contrived. By using PI [purposeful interaction], it is flexible and led by participant [child] navigation, hopefully allowing them to provide more detailed responses as to why they chose a book.
>
> (Ellie, English Specialist)

The student teacher used the strong verb *believe* to assert her viewpoint and takes ownership over the data (*my results*), whilst at the same time illustrating her empathy with the child and wishing them not to be put in a challenging (*awkward, inhibited*) position. There was some indication that the student teacher not only took a sensitive approach to the comfort of the children but that she understood that by reducing the power differential (*led by participant navigation*) between researcher and participant, more trustworthy data can be accrued. Clearly this could be linked to increased reflexivity as a result of developing research literacy skills. Indeed, there were several discourses that indicated an awareness that power relationships both in and out of the classroom were complex entities that required sensitive negotiation and benefitted from an increased student teacher understanding of their own research and the educational body of research as a whole.

Summary of findings

The vast majority of student assignments contained elements of the structures of discourse of identity, polarisation, values and beliefs and power relationships, although the latter element was found slightly less prevalently. Interestingly, in the only single case where the student teacher did not refer to all these elements, it appeared to be due to the highly structured and factual based style of the writing and the fact that the student teacher seemed to predominantly associate themselves with a researcher role, rather than exploring the teacher/researcher nexus. It is interesting that this student's mental model aligned more with the community and shared beliefs of research rather than practice. This student had come from a research background and has not made the full transition in her mental model to being a teacher. Further research is needed to explain this, perhaps the student's prior journey towards and beliefs about teaching will provide insight.

The following section will explore the key outcomes of our study, make links with existing research on student teacher professional development and make recommendations for stakeholders in the teacher education sector. Figure 1 will be referred to throughout in order to make explicit the affordances of student teachers undertaking CtP research as found in this study (shown by text on the left of the diagram) and more generally during classroom-based research by others (shown in text on the right hand side of the diagram), and how these elements may link to the effective ongoing professional development of novice teachers.

Discussion

This chapter has argued that undertaking a small scale CtP research project focused on developing subject specialism during their PGCE year, is an effective catalyst to initiate student teacher professional development. Our findings lend weight to the assertion that for student teachers to fully realize their potential across the entirety of their career, it is desirable that they engage with and maintain an enthusiastic relationship with educational research as advocated by Van der Linden *et al.* (2015).

In agreement with Rowley (2004) and Burn *et al.* (2007) and through use of the sociocognitive approach, we have found evidence that as a result of

engagement with this mode of inquiry, student teachers are more likely to persist in meaning making between their own classroom experiences and emergent pedagogic research, shown by the ways in which they assimilated current research into practice (see fig. 1). In addition, the added opportunity to pursue a subject specialism, as outlined by Morrison (2006) and Ardzejewska, McMaugh & Coutts (2010), appears to promote a self-belief in student teachers in terms of agents of school curriculum change (see fig. 1).

Student perceptions of self and identity which appear as a result of undertaking classroom-based research seem integral to the process of becoming a teacher, for example in concurrence with (van der Linden *et al.*, 2015) we found evidence of increased perceptions of self-efficacy. Specifically, student teachers reported that they found the research process initiated reflexivity especially in terms of identifying pupil learning needs. It is possible that due to the highly organized and systematic nature of their research inquiry and the enabling of pupil voice around effective learning, they were able to gain new insights into facilitative strategies to meet their learners' needs, as seen in the key studies by both Parkinson and Cochran-Smith (2009) and as illustrated in fig. 1. The sociocognitive approach has enabled us to identify these changes in student's mental models and the ways in which this results in them seeing themselves as members of the epistemic community within their school and within the teaching profession. In the general busyness of everyday classroom practice these opportunities might be very rare, hence undertaking CtP research enabled student teachers to experience the extensive benefits of deep and sustained inquiry.

In terms of teacher knowledge acquisition and organization, undertaking classroom-based research seemed to have been a highly effective facilitator. We found several examples of student teachers acknowledging the specific role of research in enabling them to gain a strong understanding of pedagogical content knowledge, for example in the case of the accessible strategies for supporting children's understanding of chronology or by facilitating understanding of key human biology concepts. This finding is in agreement with those of Byman *et al.* (2009) who highlighted specific pedagogic gains in knowledge made by research informed student teachers, who reported that they felt empowered to make sound judgments with respect to their teaching choices. Our findings also echoed those of Niemi (2011), in terms of student teachers using research as a lens to view their modes of pupil instruction, including when to intervene in a classroom and

pursue teacher instruction and when to afford learners more autonomy. This is clearly an important developmental step for student teachers not least because they cannot afford to relentlessly instruct pupils the majority of the time, both in terms of building their own resilience as well of that of their learners. Looking at these pedagogic knowledge gains as a whole, it is unsurprising that student teachers report greater overall feelings of preparedness for teaching (see fig. 1 for positive influences) in agreement with Hammerness (2005); furthermore they seem to be at the beginning of a journey of empowerment to assimilate current research with their own practice. For example, several student teachers had reviewed curriculum subject specific research in a critically evaluative manner, with a view to devising and refining their own pedagogical choices. They also demonstrated an evolving knowledge of pedagogy; in that they were aware that findings of research studies may be context or pupil specific and hence might not always confer an effective strategy in all cases of future teaching.

Looking at the findings in their entirety it was clear that the associated processes of student teachers developing their identity, moving to inhabit new collective domains, further examining their values and beliefs and negotiating power relationships within and outside the classroom resulted in significant avenues for professional development and as such were valuable contributions to initial teacher education. Taking a critical stance on the findings of this study reveals multiple inherent and methodological limitations. Primarily the study is limited by a small sample size (nine student teachers) although most qualitative studies include sample sizes of between ten and twenty participants. In addition, this study was not intended to uncover findings that were generalizable and statistically robust but rather to examine closely at a detailed level the thoughts and attitudes student teachers expressed surrounding CtP research through their written discourses. The student teachers also only undertook their *in practicum* learning in a limited number of different learning contexts, although there was an effort through purposive sampling to include student teachers from a range of nurseries, first, primary and middle schools. Arguably the most important limitation was that of the analysis strategy using critical discourse analysis, in that the words student teachers used to describe and reflect upon their enactment of research may not fully represent the entirety of their feelings and cognitive processes. However, the sociocognitive approach enables the student's mental models to be represented in their discourse, so

whilst there may be more to uncover, analysis revealed a strong consensus of feelings and thought processes amongst the emergent themes. Whilst the actual words used were not exactly the same, it was clear that the sample of student teachers expressed similar views and attitudes. Finally, in terms of temporal limitations this study was undertaken for several cohorts of teachers however it was only undertaken during the latter part of their PGCE course. It would be of great interest to carry out follow up studies of these teachers to explore the full impact of undertaking CtP research in their practice moving forward into their newly qualified teacher career phases and beyond.

Conclusion

Overall, there was a plethora of evidence to suggest that undertaking a CtP research study had enabled student teachers to process their teaching and research experiences, develop subject specialist pedagogy and explore links between contemporary theory and practice. As a result, CtP research has maximized student teacher professional development where the integration of research has almost become part of their pedagogy, and thus has developed and foregrounded research literacy. Despite the inherent methodological limitations of a structured CtP approach (including lack of generalizability of findings) not only has engaging with this form of research enabled substantive gains in teacher knowledge, it has afforded student teachers the opportunity to examine and explore their changing identities, beliefs and values and assimilation into collective groups, during initial teacher education. This is of note for teachers, teacher educators and arguably policy makers, for example in the case of the formulation of the initial teacher education curricular framework, particularly under the current conditions of reduced teacher retention (DfE, 2018). By incorporating structured opportunities for student teachers to undertake classroom based empirical studies, and by doing so support their developing research literacy, approaches such as this will not only enrich their teaching experiences and career satisfaction but help promote sound pedagogic judgements in the ever-changing educational landscape of the future.

This research has then enabled us to achieve the goals outlined at the beginning of the chapter: understanding the impact of CtP research on

developing a teacher identity, undertaking critical sociocognitive analysis and reflecting on the implications for practice and wider policy.

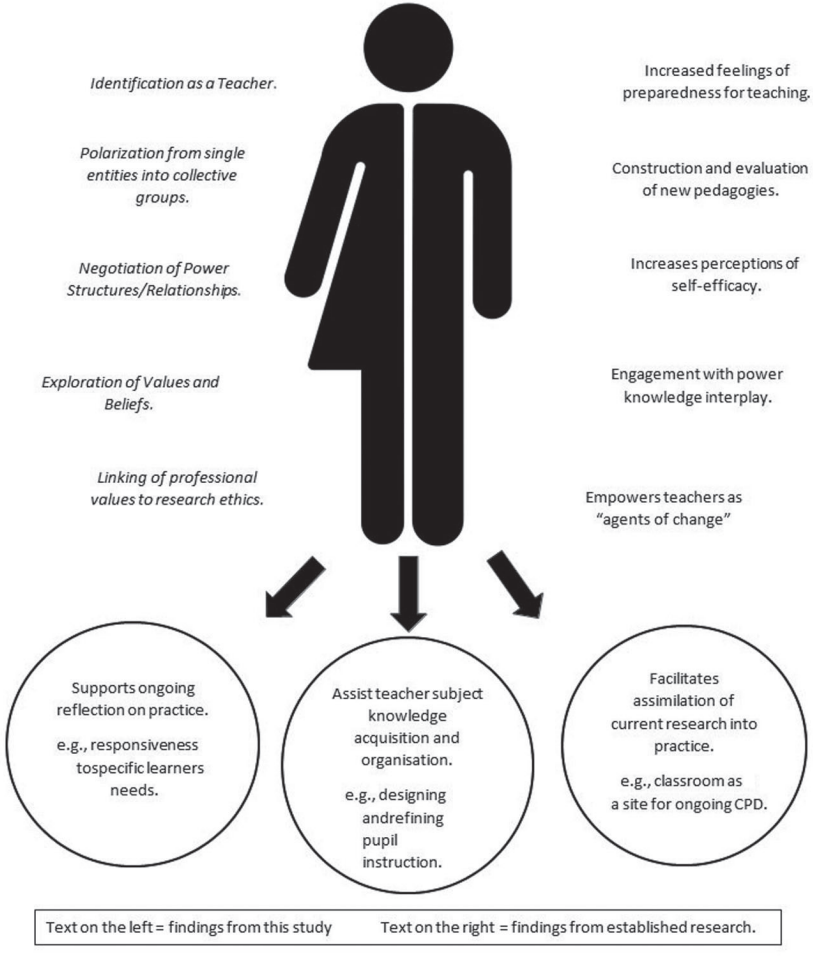


Figure 1. Affordances of Close to Practice (CtP) Research for Student Teachers during Initial Teacher Education.

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CHAPTER FIVE

Research Literacy in Initial Teacher Education: Supporting the Development of Personal Theories

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ABSTRACT

In this chapter we empirically support the claim that student teachers' research literacy benefits from collaboratively discussing educational research and relating insights to representations of their lessons in a *goal system representation*. We distinguish three research literacy competencies: the competency to 1) interpret research literature; 2) use outcomes to reflect on practice; 3) translate results of reflection into concrete adaptations of practice. We outline how a Goal System Representation can be seen as a visual image of the relation between teachers' goals and their practice, reflecting their 'personal theory'. We describe a teacher education course aimed at improving research literacy, that encompasses the three competencies and uses Goal System Representations as a vehicle for reflection and the translation of research outcomes to practice. We then discuss the results of the course evaluation and offer a detailed exemplary case of how a student teacher developed her personal theory. To conclude, we argue how our approach to developing research literacy could inform the ongoing professional development of teachers.

KEY WORDS: personal theory, goal system representation, initial teacher education, research literacy

Introduction

Teaching is an intellectual endeavor and requires a teacher's conscious awareness of the motives that guide his or her practice in order to evaluate and, when necessary, intervene in that practice (Graham, 2006). Student teachers therefore need to develop tools to explicate and evaluate the reasoning behind their design and enactment of lessons during their pre-service training (Darling-Hammond, 2006). Once made explicit, such motives and assumptions can be scrutinized and linked to theoretical notions (Korthagen & Kessels, 1999), thereby furthering the process of dialogue and critical reflection that is essential to their professional development (Graham, 2006; Maaranen *et al*., 2016). In many teacher education curricula the importance of using research to effectively improve one's teaching this way, is acknowledged but has proven not entirely unproblematic. Even though many curricula ensure that student teachers actually engage in practitioner research themselves to develop reflective skills and to design research-informed lessons (Sjölie, 2014), there is less focus on understanding the nature of educational research and how research literature can be used as a source for linking theories to practices. Student teachers are often introduced to important educational ideas, such as motivational and pedagogical theories on how to design and perform effective instructions and lessons, they are rarely invited to explore how these theories emerged from researching practice, as explained in educational scientific publications. As a result, they are often unable to truly understand the connection between research studies and practice. A further hindrance is student teachers' general lack of ability to independently perform such an exploration, since their own research backgrounds as master students' in domains such as science and arts, often differ considerably from socio-scientific educational research. This is unfortunate, since teachers who understand how theories emerge from research of practice are more likely to grasp how theories (thinking) relate to practice (acting) (*Ibidem*).

Another problem that plays a role in how student teachers (and teachers in general) embrace educational research is the issue of *practicality*. Linking theory to one's own teaching practice (concrete decisions) is not a self-evident practice (Schwab, 1971), since formal theory, which by its very nature is expected to generalize, cannot incorporate all factors influencing teaching contexts. This is generally referred to as the 'theory-practice

gap' (McIntyre, 2005). As a result, although utilizing educational research might further student teachers' thinking about practice, it has proven rather challenging to use outcomes of research as input for reflecting on one's practice, and to 'translate' outcomes of research into concrete actions that fit one's specific teaching context. In order to improve the relation between educational theory and educational practice, additional supportive tools for such reflection and translation processes are therefore required (Janssen *et al*., 2015; Westbroek *et al*., 2020).

In this chapter, we describe a course that offers student teachers such support. The designed course helps them to uncover the personal theories that shape their teaching practice, and to further inform and enrich their personal theories with educational research literature. We argue, in line with Boyd in Chapter One, that research literacy entails more than simply 'consuming' research, that the interplay between research and practice is essential and that student teachers need help to bridge the theory-practice gap. In the following, we first provide some theoretical background on the perceived roles of research and theory in teacher education and the important notion of 'practicality', that helps us understand why it is so difficult to relate research outcomes to one's educational practice in a productive way (Janssen *et al*., 2013). We introduce *goal system representations* as a tool for bridging theory and practice. This results in the formulation of two design principles that guided the design of our course. We then describe the course, provide the results from course evaluations and present an exemplary case that shows the course's potential.

Educational research and practicality

Improving education is an important goal of educational research. Opinions differ on how this goal should be achieved, however. At one end of the spectrum, there is a plea for research into 'what works' in a general sense (see, for example, Education Council, 2006; Shavelson & Towne, 2002): which methods and approaches –regardless of context– yield demonstrably better results? Teachers should then implement these insights in their practice, which becomes evidence-based. Large-scale experimental research designs provide generic and 'hard evidence'. Small-scale and/or qualitative research is seen as valuable, but due to its limited generalizability only regarded as

'soft evidence'. Such research is more explorative and gives rise to further experiments, or is included in review studies that try to scale up the results of multiple studies to more generic observations.

The 'evidence-based' view, that gained enormous momentum through the 'no child left behind' act in the USA under the Bush administration, has often been criticized (e.g. Biesta, 2007; Bridges, Smeyers & Smith, 2009). On the one hand, critics point out that experimental research does not provide insight into the specific mechanisms that explain the effects: it usually concerns analyses that are too generalizing, and that are poor in theory. The fact that method A produces demonstrably better results than method B, therefore, offers a teacher who works in a specific context and who has to make decisions about the design of a lesson on a particular subject for a particular class, above all a statistical argument. As Boyd points out in Chapter One, the relationship between educational research and educational practice is more complex than proposed in the evidence-based movement. We therefore prefer to speak of *evidence-informed, research-informed, or influenced practice* (Hargreaves, 2006). Design research is an example of a research method that yields useful knowledge for practice by linking results to the evidence-informed design of a process (Bereiter, 2014). In such research, the emphasis is on criteria such as traceability and transparency of design, expectations about the teaching-learning process that follow from design choices, and research choices (The Design-based Research Collective, 2003).

Critics of the evidence-based movement also point out the danger of an instrumental, narrow conception of education, in which teachers are told what to do at the expense of their professional space. Biesta (2007) identifies a tension between scientific versus democratic control over educational practice and educational research. For this reason, Cochran-Smith and Lytle (2009) argue in favour of action research or practical research, in which teachers themselves take control by using research skills to understand and improve their own practice. They emphasize the importance of empowerment of teachers through action research. Quality criteria such as validity still apply to action research, but the emphasis is on implementation in one's own context (Meijer *et al.*, 2013). Action research produces striking cases from which the field can derive new ideas (Luttenberg & Bergen, 2008; Zeichner, 2001). Clearly, opinions differ on the function and form teacher research should have exactly. It is commonplace, however, that it should

follow a disciplined method for gathering and analyzing data and that its quality is first and foremost determined by substantiating the conclusions: are the results and findings convincing (Borko *et al.*, 2007).

Translating the conclusions into educational practice as Korthagen and Kessel (1999) envision, is never self-evident, not even in forms such as design research (see, for example, Janssen, Westbroek & Doyle, 2015; Ros, van der Steen & Timmermans, 2016; Westbroek *et al.*, 2020). This concerns questions such as: How do the conclusions fit my own practice? Does it fit my approach to teaching, my work context and my teaching beliefs? To understand what is practically useful for (student) teachers, we must first understand the context in which they work (Janssen *et al.*, 2015). In general, the physical and social context of the work environment determines the action: simply put, there are many restrictions that define the 'problem space' (what is possible) for developing teaching practices (Heft, 2012). For example, a teacher needs to ensure that the compulsory lesson material is covered in about 50 minutes in a room with about 25 students, and on the basis of available material. This means that – in order for the lesson to be successful – a teacher must ensure time-on-task within that time frame, achieve a minimum level of engagement with all students, and so on (Kennedy, 2016). In complex practices – such as teaching – several goals must therefore always be achieved simultaneously under very specific circumstances. In addition, the resources, time and cognitive capacity with which lessons can be designed are limited (Simon, 1996). Given these limitations, optimal (design) decisions are not realistic (Pollock, 2006). Rather, we decide in a heuristic way (Gigerenzer & Grasmaier, 2011): based on limited information, we design solutions that serve all our, sometimes conflicting, goals 'well enough'. If we want to expand our action repertoire, we do so by introducing (small) adjustments step-by-step, but only if we think the adjustment truly leads to an improvement (Pollock, 2006). It follows that both the context and the nature of decision-making processes determine which (types of) lessons teachers develop, how they implement them, and how they assess the practical usefulness of innovation proposals, such as the outcomes of research (Janssen *et al.*, 2013). Learning how to assess the usefulness of research outcomes for one's own educational practice is therefore an important step in becoming research literate.

Goal systems reflecting personal theories

Teachers of course need to be able to understand and interpret research literature in order to assess its usefulness. At the same time, in order for teachers to weigh the true value of research outcomes for their own practice, given the context that they work in, it is essential that they are aware of their own ideals and conceptions of education and how these become visible in their classroom. In other words, how do research outcomes match with their own goals? Constructing a goal system representation of one's teaching practice, contributes to such awareness.

Goals are personal, mental constructs that – implicitly or explicitly – constitute the focal points around which much of how people think and act is organized (Carver, 2012). What lessons teachers develop and how they link their goals to their teaching practice can be visualized in a goal system: a hierarchy of personal goals and resources that someone connects to different components in a lesson (Janssen *et al.*, 2013; Shah & Kruglanski, 2008; Westbroek *et al.*, 2017). It is often described as a context-dependent within-person mental construct which emerges over time (Kruglanski *et al.*, 2012) and makes visible how components of more general practical knowledge are integrated in decisions about practice (Wieringa, 2011).

Figure 1 depicts a section of a goal system representation. The higher in the hierarchy, the more fundamental and abstract goals become. At the top, they reflect the professional identity of the teacher, or 'identity goals' (Carver, 2012), for example 'train students to become critical citizens'. Such goals are deeply rooted, rather stable goals that hardly change over time. In the second layer, 'principle goals' are the means to achieve these higher goals. For example, in order to train students to become critical citizens, a teacher may want to 'make students aware of different perspectives' for examining situations. The lower in the hierarchy, the more the goals reflect concrete and short-term actions (*Ibidem*). The third layer represents the level of concrete lesson components: activities / resources that are used in the lesson to achieve the goals. In this example, the teacher can schedule a 'class discussion', where students learn to express and substantiate their opinion, or have students research a current case, organize a debate, and so on. In the bottom layer, the goal system makes the lesson preparation and approach visible (e.g. 'choose an enticing topic').

The goals in the different layers of the goal system are more or less interrelated. In addition, higher goals can be linked to several lower goals – in addition to class discussions, the teacher can also have students working together on a 'small group assignment' to make students aware of different perspectives. And lower goals can serve several higher goals: collaboration can also have the purpose of contributing to 'collaborative skills' or to the 'learning climate' in the classroom. Goals that have many connections with other lower and/or higher targets are considered more important than targets with few connections (Kruglanski *et al.*, 2012). Wieringa *et al.* (2013) call strongly connected goals the 'core goals' in the goal system (see also Westbroek, Janssen & Doyle, 2017).

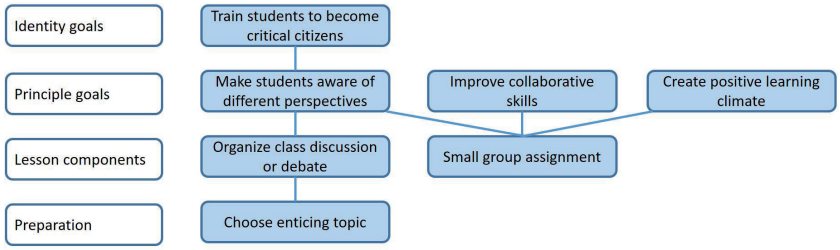

Figure 1. Section of a goal system representation

Goal systems are not static and evolve with experience, particularly in the case of student teachers who still need to develop their professional identities and routines, a process that can be complex and difficult (Pillen, Beijaard & den Brok, 2013). Goal systems can be characterized as a teacher's 'personal theory' about education (Kennedy, 2010); a snapshot of the views and beliefs that teachers consciously, or unconsciously, apply in their classes. They also form the lens through which teachers look at innovations and research (Westbroek *et al.*, 2017; Wieringa *et al.*, 2013): how do research outcomes relate to one's own practice and to what extent will the implementation of a proposed innovation undermine or serve personal goals? In our view, 'research literacy' therefore needs to move beyond a good understanding of educational research practices, but should also incorporate the extent to which teachers are able to recognize the potential of educational research for the development of their own personal theory. Research literacy is then made up of three different competencies: (1) interpreting research literature,

(2) using outcomes to reflect on one's own practice, and (3) translating results of such reflection into concrete adaptations of one's practice. This requires a research-oriented teaching methodology that teaches student teachers how to translate knowledge from research into the context of their own teaching practice. In the following section we will discuss the course we designed for this purpose, starting with the design principles that follow from practicality and goal system theory.

Course design principles

Based on the theoretical framework, we developed a course on research literacy in which we approach the definition of research quality from the perspective of the student teacher and ask them what 'practical use' (practicality) means to them. This forms the basis for a methodology that offers student teachers tools to, after they have interpreted research outcomes (competency 1), reflect on how their practice relates to these research outcomes (competency 2), and to translate them into their teaching practice (competency 3). An important part of the methodology is the articulation of a teacher's goal system representation.

Two design principles underlie the course: '*construct and reflect on a goal system representation*' and '*evaluate critically in dialogue*' (Westbroek *et al.*, 2018). Both design principles are equally important in the process of developing the three competencies that make up research literacy.

1. Construct and reflect on a goal system representation

By means of a step-by-step protocol (Westbroek & Kaal, 2017), student teachers are systematically guided in laying out their practical approaches, goals and motives. They construct a goal system representation that reflects an 'average', representative, lesson they would teach. The protocol was based on Little and Travis (2007) and has been used in previous studies into teachers' goal systems (e.g. Janssen *et al.*, 2013; Westbroek *et al.*, 2017; Wieringa *et al.*, 2013). A lesson is construed into building blocks, each of which are written down on post-its. The protocol contains the following steps:

- Think of a lesson that is representative of your teaching approach.
- Chart the components (steps or activities) that make up the lesson in consecutive order. What do you start with? What follows? Write each

component on a separate piece of paper. Place your pieces of paper in the right order.
- How do you prepare for each lesson component? Describe your preparation for each component on a separate piece of paper. Connect your piece of paper to the lesson component concerned, by creating a new row of pieces of paper underneath the lesson components.
- What do you hope to accomplish with each lesson component (goals)? Write down each goal you identify on a separate piece of paper. Create a new row of piece of paper above the lesson components, and connect the goals to the lesson components. Goals can be connected to several lesson components, and vice versa.
- For each goal, examine why you find it important. Write these higher order goals on separate pieces of paper and create a top row. Connect the higher order goals with your lesson components and/or goals.
- Review your goal system representation. What are you satisfied with [+]? What would you like to work on [-]? Which aspects are unclear or difficult to assess [?]? Place plus signs, minus signs, and question marks on piece of paper accordingly.
- Devise aims for development or action based on the review of your goal system representation.

Through this process, student teachers construct a visual representation of their lesson. It helps disentangle the building blocks of a lesson and identify means, lesson components and their preparations, and ends, the goals that are pursued. Take Jamila's goal system for example (Figure 2), who is studying to become an English teacher. Jamila's goal system representation depicts the structure of her English literature lessons about literary expressions, and how to apply them to stories, her lesson preparations and connected goals. She is not fully satisfied with the way she teaches her lessons:

> In my literature lessons, I read short stories with the students. I have a sense that they are easily distracted and don't really participate. When they have to answer questions about a text, most students don't know the answers. I have little insight in what they do or do not learn during literature class.

During the course, one's own practice, made explicit in a goal system, forms the frame of reference for reflective discussions about the practicality of research literature and professional literature. The objective is twofold: on the

one hand student teachers develop insight into their personal assumptions and theories in the form of means-ends relationships in their goal systems, on the other hand, they test these against external sources. They learn to reflect on the practicality of (research) literature in terms of the possible impact on their means-ends relationships.

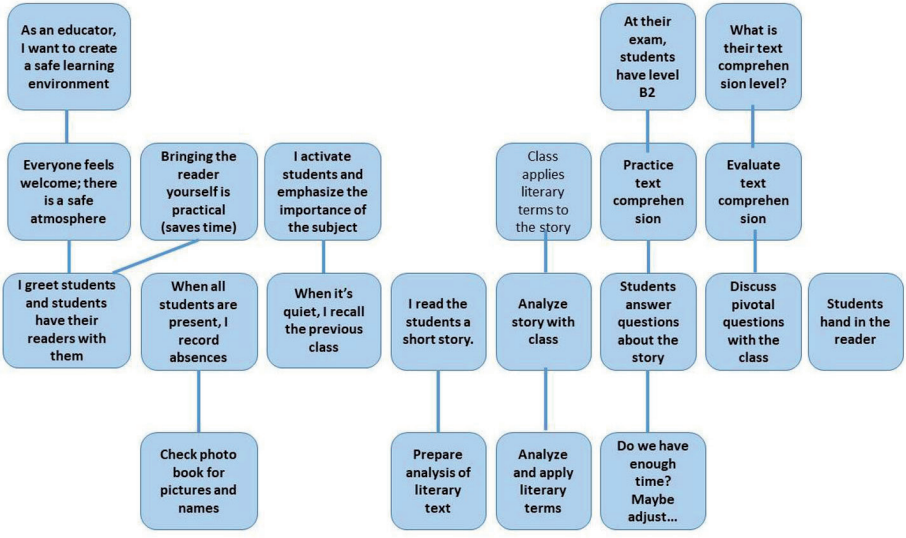

Figure 2. Jamila's goal system representation of an English literature lesson

2. Evaluate critically in dialogue

During classes, student teachers are split up into pairs and engage in dialogue about the quality and the practicality of the selected research studies and professional publications on three topical pedagogical issues: formative assessment, differentiated instruction and self-regulation. The selected literature represents different methodological approaches, ranging from quasi-experimental studies to small scale qualitative studies. Student teachers prepare for class by reading and analyzing the studies by means of an evaluation guide, a series of questions on the methodological quality, impact and practicality provided to them. In groups of four, students are invited to discuss their ideas on 1) clarity, 2) assumptions, 3) verifiability,

and 4) implications for teaching. The dialogue challenges student teachers to consider both methodology and content factors, and helps them develop insight into how theoretical notions emerged from studying practice (following Söljie, 2014). Student teachers are compelled to relate questions on content, such as 'How is self-regulation defined and measured in the study' to questions about practical guidelines, such as 'What teaching approaches support self-regulation?'.

Led by a teacher educator, student teachers subsequently discuss the practicality of the study for their own teaching practice, and for their goal system representation: Would you make adjustments in the structure of your lessons based on what you've learned? And how would that impact the goals you attempt to achieve? The dialogue challenges student teachers to explicitly voice their personal beliefs, including beliefs about what is practically useful in view of the work context, and test them against literature. Student teachers participating in the course are trained in different disciplines and have various backgrounds, which makes for rich discussions with a variety of knowledge and notions based on research tradition put forward. Their educational background experiences influence the way they appreciate educational research, and these mutual differences become a topic of conversation.

Course description: becoming a consumer of educational research

Place of the course in the TE program

The VU Teacher Education program concerns a 1-year post-master's degree program for an upper secondary school teaching degree in most school subjects (science, languages, humanities) . All student teachers have previously obtained a master's degree in the subject area they are going to teach in. They simultaneously take courses and do an internship at a secondary school. The program is structured around two learning trajectories. One learning trajectory is focused on developing (knowledge of) ambitious teaching practices, and includes courses on general pedagogy and teaching methods, theory of learning and instruction, and subject specific pedagogical content knowledge. The second learning trajectory aims to develop reflection tools,

abilities, and inquiry-skills to enable student teachers to investigate and develop their teaching practice (cf. Cochran-Smith & Lytle, 2009). The course on research literacy is part of this second trajectory.

Course design

The course covers 3,5 EC and starts two months into the program. It runs over three months and is completed halfway through the program, at which points student teachers should be able to (learning objectives):

- Evaluate the quality and applicability of different types of educational studies: distinguish different methodological types of educational research, identify strengths and weaknesses in quality, validity, and practicality, and value the study's outcomes accordingly (competency 1).
- Select and use relevant literature to assess and reflect on teaching practices: both research literature and professional literature (competency 2).
- Use relevant scientific and practice oriented literature for my professional development: utilize research and professional literature to adjust their goal systems and teaching practices, and inform fellow (student) teachers of promising research outcomes (competency 3).

Table 1 provides an overview of the different elements the course is made up of. After an introductory lecture, student teachers construct and discuss their goal system representations in an interactive seminar. Subsequently, three seminars are organized around the three topical issues in pedagogy (differentiated instruction, formative assessment, and self-regulation), in which student teachers engage in a professional dialogue. They prepare for each dialogue seminar by reading an assigned research publication and an assigned professional publications on the specific topic, and by individually performing an critical evaluation of the studies by means of an evaluation guide (design principle 2).

Table 1. Overview of course elements

Course element	Content	Purpose
Lecture (1)		
Introduction	Introduction to the course and to educational studies	Orientation on the course's learning objectives, content, design and assessment
Seminars (5)		
Seminar goal system (1)	Construct an individual goal system representation	Reconstruct and self-evaluate teaching practice (basis for competencies 2 and 3)
Dialogue seminars (3)	Critically evaluate three studies and engage in professional dialogue	Develop insight into types of research, research traditions, quality criteria and the practicality of research (making evidence explicit and clarifying implications) (competency 1)
Reflection seminar	Discuss goal systems in relation to literature, adjustments, research questions and evaluation methods	Learn how gained insights can be transformed to means-ends relationships in the goal system, that in turn are transformed into research questions and evaluation approaches (competencies 2 and 3)
Assessment		
Final assignment	Critical use of literature to reflect on and adapt one's GSR	Assessing student teachers on learning objectives (all competencies)

The three 90-minutes seminars start with a whole group introduction on the topic, after which student teachers enter into a professional dialogue in pairs. The outcomes of the critical evaluations in dialogue in pairs are discussed in plenary towards the end of the seminar. In a final fourth seminar student teachers present their goal system representations in groups of four, and discuss the adjustments they propose to make in their goal systems (design principle 2). They question each other critically on what they want to adjust, why and how. Together, they think of ways to evaluate the effects of the adjustments by defining new means-ends relationships and reformulating them into research questions. For example, if a student teacher intends to ask diagnostic questions to find out where students get stuck when completing

assignments, the following research question may arise: "Do students gain insight into their learning process when I ask diagnostic questions when they get stuck while completing assignments?" The research question may in turn prompt several reflective questions, 'Do I also get more insight?', 'Can I tailor my feedback more effectively?', 'Will students take more responsibility for their learning process?'. The course is concluded with a final assignment in which learning objectives are tested. In the assignment, student teachers first describe the adjustments they wish to make in their goal system representation, why and how. They also outline how they would evaluate the adjustments, and visualize the proposed adjustments in an adaptation of their goal system representation. Secondly, they write a substantiated report on potentially interesting ideas for fellow teachers, based on the reviewed and additional literature on the three topics.

Next, we present the evaluation of the course. We use the exemplary case of Jamila to illustrate how student teachers developed their goal systems during the course.

Course evaluation

Method

In the academic year 2017–2018, the course on research literacy was first adopted into the curriculum. During this period, we conducted a small evaluative study. The data that was collected consisted of 1) student teachers' course assignments, including their final assignments, goal-system representations, and evaluation guides, 2) informal field notes taken by teacher educators during classes, and 3) evaluation questionnaires filled out by student teachers. The questionnaire consisted of five closed-ended questions on a five point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. Student teachers were asked to rate the extent to which they had reached the course's learning objectives, and to rate the usefulness of constructing and adjusting a goal-system representation as a means to give direction to reflection (see Table 2), and to clarify and elaborate on each answer in essay questions. All 101 student teachers who took the course were invited to participate in the evaluative study. Thirty-seven student teachers filled out the questionnaire (N = 37, response rate 36.6%).

Findings

Table 2 gives an impression of the extent to which student teachers believe they have met the learning objectives. On average, student teachers judge their acquired abilities moderately positive, with scores between neutral (neither agree, nor disagree) and agree. Their elaborations on their answers support this view, for example: "Because there clearly is no holy grail in education, I understand the importance of scientific research. Research can feed debates, support opinions, guide policies, etc. It is very important to get acquainted with research, to talk about it with fellow students, and to learn to assess its value.", or "I still find it difficult to extract all these things from a research paper myself, but the classes and discussions with my peers have definitely helped".

Table 2. Student teachers' evaluation scores for the course on research literacy

Evaluation items	Student teacher scores	
	Mean	SD
I am able to evaluate the quality and applicability of different types of educational studies (learning objective 1)	3.65	.86
I am able to select and use relevant literature to assess and reflect on teaching practices (learning objective 2)	3.46	.84
I am able to use relevant scientific and practice oriented literature for my professional development (learning objective 3)	3.51	.87
I find the activity "construct a goal system representation" useful as a way to give direction to (peer group) reflection	3.51	1.02
I find the activity "make adjustments in your goal system" (based on literature) useful as a way to give direction to (peer group) reflection	3.32	1.03

Note. N = 37

The test scores on the final assignment correspond fairly well with the student teachers' self-reports on achieving the learning objectives. A large majority of student teachers (>80%) proves able to make adjustments to their goal system based on the studies literature. We see an example of this in Olivia's final assignment, when she reflects on the way she poses questions to her students: "The article on differentiated instruction got me thinking. In this article, the author writes about Emily, a student who is not noticed in class

because she easily copes with the learning material and causes no problems. I find that I sometimes ignore the silent 'Emilies' in class […]. What I want to improve is that I consciously think about the content of questions and also more consciously start thinking about who I actually want to ask the question to." She then suggests a method of focused observation – described in that particular publication– to evaluate the effects of the adjustment.

Most student teachers (>80%) have sufficient to well-developed ideas on how to determine whether the adjustments in their goal systems lead to the intended effects. Jessy, for example, intends to adopt formative assessment in her lessons and has attempted to include this in her goal system representation. She writes "To study whether this has the intended effect, one can pose the research question "Do exit-assignments in combination with feedback lead to better learning outcomes?". This can be examined, for example, by regular (formal) formative tests on topics that have and have not been part of the exit-assignments. In addition, interviews with students can provide further insights: How do they experience this lesson component? To what extent has the feedback on the exit-assignment contributed to their learning process?". Although the majority of student teachers described an adequate method for the evaluation of the adjustments in their goal systems, we did observe a tendency to test effects against student test scores. While the fact that lesson adjustments do not easily or quickly influence student test scores was often discussed in the dialogue seminars, student teachers often chose to include a comparison of test scores in their evaluation approaches. A similar observation was made for quantitative approaches, which were often favored over qualitative evaluation approaches. These findings seem to indicate that student teachers are more outcome oriented (in terms of learning outcomes), than process oriented, and that this and their beliefs about 'what counts as a proper research design' guides their thinking more than the question what would actually be informative to evaluate about the process.

The final assignment included a short report on potentially interesting ideas for fellow teachers, based on literature. The majority of student teachers (>75%) passed this aspect of the assignment. Student teachers that did not pass generally left out their critical evaluation of the studies that informed their ideas. They limited their reports to a description of the ideas they were recommending to fellow teachers.

A number of positively evaluated course aspects emerged from the elaborations in the questionnaire. 'Collaboratively discussing educational

publications', and 'critical review of teaching practice' and 'evidence informed adjustments to teaching practice' were the most mentioned positive aspects of the course. The main points of improvements concerned the practicality of the selected studies (i.e. not all studies proved to be of obvious practical use), and the added value of the critical evaluations of studies (i.e. not all student teachers found it useful to evaluate studies on their methodological quality).

Student teachers are moderately positive on the usefulness of a goal system representation, also shown in Table 2. Their elaborations on their ratings give further insight : "When you've made a goal system representation, you quickly see what you can improve and how to go about this. Putting it on paper makes it explicit. You can learn a lot from your peers in this process.", and "Creating the goal system helps you gain an overview of what you are doing now and what you would like to do. I like that very much. You immediately see what you still have to work on." More critical notes included "All my lessons are unique. I find it hard to make a representation of an average lesson", and "Teaching practice is more complex than a schematic model."

Exemplary case

Let us return to Jamila, the student teacher who constructed a goal system representation for her English literature lesson about how to apply literacy expressions to stories (Figure 2). She felt that her students were not participating sufficiently, they often are not able to answer her questions. She generally feels that she has too little insight in their learning processes. Following the critical dialogue sessions, Jamila decided to change her literature lessons. In her final assignment, she explains her adapted personal theory of her practice using her goal system representation (Figure 3):

> By having the students analyze the text in 'learning dialogues' (van den Tillaart, 2016), they learn to comprehend the text. By thinking out loud and exchanging ideas, the students learn from each other. In the "what?" section of my goal system representation, I'm going to divide the students into groups. Each group receives pieces of the text that they will analyze together. They then complete the exercises about the text and write a summary. This also changes the "why?" section. Students will develop better text comprehension, collaborate more and develop metacognitive skills. The teacher takes on the role of scaffolder. (van der Pol *et al.*, 2012).

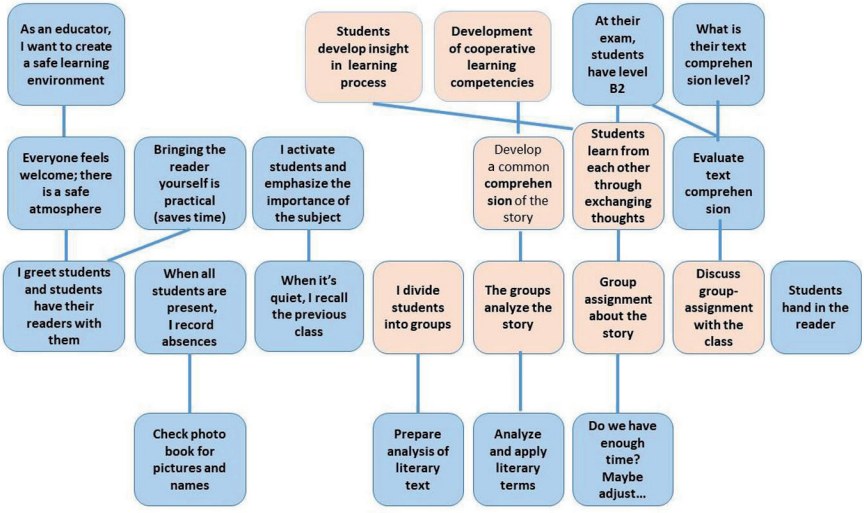

Figure 3. Jamila's goal system representation after finishing the course

Jamila's case shows how she used her understanding of how the literature (competency 1) related to her Goal System Representation and the challenges that she experienced in her literature lessons (competency 2), to adapt her teaching approach to her literature lessons. As a result, her goal system representation evolved both on the level of 'what she does' (lesson components) and on the level of 'why it is important' (the new goals that she connected to the newly added lesson components) (competency 3). This way, her Goal System Representation offers an insight into how Jamila developed her personal theory about how students can be supported to gain understanding of literary expressions, of their learning processes, and to develop cooperative learning competencies.

Conclusions

In our conclusion we resume the most important findings from the evaluation study summarizing how reading research articles on relevant and current topics for student teachers in a pre-service early career, and collaboratively discussing the quality, practical relevance and transfer value of the research, raises awareness of their current lessons and teaching and feed their

lessons in two important ways. We distinguished three research literacy competencies that need separate attention to develop: the competency to 1) interpret research literature; 2) use outcomes to reflect on practice; 3) translate results of reflection into concrete adaptations of practice. We formulated two design principles to support the development of these competencies: critical dialogue about the quality and practicality of research literature (Soljie, 2014), and the construction of and reflection on a goal system representation to support the fundamental problem of connecting theoretical notions to one's practice.

Overall, student teachers rated the course positively, and learning objectives, reflecting the three research literacy competencies, were mostly achieved. Student teachers considered the goal system as an important tool for self-evaluation, and for translating research literature to practice. The goal system representation reflected the student teachers' personal theories and offered a realistic starting point for discussing development. They established how they wanted to develop their practice, and which adaptations in their goal system representations they considered feasible and desirable. In this manner, literature functioned as a perspective for possible points of improvement. The dialogues between student teachers, and between student teachers and teacher educators were also appreciated by students. The conversations in the seminars gave rise to a range of subjects concerning the quality and practicality of the studies. Mutual differences in views on the value of theoretical knowledge and research were regularly expressed. Previous research into the role of theory in teacher education has already demonstrated the importance of a dialogue about theory and research in relation to practice: conducting a meta-dialogue about the nature and value of theory for practice, that makes way for the different perspectives of the student teachers, is expected to contribute to an improvement of the relationship between theory and practice in their future careers (see, for example, Sjölie, 2014).

Aside from the fairly positive course appreciation, some student teachers have also expressed criticism. Although they see the value of the literature and dialogues, at this stage of their teaching career they are first and foremost looking for insights, approaches and tools that are directly applicable in practice. Some student teachers therefore find the practicality of the selected articles, especially the scientific ones, too limited. Behind these critical notes lies the implicit view that educational research does not yield descriptive knowledge, but prescriptive knowledge. Student teachers

hence expect that this knowledge is or should be directly applicable. Here too, the dialogue can further contribute to a more nuanced view of the function of educational research and educational theory for teaching practice (cf. Sjölie, 2014). Most teacher education programs incorporate a means to develop a professional inquiry approach among their student teachers. The focus is often on student teachers' active participation in practitioner research, which encompasses numerous challenges. With the development and implementation of the new course on research literacy, our teacher education program has taken a new path, with an emphasis on acquiring knowledge and insights on practicality from research literature, and by using goal system representations as a 'bridging tool' for evaluating the practicality of theory and research evidence. In our view, the devil is in the detail and the concept of 'teachers' research literacy' must be extended to include tools by which the broad approach of professional inquiry can be implemented. Goal systems representations offer one approach that teacher education teaching teams might consider. In this chapter, we've illustrated how reading and discussing research literature not only contributes to the development of our student teachers' pedagogical knowledge, but more importantly, fuels a professional dialogue among prospective teachers. We believe that their inquisitive attitude will receive an important new impulse, particularly through the start of this professional dialogue. The contribution that the course can make to the inquisitive attitude of student teachers argues in favor of seeking further connection between the course and the other components of the teacher education program. Therefore, we've taken several steps to firmly embed the course in the curriculum and forge these connections. We've aligned the pedagogical topical issues the course literature is centered around with themes they encounter in their pedagogy courses, and we've introduced an elective follow up course in which student teachers conduct practitioner research. The course on research literacy has the potential to function as a valuable stepping stone to conducting practitioner research, which may take on the form of action research based on their goal system representations. After all, the student teachers formulate initial research questions to evaluate their adapted goal systems.

Our approach to developing teachers' research literacy also offers a promising avenue for the professional development of in-service teachers. Like student teachers, many in-service teachers experience a gap between research and teaching practice (e.g. Admiraal, Smit & Zwart, 2015). Moreover,

they often seem to stick to the routines they have developed throughout their career, without critically examining their effectiveness. This is a disadvantage for their role as coaches of in-service teachers, because it makes it less easy to discuss the motives and conceptions behind their teaching. By showing in-service teachers how to build their own goal system representation, they gain a renewed awareness of their own personal theories.

In closing, we observe that many teacher education programs as well as teacher professional development initiatives, both nationally and internationally, are looking for and developing ways to stimulate the development of research literacy in (student) teachers. We believe we've developed an accessible and effective approach in doing so. We hope our approach will inspire others, and invite them to use the design principles we've put forward in this chapter.

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CHAPTER SIX

Action Research Journals: A Window into How Student Teachers Build Research Literacy

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ABSTRACT

This chapter focuses on the development of research literacy by nine practising teachers who were taking part in an initial teacher education programme in the Caribbean. During a compulsory research focused course entitled 'The Reflective Practitioner', they completed and submitted three reflective action research journals, for which guidelines and rubrics were provided. With informed consent from the nine graduates, those journals were analysed thematically with five themes emerging. The analysis was able to trace the emotions, experiences and projections of the research participants in order to demonstrate some essential academic and non-academic components of developing research literacy, including linking research to practice and the emotional element of working through research-informed change in practice. This chapter argues that these components should be considered by all teacher education programmes.

KEY WORDS: research journals, teacher education, teacher research literacy, reflective practice

Situational Context

This empirical study addresses the development of nine teachers' research literacy within an initial teacher preparation programme in a higher education institution which is a School of Education, located within one campus of a regional university with five island campuses within the Caribbean.

The programme of focus is postgraduate and in-service, targeted at initial professional preparation of secondary school teachers who have completed an undergraduate programme in the subject area they teach. The Postgraduate Diploma in Education programme consists of four compulsory courses, one of which is 'The Reflective Practitioner', an action research course. Central to the assessment of this course is a reflective component which permeates each stage of the participants' practice-based action research enquiry. The pivot of this investigation is the reflective journaling experience of a cohort of nine Modern Foreign Languages (French and Spanish) secondary school teachers who participated in the in-service teacher education progamme for the duration of one academic year.

A core focus for the participant student teachers of this action research course includes inquiry into an area within the student teacher's school, classroom or educational setting that requires improvement or change. It builds on that student teacher's capacity to be able to inwardly interrogate his or her understanding of what it means to be a teacher. This, in turn, is intended to guide him or her towards establishing a professional identity in keeping with best reflective practice. Each student teacher that reads for this course is required to engage in deep reflection in order to conceptualise and enact the action research study as well as produce the report.

As participant student teachers engage in identifying issues in their educational context, they draw on their experiences as well as their understanding of pedagogical and foundational concepts in education taught in other concurrent courses. This practice-based enquiry affords these student teachers the opportunity to critically examine various facets of their profession, their own experiences when they were students themselves and those of their peers as presented to them through collaborative activities. Combined with exposure to literature based on teacher reflection and examples of best practice in pedagogy that are both contextually and culturally relevant, these student teachers develop reflective habits as they pertain to their practice and their teacher researcher persona. These reflective habits manifest themselves

in a three-part reflective action research journal which chronicles the development, implementation and outcomes of their chosen interventions in their school and classroom contexts.

Background to the Research

As early as 1981 Cruickshank and Applegate defined reflective teaching as "the teacher's thinking about what happens in classroom lessons and thinking about alternative means of achieving goals or aims". Later, Osterman (2004, p. 1) adds that "reflective practice… is a way of thinking that fosters personal learning, behavioural change, and improved performance". This study investigates the professional growth and evolving perception of teacher identity as a reflective practitioner among nine student teachers of Modern Foreign Languages who completed and reported on their classroom-based action research studies. As part of the core content for The Reflective Practitioner course, participants were encouraged to examine, using an action research model, specific issues encountered in their classrooms with the intention of improving student learning.

The action research experience of this group of secondary school Modern Foreign Language teachers was intended to enable them to assess their students' needs, while documenting the steps of inquiry, analysing data and eventually making informed decisions that could contribute to their desired outcomes. Thus, the course facilitated on-the-job professional learning (McNiff, 2005). Student teacher participation in this type of classroom-based action research enabled them to improve different aspects of their teaching and learning (Nunan, 1990). Through their small-scale research, the main purpose of which was to find a solution to a problem, they sought to address concerns which are closest to them and those over which they could exhibit some influence and make changes (Ferrance, 2000). Since this action research was aimed specifically at a disciplined inquiry done by the teachers with the intent that the research will inform and change their future practices, the reflective element was at the nexus of the investigation.

Built into the iterative action research process of planning, action, observation and reflection, as the researcher plans the next cycle (Kemmis & McTaggart, 1990) is that strong need for researcher reflection. At each stage of the action research cycle, the student teachers were required to

contemplate their own contexts through a three-part compulsory reflective journal which had a 20% weighting of their final score.

Journal guidelines provided in the course

Participant teachers were provided with general guidelines for the action research journals as well as with a rubric detailing the criteria to be assessed. This proved invaluable in guiding the teachers' focus.

In the first stage, 'Reconnaissance', student teachers identified the focus of their inquiry and created a plan to observe and record their Modern Foreign Language classroom activities. Dillon (2008, p. 11) highlights the reflective element of the reconnaissance phase of action research as he purports it to be an exploration of both the investigator and the situation. He itemises two areas of investigation to be referred to as: "self-reconnaissance – the exploration of the investigator's beliefs and behaviours within the areas of leadership and management, and situational reconnaissance – the exploration of the research context, investigation approaches and the literature related to the management of knowledge".

As these Modern Foreign Language student teachers moved to the 'Implementation' phase, they interrogated their design, their data sources and synthesised learnings from theory into their practice. In turn, this phase encouraged teachers to critically reflect upon their findings as they made an informed decision on the next planned cycle based on what has been learned (Winter & Munn-Giddings, 2001). At the final stage of the action research process, they discussed reflectively the growth and challenges faced in the action research process and how they felt they had changed on a personal and professional level. Their future plans for classroom-based enquiry were addressed in their journal reflections as they were prompted to consider their future actions as reflective practitioners in their Modern Foreign Language classrooms.

Bailey, Curtis and Nunan's (2004) discourse on the benefits of reflective practice on professional development among teachers is highlighted in the main thrust of this course to encourage teachers to think, analyse and objectively judge their classroom action as they identified and planned an intervention for problems in real practice their classroom contexts. As these student teachers sought strategies and solutions to solve their identified areas of focus, meaningful consideration, focused observation and deep

reflection acted as enablers to the reflective process. These in turn, fostered teacher self-examination, professional growth, innovative practice and the cultivation of their personal teaching philosophy.

Purpose of the Research

This study seeks to investigate the extent to which the action research experience of a cohort of nine modern foreign language student teachers builds their research capacity through reflection. The ultimate aim is to use the findings to inform teacher educators of the lived process that teacher researchers undergo in their academic journey of building their research capability. This research therefore proposes to build teacher educators' awareness of their students' needs, challenges, and enablers so that research courses could effectively facilitate adequate content and delivery in their attempt to develop research literacy. The research examines the growth and development of these teachers through their engagement with action research and a prescribed action research journal component. These journals are the primary source of data for this research. The research question is: How do the reflective journals of student teachers, completed as part of an action research project, reveal the development of their research literacy?

Review of Literature

Research Literacy

Teacher research has been discussed and promoted from varying perspectives in a wide cross-section of literature on teachers' practice and teacher education. Such focus of attention is exemplified in a British research review on practitioners' use of and engagement with research (Bell *et al*., 2010) and earlier in 1999 by Cochran-Smith and Lytle who examined the teacher Research Movement in the USA prior to 1999.

The notion of research literacy was formerly conceptualised in some places as 'research capacity-building' (Gorard, 2001). Some clarification emerged with the suggestion that 'capacity' was not limited to quantity but also needs to include 'potential'. Gorard further suggests the use of "research capability" to describe what the work of the Research Capacity-Building (RCB)

project of the British Teaching and Learning Research Programme sought to accomplish. Yet, almost contradictorily, there was in the same jurisdiction a call for more teacher enquiry (Somekh, 1995) but a hesitation to value its contribution (Foster, 1999; Gorard, 2001). In his 2001 report Gorard himself indicated that teacher enquiry action research projects reflected little involvement in the reporting and analysis phases by teachers themselves. Therein, it seems, lay the need for the then termed 'research capability' building among teachers.

Within recent years, research capability has come to be referred to as 'research literacy' which especially in teacher education and professional development programmes, has been seen to foster elements of collaboration, critical enquiry, authentic practice and reflective practice. The deliberate attempt to build this core skill among early career practitioners and trainee teachers can lead to intrinsic benefits in classroom practice and in teaching and learning as a whole. It is important to acknowledge that research literacy is viewed by some as an essential component of what teachers do on a daily basis and not necessarily externally driven nor focused on entirely clearly identified and established research projects (Carter, 2015).

Waring and Evans (2015) suggest that a critical and meaningful integration of research to inform and evolve effective teaching and learning practices is an essential requirement for teachers in twenty-first century learning environments. Teachers would be overtly taught to become research oriented and literate as they learn to utilise classroom data discerningly to inform their own practice and even help to develop that among their own students and other practitioners within their scope of influence. Additionally, coming to value their research as a tool for improving their own practice is a critical initial element of building this type of literacy among teachers (Evans *et al*., 2017).

For professional learning to be meaningful and near authentic, collaboration is critical. Teachers must be able to collaboratively design and implement professional learning activities. This collaboration is not limited to their classroom participants, the students, but may require the teacher to engage with other teachers, parents and administration in some cases (Webster-Wright, 2010).

Being able to generate and evaluate evidence they collect from their practice as they simultaneously learn to derive meaning from data emerging from formalised educational research (Shank & Brown, 2013) is a way that research literacy can be built as teachers learn the how-to of classroom-based

enquiry. They must learn to inform, develop and translate ideas into classroom practice in meaningful and manageable ways for the benefit of their schools and their classrooms.

The idea of research literacy, therefore, is not limited to the teacher's ability to use, apply and develop research as an integral part of one's teaching classroom practice, but rather extends to the capacity to integrate evidence from various sources. It fosters teacher intuition and adaptability. Waring and Evans (2015) address a teacher's "willingness to engage with research in order to assess its utility and ripeness for adaptation to context" (p. 18). They underscore the importance of critical scrutiny of data from sources that are either classroom based, from active research or from researcher-led studies.

Action Research

The teacher education programme is designed on the basis that participating in action research builds research literacy of teachers through reflective practice. The 'technical rationality' of scientific theory has not given prominence to the kind of reflective practice which has been useful in situations which fall outside of standard technical problem solving. According to Schön (1983), to the rigid, linear technical rationalist, the use of reflection in research would evoke confusion and contradiction within practitioners.

However, teacher professional development in reflective practice as well as research methodology can enable the bridging of theory to practice as well as knowledge sharing and collaboration among novice and trainee teachers. This builds competence towards becoming research literate (Lillejord & Børte, 2016). Reflection and inquiry enable practitioners to expose their tacit understandings, stimulate change in their approach to solving problems and develop new courses of action (Russell, 2005).

Senter and Forlenzo-Bailey (2000) link reflective practice in the role of teacher-as-researcher to the research paradigm of action research. There is divergence in the way these two paradigms of reflective practice and action research are conceptualised, however some key similarities are noteworthy. The focus on the teacher as the research leader is central to both approaches and the goal of the teacher in both is for the sole purpose to improve teaching, learning, and the institution.

For true reflective teaching to occur, action research must be overtly presented to student teachers and they must be taught how to reflect in the

same way that they learn how to conduct research. As Liston and Zeichner (1990) argue, reflection and action research involve the same "cycles of plan, act, observe, and reflect" (p. 241), therefore teachers' developmental experience in research literacy must include the understanding and practice of these cycles. When supported by a professional development exercise, teachers may come to a better understanding of their responsibility for their own classrooms. Killingsworth Roberts and Hickmann (2010) report how participants in their study "traveled the ambiguous and difficult journey of uncovering a research question and determining a method of examining that question" (p. 262) and noted that "ongoing expectations and prior experience eliminated the underlying concerns about participants' abilities to perform an action research project" (*Ibidem*). They also outline a process they used to facilitate the analytic processes the novice researchers needed to engage in.

Key to the research literacy development in the context of the Postgraduate Diploma in Education programme is the enabling of student teachers to link research to practice. Merrill (2002) suggests that learning is promoted when knowledge is applied and integrated in the real world and points out that most instructional design theories advocate application of knowledge and skill as a necessary condition for effective learning. Further to this, novice teachers' learning is enhanced when they are given multiple opportunities to apply what they have learned in meaningful contexts (Gagne, 1985; Gardner, 1999; Perkins & Unger, 1999). The Reflective Practitioner course was designed to provide the student teachers with the opportunity to enact an action research project which allowed for this linking of theory with practice. Participants in the course would have been required to use their learnings from their course on Pedagogy as Process to plan for their action research intervention.

Teacher-Researcher Identity

A critical part of addressing the transition to becoming research literate, is a focus on the teacher's understanding of him or herself as a researcher. Goodnough (2010) purports that comprehending how a teacher constructs and deconstructs his or her identity to incorporate literacy as a researcher when they become engaged in teacher-centered action research, relies heavily on the teachers' perceptions of the process and the authenticity of the reflective practice they may engage in during the research. Equally important in teacher educators' understanding of the process of literacy development in research are

the non-academic but essential qualities and traits that support the experience of the research effort. These are the elements that contribute to the teacher-researcher identity. For example, resilience and emotions and how individuals make sense of the world are essential in trying to understand their own personal theories of learning. These understandings can guide and build teachers' research literacy as they use their research experiences to make informed pedagogical decisions (Evans *et al.*, 2017). Student teachers need to develop a will to learn; a will to encounter strangeness; a will to engage; preparedness to listen; a willingness to be changed as a result of one's learning; and a determination to keep going (Barnett, 2007, 2011).

Methodology

The following methodology was employed to answer the research question: How do the reflective journals of student teachers, completed as part of an action research project, reveal the development of their research literacy?

This research falls within the qualitative paradigm. It is a case study. Its purpose is to identify and discuss how practitioners' research literacy is captured in the reflective process of their initial action research experience, and to suggest how these findings could inform teacher educators' attempts to build teachers' research literacy. Data for this study comprised three action research journals which students were required to submit as part of The Reflective Practitioner course on the Postgraduate Diploma in Education programme. Permission was granted by the nine graduates of the Modern Foreign Language cohort of the course to use their action research journals for the purpose of this research. Approval was received from an Ethics Committee of the University of the West Indies for the conduct of this research. The selection of participants was purposive. They comprise one Modern Foreign Language group of nine in-service secondary school teachers on an initial teacher education programme of one year duration (2019–2020). They are all female ranging in age from 33–37 years with one being 44 years old. The latter had been otherwise employed for 14 years prior to becoming a teacher. The nine teachers have been secondary school teachers for between 6–11 years.

There is an element of insiderness in this research as one researcher has been the main research facilitator for these nine students as well as for their practicum supervision, and has taught this course for 16 years,

having experienced the iterations in its development. The second researcher facilitated a large portion of their pedagogy course and also supervised the research of ten other student teachers on the course. We feel that this research, in a sense, models the action research of our students, in that we are seeking to observe and learn from our students' experience and output, and then to act upon our findings in order to improve the learning experience and performance of future students.

Thematic analysis drove the data analysis for this study. Firstly, the relativistic nature of participants' experiences as recounted by them, and of their perceptions as articulated by them, paints an epistemological picture that is comprised of multiple subjectivities bearing in mind that the research participants, student teachers, are human, after all. Also, the nature of the data source had to be borne in mind, making interpretative analysis an inescapable but preferred route in this qualitative study. The fundamental guidelines for the action research journals were based on chronology and growth. On one level, the analysis enabled a developmental perspective to be represented.

Braun and Clarke's (2006) 6-step thematic analysis process was followed:

Step 1: Become familiar with the data – the journals were read and re-read to gain a clear understanding of what the writer was trying to convey. For example, we had to take care to avoid our interpretation to cloud meaning.

Step 2: Generate initial codes – initial codes were generated, including those words that had initially 'popped out'. These had to be re-examined within the context of the fuller text to ensure that the intended meaning was captured, and not the meaning of the word in isolation.

Step 3: Search for themes – the codes derived from the text were clustered under main headings or categories which adequately provided an overarching concept or idea. A top-down (Braun & Clarke, 2006) approach to analysis drove the placement of codes under broad foci of the researchers' choice. At the same time, these categories were placed under the relevant a priori chronological headings which became the themes. The guiding questions which were given to the student teachers to write their journals heavily influenced the chronological headings. Those questions were:

a) What was your experience developing the focus of your study?
b) What was your experience designing and implementing your intervention?
c) How has engagement in this action research project changed you?

So, chronology influenced the themes in order to establish one kind of coherence in the data.

Step 4: Review themes – themes were reviewed to ensure that they did summarise the categories therein and also to verify that they adequately represented the relevant categories of data. The guiding questions were not maintained as the main themes but were framed according to the data that emerged under the broad guiding questions while maintaining a chronological order.

Step 5: Define themes – when Step 4 was completed, the naming of the themes was finalised to ensure that there was a fit between the emerging categories and the theme.

Step 6: Write-up – the final stage of the analysis was the reporting of the findings of the analysis according to the themes and categories as presented below.

Findings

Research literacy in this study is conceptualised according to five broad themes that emerged from the teachers' action research journals: arriving at a focus of study; making decisions about data collection methods and analysis; experiences in the intervention process; applied learnings during intervention, and changes in teachers during the research process. The findings are presented according to the processes they underwent in order to capture how their research literacy was developed and experienced. Their reflections and reports about pedagogy are incorporated.

Arriving at a focus of study

My values and beliefs encourage me to always do my best, and I expect the same from my students; to give up, would be unbecoming of my nature and my duty as a teacher.

Teachers' experiences in deciding on a focus for their research are categorised under three general headings: The teacher self; Students as motivation; Teachers' support.

The teacher self

The category of 'The teacher self' was reflected in comments made about: Initial feelings; Perception of self as researcher; Process; Expectations of the experience; Conceptualisation of the experience; Teaching philosophy/ perception of self as professional; and A broader vision.

Initial emotions expressed by teachers included "reluctant", "hesitant", "feel strongly about" [the issue], "excited". Some acknowledged their status as novices in research. As their new researcher self was germinating, they began to have expectations of the research experience and hoped their students would be engaged, and generally wished to make a difference and that the benefits of the research would be seen by others. With these initial emotions and expectations, it was interesting how some initially conceptualised the research experience, either as a "journey", "a mystery", or "a key that unlocks the door". Their underlying motivation seemed to be intrinsic, driven by either a teaching philosophy or a personal philosophy as seen in this comment that shows a starting point to the research: "From that moment, *I knew I was failing my students* and I needed *to find ways to reach these students* personally, academically and emotionally" (italics in original). "Making a positive difference" seemed to be a recurring trend in their motivation. The notion of "change agent" emerged alongside one's lamentation: "I was still not achieving that 'no child left behind goal'".

Students as motivation

The category of 'Students as motivation' was structured according to: Student performance and student improvement; Student passion and attitude; and Student learning and student interests.

Getting their students to higher performance levels and with increased motivation were major fillips in their own motivation to conduct this research. The teachers in this study revealed that they used data to examine student performance and act upon it. For example: "Data…revealed that the pass rate in Spanish was fluctuating every year". Finding ways to make students value the subject more was one element in student performance that was noted as well as teaching in ways to ensure that students learn. Despite some assumptions about students and learning, the teachers sometimes questioned their beliefs and were ready to learn from their students as part of their research experience. They also paid attention to their students' interests, learning that some "liked to read comics", and another sought students'

feedback on their interests by inviting students to write a short letter on their views on their French learning experience.

Teachers' support

In the initial phases of the research effort, collaboration was a common feature to all the teachers represented in this study. School principals, Heads of Departments, colleagues, peers on the course and course tutors were those they collaborated with. Collaboration purposes included accessing resources, seeking permission to conduct the research and moral and professional support from departmental colleagues: "I began liaising with teachers… surprisingly, many began to share their thoughts". This collaboration which the research experience fostered seemed to be new to some of these student teachers who were now benefiting from collegial support. Collaboration with their course tutors was also cited as a significant contributor to helping them refine the focus of their study.

Several of these 'novice researchers' cited literature in the field as an oar in their stormy start. As they delved into the literature and past projects, they saw gaps to be filled and were seeing areas of interest in their practice from new perspectives. They were entering the world of research by recognising the usefulness of becoming acquainted with the literature pertinent to their research interest.

Making decisions about data collection methods and analysis

Action research was a new experience and I felt daunted by such a task; Designing and choosing instruments for this research were very problematic and nerve wrecking.

Four categories comprise this theme: Lecturers and tutors; Extensive reading/research; Careful thought/exploring; Students' capabilities.

Lecturers and tutors

Because teachers participated in the course named 'The Reflective Practitioner' and belonged to relatively small groups which functioned as tutorial groups, students were able to receive individual attention in formal sessions and outside of those via emails to their tutor. They were given informal deadlines

for work in order to get feedback before formal submission of various parts of the assignment were due. One person summed this up when she said that she relied on the lectures and advice provided to them by their tutors and course coordinators to decide on which methods of data collection she would use. Apart from the individual attention, there was a module comprising plenary sessions where the 'big' action research concepts were presented.

Extensive reading/research

Each student had specific research needs in terms of knowledge and understanding of research paradigms and data collection and analysis in general. So apart from guidance from their tutor, reading research was necessary for them to fine-tune their methods. Their journals indicated extensive reading of empirical and seminal research which provided understanding of research terms and data analysis approaches.

Careful thought/exploring

Even after tutors' guidance and support from plenary sessions, and based on what they had read, students would have had to process their new learnings in order to create a fit between what they learned and their research purpose. In addition to reading, the research process included careful thought in order to design and implement the intervention for the study, as one teacher explained. Exploring the various methods of data collection was another phase identified. This exploration led to the point of concluding that various instruments were needed for triangulation of data.

Students' capabilities

There were instances where the choice of data collection was determined by what the students were able to do in particular scenarios. For example: "This class was not willing to write journals… Thus, I chose instruments that would reduce the load of students and of course be done during class time". Poor writing performance of students and their general behaviour motivated another to use stemmed student journals. The novice researchers learned soon enough that they had to understand their participants in order to design their data collection methods.

This process and experience of making decisions about data collection methods and analysis should be borne in mind when considering the preparation of practitioners who are becoming researchers.

Experiences in the Intervention Process

I had no idea about designing instruments and not only that, I had no idea how to implement an action research.

This theme comprises five categories:

Pre-intervention; During intervention; Reflection Post intervention; Outcomes/Learning; Projection.

Teachers' comments demonstrated how the research intervention process enhanced their professional capacity and learning in terms of their level of research literacy.

Pre-intervention

Prior to implementation there was excitement and curiosity about seeing how the students would work and be challenged and there was a report that students were thrilled to start, which boosted the teacher's motivation. They were "anxious and worried for the actual intervention" but also eager to implement. Designing the intervention was challenging to them, and at times they found the process to be moving slowly. Preparing the details of the actual intervention, such as lesson planning was also time-consuming and stressful. Demands on their time, such as the "struggle to write journals" added to their challenges. Evidence from the journals also showed that meticulous validation of research instruments was something they learned was a critical part of conducting research. Being able to "trust the process" was an outcome of their experience of the early part of the research experience.

As they struggled with the newness of the research experience, the novice researchers adopted a positive stance toward the implementation of the action research. They even "eagerly anticipated" it, and became "proactive" to ensure the prevention of any hiccups and even planned trial runs. They adopted the stance of a traveller on "a learning journey".

During intervention

They grew in capacity as researchers as they achieved more clarity. Feeling encouraged and renewed passion were reported. They were driven to revisit their plans and monitor. Transformed teaching behaviour was evident as one "transitioned into an actress performing to [her] student audience". Their energies were now directed to ensuring that their teaching space was

prepared. Any perceived success motivated them to "continue with more effort and determination".

The combination of the school context and the demands of the teacher education programme was challenging for all. Struggling with balancing their time and effort in areas such as locating resources, non-teaching duties, balancing their professional and personal life, led one to feel that she "was going insane". Yet there was the constant duality of being "happy but mentally struggling to keep afloat".

Despite the challenges the student teachers faced, they saw the connection between theory and practice, as one teacher indicated: "I realised the connection between theory and practice, which made me appreciate even more the process of what was being done". The research process resulted in learning through reflection and action. Their learning also depended on the specific intervention. For example, by catering to the diversity in the classroom, one teacher began to "profoundly understand my students and how they learn". There was the observation that the study reinforced the importance of monitoring in their teaching.

Enjoying the preparation of the lesson plans and looking on as "the students eagerly completed their projects", and seeing students enjoying the intervention and being very receptive to the teaching experience were valuable outcomes of the research intervention. The teachers seemed gratified by their students' responses after they had spent considerable time and effort "to always supersede [students'] expectations". For many, teacher-centred teaching was bringing rewards. "[Students'] eyes lit up", they were now recommending how they wanted to present their homework. Students' preferences and propositions were being accommodated. Students' feedback reflected an appreciation of the new strategies the teachers were using: "Miss how come (sic) you don't teach like this all the time". Teachers were seeing a difference between their students' response prior to their teacher preparation programme and during the research intervention. The action research experience facilitated this examination and reflection.

The research journey brought out the innate resilience in the participating student teachers. There was a certain determination to make a change especially as seen in a case where colleagues in school thought that there was little hope of student improvement. Confusion about developing research interments did not prevent the option to 'rally on'. The will to implement newer and better approaches in the classroom was a source of strength

whereby they were able to "withdraw [their] fears" in order to reap the benefits.

The in-service nature of the teacher education programme also offered the student teachers the opportunity to solicit colleagues' assistance.

Reflection post intervention/Projection

At the end of the intervention, the results of the research intervention were generally satisfying to the student teachers. One felt that the entire process was not as tedious as she had imagined. It was described as "an incredible learning experience" and "a rewarding process". Some benefits cited were enhanced pedagogy skills, better organisational skills, improved relations with students and colleagues, and students were more motivated to learn. One participant felt that she had undergone "a metamorphosis of perspective" as the research project evolved.

The practitioners indicated that they would carry out further work in action research based on their experiences during the project. Most of their comments were general though, and not specific. These included the intention of incorporating the intervention strategies in all classes, and in retrospect, changing some parts of the study which needed more clarity. Some hoped to implement another study with a new focus and target group. Improving upon or changing aspects of their practice was the motivation for all of them. Among their feelings were that implementing another research intervention should not be as challenging, and planning would take up less time. Additionally, sharing insights from future research within the department and with administration was mentioned as well as putting the needs of students first. There was also an interest in conducting research beyond the classroom by working with colleagues to investigate a recurring, widespread issue affecting learners in the school. In a general sense, the nine participants were motivated to conduct more research in their schools and did not seem daunted by the initial research experience.

Applied learnings during intervention

Even though I was taught about instruments and guided by my tutor, I was still a bit confused but nevertheless I rallied on.

This theme is elaborated through four categories: Reflection and discernment; General Learnings from the course; Ethics.

Reflection and discernment

The name of the research course is 'The Reflective Practitioner". Its "intention is to provide the participants with the opportunity to develop a plan that is reflective of their: specific beginning point as novice researchers, identified needs, experiences, and operating contexts" and also "to encourage participants to embrace their roles as change agents" (Course Outline 2019/2020, p. 26). Students were guided at every stage of the reflective process. They reported that they were taught about reflecting on their practice in different ways, reflecting on what went wrong and figuring out ways to improve, as well as what caused lessons to work out as planned. They also recognised that the research process began with the stage of self- reflection, awakening the reconnaissance through which they identified a problem that existed in the classroom. They saw that the course enabled them to have the will to make a positive difference. They also viewed their intervention as being potentially impactful on not only their professional development but on the lives of all students across the curriculum. One student commented that she had engaged in "one of the highest levels of structured personal reflection" as a teacher in terms of one's own practice.

General Learnings from the Reflective Practitioner course

Participating teachers were able to identify in what ways they had benefited from the course. Elements specified were that teaching requires a cyclical approach, time management is crucial, and unit and lessons plans are beneficial. The ability to scaffold the teaching of a topic was also noted.

In all aspects of the course, they manifested the ability to link theory with practice in that they used their understanding of the action research paradigm to configure their reconnaissance, data collection and analysis.

Importantly, they got an experience that integrated pedagogical and research skills.

Ethics

In conducting their research, these participating teachers encountered and incorporated ethical practices which they described individually noting

the avoidance of any intentional deception of participants and ensuring as little bias as possible by not siding with the participants. Another attempt at ethical practice was the reporting of multiple perspectives. To add to this, one person declared that she did not disclose only positive results but instead also reported contrary findings when necessary. Respecting the privacy and anonymity of the participants was another way a teacher manifested ethical behavior. Employing valid and rigorous research techniques and reporting findings honestly and accurately were additional ways in which the teachers incorporated ethical practice in their research.

Changes in teachers during the research process

My engagement in this Action Research project has been life changing.

Three categories constitute this theme: Challenges that shaped their growth; Personal growth; and Professional growth.

Challenges that shaped their growth

The nine novice researchers faced some growth pains during their research course. Some had challenges of balancing their personal and professional lives. Some were married with children. As one said: "Finding an equilibrium between my personal and professional life was like a seesaw without a steady axis". There were feelings of guilt for not dedicating enough time to family.

Other mental and emotional challenges included being forced out of their comfort zone and being bombarded with hard-to-understand information thus feeling "overwhelmed and frustrated". It seemed to be a test of their emotional and mental strength. Exhaustion was also reported as a challenge. "Giving up" was an option considered when these challenges presented themselves.

School life also seemed to be affected negatively when one person reported that there were days when her planning and preparation of lessons for other classes were affected because she was so focused on organising the resources for the intervention lessons.

The total immersion into the research experience had taken a toll on them in varying ways but there seemed to be total engagement with their research project.

Personal growth

There were many indicators of personal growth as the nine participating teachers reflected on their research journey. General mental growth was one area highlighted. This included ways of thinking about themselves and perspectives on life. A zealous approach to pursuing success and positive change was evident in the teachers' reflections. They had also become more "adaptable" and "resilient" to new challenges as opposed to seeing them as being "extremely uncomfortable and laborious".

Manging themselves was also an outcome of the research endeavour. Some of their new attitudes and practices included procrastinating less, asking for assistance instead of suffering in silence, multitasking, and prioritising and refocusing energy on important matters, and eliminating the trivial ones. They also found themselves adopting new skills and techniques to find balance in their lives. It would appear that they were transferring learnings from their research experience to their personal lives.

Professional growth

By the end of the course, the novice researchers seemed confident that they had grown in professional ways. Having experienced the "see-saw" of their research literacy journey, one even seemed surprised at how "the action research came together". Making mistakes was one way of growing as one of them learned the value of "being astute" in all her work, adding that the use of feedback and reflection was instrumental in securing improvement.

Specifically, professional growth was reported in the development of organisational skills for their school life, and this spilled over into in their personal lives. Thinking "outside the box" was another way one teacher saw her development when it came to finding solutions. One was being perceived as a "game-changer" in her school due to her efforts with the action research project.

The researcher's voice emerged as one teacher indicated that she had become more adept at researching and developing instruments and that her self-confidence as a researcher had increased because she now had acquired skills to undertake any research project on her own.

Connecting theory to practice was apparent when through reading and guidance, the student teachers were able to demonstrate understanding of theoretical approaches to data collection and analysis through the various phases of their research engagement.

Discussion and Conclusion

This research sought to answer the question: How do the reflective journals of student teachers, completed as part of an action research project, reveal the development of their research literacy?

The reflective journals of the nine student teachers were indeed a window into how they built their research literacy. They reported, described, interpreted and analysed their experiences and learnings in those journals. The journals reveal a canvas for us to study, interpret and draw conclusions regarding how teacher education research courses may be best designed to include an acceptable hybrid of professional teacher inquiry that recognises the importance of teachers' practical wisdom, published research, established theory, and professional guidance (Boyd, 2021, in Chapter 1 of this book).

The summary of findings that follows guides us to the realities of the research literacy development experience of the nine student teachers, and invites us to consider a way forward for developmental strategies for current and future teachers as we discuss the findings in the context of literature in the field.

The findings from this study point to several elements that comprised student teachers' encounter with the research process. Emotions and attitudes were a recurring factor in their literacy journey. Emotions (Evans *et al.*, 2017) arising out of their initial anxiety, their enthusiasm to help their students and their perspectives of themselves as researchers were apparent as they worked at arriving at a focus of study. However, a different set of emotions were added to these as they became eager, positive and developed resilience moving ahead pre and during intervention.

Acknowledging the novice's personal journey as the core of action research is critical to the development of their research literacy. While the development of research literacy among the teachers in this study was developed in a formal academic context, it is clear from the findings that their personal journey in the research experience was valuable as a developmental route parallel to that of the academic learning. We may conclude that central to research literacy within the action research paradigm are the emotions that they experienced along that journey, and acknowledge that even prior to engaging in 'reflection-in-action' (Schön, 1983, 1987), there is an emotional phase in the research literacy growth continuum that constitutes emotions such as fear, anxiety and doubt.

But along that continuum, during intervention, according to the findings of this research, coping with challenges is a reality to be faced. As such, being overwhelmed and frustrated are feelings that one should be prepared to face, as in many other research scenarios. Resilience (Barnett, 2007, 2011; Johnson *et al*., 2015; Evans *et al*., 2017) was seen to be counteractive to the potentially debilitating initial emotions that the novice researchers experienced. But this study also found that passion and delight held a place in the reconnaissance and implementation phases of the teachers' research, similar to the comment by Killingsworth Roberts and Hickmann (2010), that "teacher research helped teachers find their passion so that their confidence could be accessed and increased in meaningful ways" (p. 270).

The students in their classrooms represented another factor that stood out as significant in the journey in that they were the driving force in the teachers' desire to improve their practice (Nunan, 1990). Students were at the forefront at the stages of arriving at a focus, making decisions about their data collection, and in the pre-intervention stage as they imagined their students' reactions to the intervention. This is a reminder that because it is expected that the main focus of teachers' action research would be their students, as teacher educators prepare novice teacher researchers to engage with their research focus, they should bear in mind the peculiarities of each teacher's practice context settings and their relationship with their students, in addition to the characteristics of the individual practitioners involved (Philpott, 2017). Such details play a fundamental role in developing novice researchers' research literacy.

Support and enabling processes comprised another tool which the novice researchers found useful in developing their research capability, whether through academic guidance from faculty or practical help from persons in their school environment. Academic support would have pointed them to the need to search the relevant literature which they cited as a source of guidance. Since their involvement in the process generated excitement and the desire to make a difference, which are key ingredients of a potentially successful research project, it provides an argument for a more bottom-up approach of selecting their own area of focus and suggests that effort should be expended on developing practitioners who are sufficiently skilled, confident and knowledgeable in order to find and critically analyse existing evidence and generate new evidence pertinent to their own context. In this study, the teachers did use existing literature to support their deliberations,

an element which should be maintained in the development of novices' research literacy.

Challenges such as designing the research instruments in the pre-intervention phase and coping with demands on their time and effort during the intervention comprised a reality of the research experience which force d them to build resilience. That resilience, coupled with personal and professional growth emerged as outstanding features in the development of research literacy in the nine student teachers in this study.

In terms of interacting with their data, there were specific new learnings and awakenings (Shank & Brown, 2013; Waring & Evans, 2015) such as the ability to connect theory with practice (Ulvik, 2018) throughout all phases of the intervention. Understanding of pedagogical theories would have impacted their conceptualisation of teaching and learning issues to be examined, and pedagogical decisions had to be made in terms of their choice of intervention. Even prior to implementation of their intervention, the teachers had to plan their pedagogical interventions, and data collection and analysis based on theories which were explicitly explained to them, but also which they themselves had researched. This study echoes that of Ulvik *et al*. (2018) which concluded that the student teachers in their research had emphasised the outcome of theory interacting with real situations which they had encountered in the teaching practice.

The growth in research literacy included the processes of careful thought, reflection and discernment (Liston & Zeichner, 1990; Killingsworth Roberts & Hickmann, 2010), which all constitute major facets of action research. The teachers' journals revealed their new perception of themselves which was coloured by the will to learn, the joy of discovery, and the courage to confront the newness of the research experience. Reflection on all of this brought out the potential for them to learn and to be changed by their learning (Barnett, 2007, 2011; Russell, 2005), and to even see themselves as agents of change in their particular contexts (Evans *et al*., 2017).

The ability and desire to project new research efforts in their future practice (Winter & Munn-Giddings, 2001) and to conduct research collaboratively in their contexts and share their expertise, echoing the concept of research leader (Senter & Forlenzo-Bailey, 2000), is evidence that novice researchers are strengthened and enabled by overt preparation for conducting research. While overt preparation for the development of research literacy among student teachers is an undeniable need, understanding the experiences of

those going through the research process is even more critical if teacher educators are to adequately prepare novice teacher researchers to conduct action research. What should they consider as they plan for research literacy development in an academic context such as a teacher development programme or even as a school-based initiative?

The reflective journals of these nine participating teachers were the main data collection tool for this study. The journals allowed us to get a deep understanding of the research process from the student teachers' perspectives. This has implications for the need for novice researchers to share their emotions in a meaningful and timely way during the research process. Firstly, supportive peer discussion groups or a 'buddy system' may serve the purpose of this sharing. These could provide a somewhat small-scale version of what has come to be known as a 'professional learning community' (DuFour, 2004). Such an element within a teacher preparation course can allow for oral sharing among peers in order to provide the opportunity to unpack emotions, delve deeper and perhaps examine the elements of the research which are causing stress. This provision can also help to fight the potential loneliness new researchers may feel in their little corner of their research world.

Secondly, academic preparation for action research ought not to discount overt preparation for the emotions that the practitioners will face as they develop their research literacy, bearing in mind that it is not just the 'ability' to perform an action research project, as in Killingsworth Roberts and Hickmann's (2010) study, that is of concern. The preliminary phase of a research literacy course can be designed to include a module on 'how to cope' as a novice researcher. This can take the form of hands-on, interactive sessions which could be based on case studies or scenarios which will take the novices through the continuum of likely emotions.

Thirdly, since action research is so closely aligned to teaching and learning within researchers' school contexts, the teacher preparation course or programme should support the building of teacher's research literacy through establishing a relationship with the practitioner's school. In this way, while the research itself is not a joint effort between supervisor and student, the supportive institutional aspects of the research context could be ensured by the supervisor in a concrete way to the extent that might be necessary.

This alignment to teachers' school context underlines the need for flexibility in the design of data collection for action research, since it was seen that the nature of their students and their particular weaknesses shaped how

the student teachers gathered data in some circumstances. As such, research literacy must be located within a paradigm that is cognisant of contextual reality and awareness.

The window to the research experiences of the teachers in this study has provided a clear view of how the messiness of action research is aligned to the nature of what Webster-Wright (2010) refers to as authentic learning, closely related to 'knowing-in-practice' as initiated by Schön and discussed by many thereafter. Developing student teachers' research literacy must therefore be approached from a holistic perspective.

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CHAPTER SEVEN

Learning from Exploring Narratives of Practice using Educational Theories and Research

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ABSTRACT

The purpose of this chapter is to support teacher educators' professional learning around research literacy in a way that enables them to explicitly model to teachers the interplay between research, theory and practice. Explicit modelling is a signature pedagogy of teacher educators, yet often teacher educators do not link practice with research or theory when they model. Narratives of experiences 'on the ground' in teacher education are a helpful resource for unpacking the theory behind teacher educators' practice. Exemplar material demonstrates how specific narratives can be opened up and reveals the benefits of using theory to interrogate practice. Provocations and suggestions are provided to show how narratives of practice can be explored using educational theories and research in order to learn and develop practice. This professional learning can support teacher educators' work of developing teachers' research literacy.

KEY WORDS: explicit modelling; research-informed practice; educational theory; teacher educator

Introduction

This chapter is designed to enable teacher educators in universities, colleges and schools to use narratives of practice to interrogate their approach to modelling and to develop the way they model links between educational theories, research and practice. The intention is for teacher educators to use the narratives as a tool to examine and develop their own practice of modelling in order to support their work of developing teachers' research literacy, rather than to use the narratives with teachers. Teacher educators might use this form of modelling with teachers in different settings, for example, with student teachers in initial teacher education and with qualified teachers in the context of professional learning and development.

Teacher educators model their practice whilst they are working with teachers. Modelling is more effective when it becomes part of the dialogue, as the teacher educator 'steps out' of their teaching to explain their rationale (Loughran, 2006). This can provide beneficial learning opportunities as the teacher educator's practice can be related to what teachers might experience in their own teaching. Additionally, teacher educators can use modelling to link practice with theories (Lunenberg *et al.*, 2007). However, this linking process is challenging, and there are multiple interpretations of theories and practice. This chapter provides resources to support teacher educators' professional learning about modelling the interplay between research, theory, and practice so that they, in turn, can support teachers to develop their critical thinking and research literacy. Based on teacher educators' narratives of practice, these resources include examples and provocations so that teacher educators can learn about and then use similar approaches to support teachers to develop their research literacy.

One incentive for developing teachers' and teacher educators' research literacy arises from the 'Age of Accountability' in which they are employed (Boyd & White, 2017). Teachers are increasingly positioned as technicians rather than professionals, being highly accountable for 'delivering' curricula that might not match their professional values, using pedagogies they do not always believe in. In this context, the potential of developing research literacy can be appreciated, empowering teachers and teacher educators to articulate research that informs their approaches to teaching, leadership, curriculum development and other aspects of practice. Clearly, 'teacher education, both initial and advanced, needs to equip teachers with the essential skills and

knowledge of educational research literacy so that they have the professional tools required to contribute to curriculum development and develop research-informed practice' (Boyd & White, 2017, p. 123). Therefore, teachers and teacher educators need to develop their ability to critically evaluate the published professional knowledge base, including empirical research, practitioner research, theoretical concepts, and professional and policy documents (Eraut, 1994; Boyd *et al*., 2015). Teacher educators and teachers need to engage in these discussions around research, theory and practice and contribute to developing the body of professional knowledge in their field.

As they develop their practice, teachers and teacher educators might use the traditional model of trying to apply theory to practice *in situ*, but this is rare and appears to be rather ineffective. Guskey (2002) suggested there is a causal path from teachers learning about a theory or idea from a professional development event, to a change in their classroom practices, which causes change in pupils' learning outcomes, which in turn changes the teachers' beliefs and attitudes. When actions bring about the desired learning outcomes, there is positive reinforcement leading to the teacher adopting the practice and growing in their acceptance of the theory, because it works for them. More reflective approaches to help teachers to integrate theory and practice, include a 'realistic approach' to teacher education (Korthagen & Kessels, 1999). Often the starting point is the teacher's practical wisdom, situated in their own context, together with some ideas from the practice of others or from professional learning opportunities, through a trial-and-error approach, developing their practical wisdom further. This leaves the challenge of being able to relate what is happening in practice to published research or theory, and to work in the zone of interplay between practical wisdom and public knowledge (Boyd *et al*., 2015). Such 'public knowledge' could include 'learning theory, research evidence, professional guidance or policy' (Boyd *et al*., 2015, p. 58). Personally held theories need unpicking to understand more deeply the underlying knowledge base. Teacher educators need to surface underpinning theories, so that this understanding can be modelled explicitly to teachers, helping them to understand the benefit of having a theoretical framework to use as a lens to analyse the complexities of practice to further develop practice. Swennen *et al*. (2008) suggested that as well as modelling, teacher educators should 'explain the choices they make while teaching (meta-commentary)' and 'link those choices to relevant theory' (p. 531). In this chapter, Eraut's (1994) definition of educational theory

is used; such theory 'comprises concepts, frameworks, ideas and principles which may be used to interpret, explain or judge intentions, actions and experiences in educational or education-related settings' (p. 60). This broad definition may help teacher educators to demonstrate that 'there is nothing as effective as the interdependence between theory, research and practice' (Bargal, 2011, p. 43).

The idea of theory can be daunting to teachers and teacher educators and there are challenges to linking theory to practice. For example, having time to stop and think what theories there are that relate to practice; having knowledge of relevant theories, especially where their use is not explicated; it takes a bit of searching to find relevant theories/literature; and lack of confidence about whether the literature that is found stands up to current critique. Also, in some settings academic literature is not readily available. The same concerns can apply to the idea of research. However, significant benefits can be gained from contributing to discussions about research, theory and practice and until time is given to engaging with the literature, teachers and teacher educators can end up not developing their practice and becoming stuck. This process can give fresh ideas and new insights and learning, from those who have gone before and those who are in other countries and systems. It stops teachers and teacher educators from reinventing the wheel, it can help to broaden understanding beyond the field of training – for example, learning from fields such as behavioural psychology, sociology and neuroscience can enrich the interpretation of practice.

Exploring narratives of practice in teacher education is especially useful for the professional development of teacher educators (White *et al.*, 2020). In this chapter a series of narratives about teacher educators' practice are used to explore how specific examples relate to research and educational theories, and what professional knowledge base has been used to guide the judgements that have been made. The narratives will be about teaching and assessing student teachers, which can reflect teaching and assessment practices that teachers will also enact in their settings. These narratives were written by school-based and institute-based teacher educators working within school-university partnerships for initial teacher education, in England and the Netherlands. Participants were invited to write a brief story about a specific challenge they had faced recently in their practice, using pseudonyms, and including a beginning, a plot, and an ending (if there was one).

In unpicking these narratives of practice and relating them to empirical research and theoretical concepts, a deeper understanding will develop of how teachers and teacher educators can locate their practice within published literature. Resources are provided in this chapter to enable teacher educators to explicitly model how educational theories are related to their practice, providing an interpretive approach to enhancing the research literacy of educational professionals. As teacher educators critique and develop the way they model links between practice and research or theory in their own setting they can work on their own or with others to develop their approach. If working alone they might reflect on their practice, plan to model specific aspects and identify the underpinning research or theory in advance; whilst working with others can provide opportunities for peer observation, joint planning, co-teaching or discussing ideas with colleagues, trying them out and reporting back.

The next four sections of this chapter illustrate how a narrative of practice can be explored to learn more about modelling the link between practice and research or theory:

Section One: Exploring a narrative – have a go!

Section Two: Ways that teacher educators can explore narratives of practice using educational theories

Section Three: Sample narratives with provocations

Section Four: Example responses to questions in Section One

Section One: Exploring a narrative – have a go!

This section illustrates how you could use a story or narrative of practice to learn more about ways of modelling the link between practice and research or theory when working with teachers. As this is a challenging form of modelling, the first activity in this section, Activity 1.1, invites teacher educators to 'step back' and reflect on their own understanding of the term modelling, and of the purpose of modelling, before they consider their approaches to modelling. Activity 1.2 illustrates how the narrative could then be used as a basis for deepening reflective thinking about ways of modelling the link between a teacher educator's practice and the research or theory that underpins it. These two activities are based on Narrative 1: 'Individualised support' in which a teacher mentor recounts their experience of working with a student

teacher in the classroom. Although the storyteller does not mention modelling explicitly, modelling might have taken place at several points in this story. A third activity, Activity 1.3, focuses on ongoing professional learning.

Each activity is designed to encourage personal reflection when carried out by a teacher educator working on their own. This reflection could be followed by discussion to articulate thinking and share ideas if the activities are used in pairs or groups. After you have had a go – or if you get stuck – you might find it helpful to have a look at the suggestions in Section Four.

Resources that can be used to support the process of identifying and critically evaluating research literature are listed after the references at the end of this chapter. These could be used alongside any activities in this chapter. The process of finding relevant literature starts with identifying a term or terms that relates to the practice of interest. Many academic papers can be found using web search engines such as Google Scholar, and may be available Open Access through the institutions of the authors or by emailing the author directly.

Narrative 1: 'Individualised support'

I am an experienced teacher mentor. I had a student teacher who was recruited by my school on to a school-led programme for initial teacher education. The student teacher was quiet, calm, and patient. He was naturally prepared to work hard. His two main areas for development were initially ensuring that the pupils were listening to instructions and feedback, and behaviour management. He seemed to get lost within the classroom as his presence was not imposing. To improve his ability to ensure pupils were listening, I sent him to observe several teachers who had a quiet disposition, rather like him. We discussed what he had learnt and then reviewed how he could improve pupils' behaviour when he was supporting different pupils. We identified his position in the classroom as a new area to focus on, and this meant he didn't have to project his voice from different locations but from one point nearer the front. The ability to move around the class could come once the relationships with pupils were more developed. The positioning at the front also allowed him to keep a handle on the progress of all pupils, supporting them from a few metres away rather than from right next to each pupil. The behaviour improved greatly because the pupils were able to see him, and he was able to scan around the room. This was put as an on-going weekly target, and the professional mentor was made aware.

Dealing with the individual need of this student teacher, helped me to realise that each student teacher needs to be supported to find ways that are appropriate for them to develop the skills of managing the classroom. There is not a one-size-fits-all. My own style is much louder than that of this student teacher, and it was more helpful to find other teachers for him to observe rather than to expect him to do things in the same way as me. In the end he developed a good presence and the respect of the class without straining or trying to be someone that he wasn't.

Activities

If you are carrying out these activities with another teacher educator or in a group, you might like to work through each activity on your own and stop after each one to discuss your ideas with others.

Activity 1.1: Stepping back

This activity is divided into three stages:

- What does the term modelling mean to you? How would you describe modelling to a colleague or a student teacher?
- What do you see as the purpose of modelling? Why do you model?

- Read through Narrative 1: 'Individualised support'.
- Identify with the teacher mentor in this story and consider:
  a) *When* you could model in this situation;
  b) *With whom* you could model;
  c) *What* you could model; and
  d) *How* you could model.

- Consider your own approach to modelling and reflect on the same aspects of modelling.
  a) *When* you model;
  b) *With whom* you model;

c) *What* you model; and
d) *How* you model.

Activity 1.2: Linking practice and research or theory

- Read through Narrative 1: 'Individualised support' again. This time highlight or underline any part(s) of the story where you think the teacher mentor could link their practice, what they are doing, with research or theory.
- In the part(s) of the story you have highlighted or underlined, what research or theory could the teacher mentor use to support their practice?
- How could they model to the student teacher to make clear links between their practice and this research or theory?
- Finally, think again about your approach to modelling (Part 3 of Activity 1.1) and then reflect on your learning from this story. Can you identify how you could develop your approach to modelling to make clearer links between your practice and the research or theory that underpins it?

Activity 1.3: Ongoing professional learning

As you continue to reflect on, critique and develop your approach to modelling links between your practice and research or theory in your own setting:

- How could you work on your own to develop your approach?
- How could you work with others?

Once you have worked through these three activities you might like to look at some of the ideas provided in Section Four of this chapter. These ideas are designed to support further professional learning.

Section Two: Ways that teacher educators can explore narratives of practice using educational theories

Loughran and Berry (2003) asserted that 'Deciding which aspects of practice to make explicit, how to make them explicit, and when so that they might be useful and meaningful for student teachers is an ongoing dilemma in attempting to teach through explicit modelling' (p. 13). This section includes several activities that teacher educators could use with stories of practice to learn more about this challenging process in relation to modelling the link between practice and research or theory when working with teachers. In each case teacher educators need to find ways of uncovering the links between practice and research or theory before they can engage in this form of modelling. Some of these activities refer explicitly to this complex and important step.

These activities are suitable for teacher educators working alone or in pairs or groups .

Activity 2.1: Ask the author

- Read through the story and identify any aspects of the author's practice that interest you.
- What questions would you like to ask the author about these aspects of their practice?
- How could you work with them to uncover the research or theory that underpinned them?
- How could they have made the underpinning research or theory clear to others in this situation?
- What could you take away from this that will help you to develop your own practice of uncovering the research or theory that underpins your practice and making explicit links between your practice and that research or theory?

Activity 2.2: Discover, Deepen, Do (3D)

This activity is based on the 'Discover – Deepen – Do' model designed to support change in teaching through analysis of critical incidents or critical moments (Graham *et al*., 2012, p. 47).

DISCOVER

- Read through the story and identify an aspect of practice that you would like to discuss.
- Highlight or underline this part of the story.
- Each person shares the part of the story they have identified and explains why they would like to discuss it.
- Everyone agrees on one aspect of practice to discuss.

DEEPEN

- Everyone shares their ideas about this aspect of practice so that they can gain greater understanding and new insights.
- Working in pairs or groups the participants identify and discuss research or theory that might have underpinned the practice and shares this with the group.
- Working together everyone considers how they could learn more about the research or theory they have identified (e.g. reading books, journal articles).

DO

- Each person reflects on their learning from this activity and identifies any new insights into the research or theory underpinning practice in this example and how they could find out more about it.
- Everyone identifies something they will do to make clearer links between their own practice and the research or theory that underpins it and shares this with the group.

Activity 2.3: Putting yourself in the story

- Read through the story and identify an aspect of practice that reflects what you think you would have done in that situation.

- Why would you have done that?
- Can you identify the research or theory that underlies that aspect of your practice?
- How could you make that research or theory explicit to a teacher in this example?

Activities 2.4: Stepping back, Linking practice and research or theory, Ongoing professional learning

These are the three sequential activities provided in the previous section of this chapter.
PART 1: Stepping back
PART 2: Linking practice and research or theory
PART 3: Ongoing professional learning

Activity 2.5: Uncovering theories in practice

- This activity is suitable for a story that involves a student teacher engaged in teaching.
- Read through the story and identify an aspect of the student teacher's practice that you would focus on if you were working with them.
- Why would you focus on this aspect of their practice?
- What questions would you like to ask them about it?
- How could you work with them to uncover the reasons for their actions and to relate these to research or theory?
- How could they use this learning to develop their practice in this area?
- What can you take away from this that will help you to develop the way you work with teachers to explore links between their practice and the research or theory that underpins it?

Activity 2.6: What would you do?

The context for this activity is that in many situations there is not a 'right' way to act; different approaches can be appropriate. This reflects the complex nature of the work of a teacher educator.

- Read through the story and identify something you would have done differently.
- Reflect on what actions you would have taken in this situation and why.
- Working in pairs or groups take turns to explain what you would have done differently, how you would have done it differently, and why.
- Would you have taken the same actions as each other?
- Discuss your choices, probing more deeply into your examples, and try to identify research or theory that is relevant to the actions you would have taken.
- Identify together how you could have made this research or theory clear to others in this story. What approaches could you use?
- How could you use these approaches in your own practice?

Section Three: Sample narratives with provocations

This section includes two narratives with provocations that are designed to support teacher educators' professional learning about issues relating to modelling the link between practice and research or theory when working with teachers. There are two separate sets of provocations for each narrative. Each set of provocations comprises an activity.

In Narrative 2: 'An unsatisfactory lesson' a school-based teacher educator recounts their experience of working alongside a student teacher who is at an early phase of their teacher education programme. Activity 3.1, '**Trying on different shoes**', linked to this narrative is based on work by Jarvis and Graham (2015). This activity invites teacher educators to try on the shoes of the student teacher and the teacher educator and to consider their perspectives before putting on their own shoes and considering the strategies they would have used in this situation, and how they might explain these

strategies and link them to research or theory. Activity 3.2, '**Choosing what to model**', invites teacher educators to choose an aspect of the approach the storyteller took to providing feedback on teaching, to consider how they could model that explicitly to a student teacher, and to identify whether they could link it with underpinning research or theory.

Narrative 3: 'Depth or breadth' is a teacher educator's account of teaching and of the importance and complexity of considering different beliefs about teaching, in this case the beliefs of the teacher educator, the student teachers, and the school in which they are based. The teacher educator concludes the account by reflecting 'what do we value in a lesson?' This fundamental question is explored initially using Activity 3.3, '**Exploring values in teaching**', which is adapted from one developed and used with teachers (Jarvis & Graham, 2015). Activity 3.4, '**What does 'modelling' mean to you?**', invites teacher educators to consider different approaches to modelling by reflecting on the similarities and differences between the way modelling is portrayed in the narrative and the approaches they use themselves.

Each activity is designed to encourage personal reflection when carried out by a teacher educator working on their own. This reflection could be followed by discussion to articulate thinking and share ideas if the activities are used in pairs or groups.

Narrative 2: 'An unsatisfactory lesson'

I have been working as a school-based teacher mentor for a few years. When I was working with this particular student teacher, I had a challenging incident early on in their training. Her teaching had been improving through the first term; however, this one lesson I observed was unsatisfactory. The lesson was not well planned, and the activities chosen did not match the learning objectives. The problem was that she thought the lesson went well, and I had to help her to understand where things had gone wrong. What could I do to help her to change her perspective without undermining her growing confidence?

I also had to discuss the importance of careful planning; that it was not about having a piece of paper to hand in as much as about carefully thinking through each stage of the lesson to make sure they were fit for the purpose

of the lesson. Her growing confidence had led to a complacent approach to the planning. Perhaps this was because, from her perspective, it seemed that more experienced teachers did not write detailed lesson plans – I don't think she realised that these teachers will have a lot of their thinking stored in their head rather than written.

We set a clear target that she could work on for the week, so that when I observed the next week, I would be able to see that she had planned more carefully and that the lesson would have more pace and purpose. Fortunately, this was effective, and the next lesson was much better.

I also realised that the student teacher might well discuss this incident with the school-based teacher educator overseeing training in the school. I was concerned that although she seemed to accept what I was trying to draw out of her during this meeting, she might put another perspective on the incident in conversation with this colleague. So, I highlighted the incident to the school-based teacher educator quietly, to ensure that a fuller picture was available to her when she met with the student teacher.

Activity 3.1: Trying on different shoes

- Read Narrative 2: 'An unsatisfactory lesson.'
- Try to put yourself in the shoes of the student teacher who thought her lesson had gone well.
- How might she have felt when she received feedback from the teacher mentor?
- Now try to put yourself in the shoes of the mentor.
- What were the mentor's concerns? What strategies did the mentor use to provide feedback on the lesson?
- Now put on your own shoes.
- Would you use the same strategies as the mentor to provide feedback in this situation? If not, what strategies would you use?
- How would you explain your reasons for using these strategies to the student teacher?
- Could you explain to her how these strategies link to underpinning research or theory? If not, how could you find out more about these links?
- What can you take away from this that will help you to develop the way you reflect on and explain links between practice and research or theory?

Activity 3.2: Choosing what to model

- Read Narrative 2: 'An unsatisfactory lesson', focusing on the teacher mentor's practice of providing feedback.
- Choose aspects of this practice that you could make explicit to the student teacher.
- Why would you choose these aspects of practice?
- How could you make them explicit in this situation?
- Could you link these aspects of practice to research or theory?
- If so, what research or theory would you share?
- How might this be useful for the student teacher's learning?
- How might It help your own learning?

Narrative 3: 'Depth or breadth'

As a new teacher educator there are many challenges to overcome. Moving from an environment where you are seen as an expert to one where you are a novice can be disconcerting. There is the challenge of teaching adults as opposed to children. Their thinking and understanding of education are often quite well developed and therefore making a change to understanding can be challenging.

Aligned with this is the tension between what you believe about teaching and what the beginning teacher's school believe good teaching looks like. An example of this is…

A Monday afternoon session where I was teaching the importance of providing pupils with lots of practice so that they can develop fluency in a concept. I also wanted to develop the concepts from the previous two weeks which looked at delivering explanations and modelling. I decided to use a whiteboard only, so that I could also show my own thinking as opposed to pre-prepared power point slides.

I then spent the next 20 minutes explaining, modelling, and showing how I would provide the pupils with lots of practice so that they could balance ionic compounds. We looked at the previous knowledge they would require to make sense of the work. I then gave them worked examples to show my thinking (metacognition) and justified the questions I wanted the pupils to work through. This justification involved using lots of familiar compounds, many I had mentioned during the session.

When I asked the student teachers for feedback, some could see that the time spent on this would speed up the time spent doing more complex work because it tried to develop solid foundations for all. That is the idea that although their gains appeared small in the short term, over a longer period they would be larger because academic success breeds motivation not the other way around. So, if they experienced success then they were more likely to be motivated and not rely on trying to "engage" the pupils to increase motivation.

There was a fascinating debate about how much work needs to be covered during a lesson. Some student teachers felt that I had taken a very long time to get to a certain point. So, the end point of the story is asking what do we value in a lesson? Understanding one thing well, and taking our time and checking understanding, or racing through the curriculum to demonstrate that it has all been taught?

Activity 3.3: Exploring values in teaching

- Read Narrative 3: 'Depth or breadth'.
- Highlight or underline the parts of the story about what the teacher educator is doing or thinking.
- Using a different colour, highlight or underline the parts of the story about what the student teachers are doing or thinking.
- Identify and reflect on those parts of the story you think illustrate 'good teaching'.
- Why do you think that? What are the values underpinning those parts of the story?
- Do these values underpin your own practice?
- Can you identify other values that underpin your own practice?
- Discuss your values in pairs or groups and work together to try to identify links between any of the values you have shared and research or theory and reflect on how you could explain the links as a teacher educator.

Activity 3.4: What does 'modelling' mean to you?

- Read Narrative 3: 'Depth or breadth'.
- What does the storyteller tell you about their approach to modelling? Note down how you think they model in this story.

- What approaches would you have used? Note down how you think you would have modelled in this situation.
- Identify and reflect on the similarities and differences between the storyteller's approach to modelling and your own approach.
- What research or theory underpins your own approach to modelling?
- How could you find out more about research or theory relevant to using different approaches to modelling in teacher education?
- How could you make clear links between your approach to modelling and the underpinning research or theory so that teachers you work with can develop their own practice of modelling?

Section Four: Example responses to questions in Section One

This section provides some 'ideas to consider' in response to the questions in the first two activities provided with Narrative 1 in Section One of this chapter: Activity 1.1, **Stepping back** and Activity 1.2, **Linking practice and research or theory**. These ideas are designed to support further professional learning.

Activity 1.1: Stepping back

- What does the term modelling mean to you? How would you describe modelling to a colleague or a student teacher?

Ideas to consider:

- *The term modelling in teacher education has been defined in different ways. For example:*
  - *Loughran (2006) suggested that it 'means teaching about two things simultaneously; the content under consideration and the teaching employed to convey that content… Modeling then requires teachers of teaching to actively make the tacit explicit' (p. 42).*
  - *Loughran and Berry (2003) saw 'explicit modelling' as working at two levels at the same time: 'At one level, explicit modelling is about us "doing" in our practice that which we expect our students to do in*

> *their teaching. This means we must model the use of engaging and innovative teaching procedures for our students rather than "deliver" information about such practice through the traditional (and often expected) transmissive approach. At another level there is also a need to offer our student teachers access to the pedagogical reasoning, feelings, thoughts and actions that accompany our practice across a range of teaching and learning experiences' (p. 4).*

- What do you see as the purpose of modelling? Why do you model?

Ideas to consider:

- *You could model to explain thinking; to break down a complex activity into manageable steps so that the student teacher can understand the rationale of pedagogical choices; to offer new experiences of learning and teaching; to make explicit links between practice and different forms of public knowledge such as principles, theories, and research.*

- Read through Narrative 1: 'Individualised support'.
- Identify with the teacher mentor in this story and consider:
  a) *When* you could model in this situation;
  b) *With whom* you could model;
  c) *What* you could model; and
  d) *How* you could model.

Ideas to consider:

a) and b) ***When and with whom you could model in this situation****. You could model with the student teacher; you could choose others to model practice to the student teacher; you could use video recordings of model practice. You could choose to model by directly intervening in the lesson or through providing feedback to the student teacher.*

c) and d) ***What and how you could model in this situation****. You could model:*

- *Aspects of practice such as carrying out assessment and providing feedback. You could also model 'reflective practice' (Boyd, 2014, p. 58).*
- *Classroom presence, modelling positioning, use of body language and voice (Rogers, 2012).*

- *Enquiry into practice, modelling how the student teacher could enquire into their practice of encouraging pupils to listen and managing pupil behaviour.*
- *Problem solving around teaching, by allowing the student teacher to identify and suggest solutions to problems they are finding in the classroom, and by discussing these and sharing planning for practice in the next session.*
- *What it is like to be a learner (Boyd, 2014), a pupil, in this situation.*

You could model: by 'thinking aloud' (Loughran, 1995, p. 431), articulating things that are not going as planned, asking for reasons and solutions; by demonstrating ways of finding solutions such as by observing other teachers; by discussing what the student teacher has noticed about other teachers' practice and how they might use their learning in the classroom.

- Consider your own approach to modelling and reflect on the same aspects of modelling.
  a) *When* you model;
  b) *With whom* you model;
  c) *What* you model; and
  d) *How* you model.

Ideas to consider:

a) and b) ***When and with whom you model****. You could model when you are working with a student teacher or with any member of the teaching team. For example, you could model when you are planning a session together; leading or co-teaching a session; providing feedback; supporting them to engage in reflecting on their practice; identifying theory relevant to your practice; and engaging in your own professional development.*

c) and d) ***What and how you could model****. For example, you could model:*

- *Approaches to learning e.g. how to ask questions in a specific context. This might involve two tutors, one taking the role of the teacher and the other the learner, or the tutor could model by taking different roles, or providing prompts for teachers to develop questioning skills.*
- *Aspects of practice such as organising group work or resources, and techniques for identifying prior knowledge, explaining or running*

a plenary. You could also model 'teaching strategies' and 'reflective practice' (Boyd, 2014, p. 58).

- *Enquiry into practice. Working with teachers to model how they might enquire into aspects of their practice. This might involve finding published literature to identify different approaches to learning and teaching to try in the classroom.*
- *Links between practice and theory. This might involve relating practice to theory of pedagogy, subject theory, child development theory, process of critical reflection.*
- *Planning for learning. Perhaps by sharing planning for sessions, asking for feedback, and also by reflecting publicly (on-line or face-to-face) on the session and identifying issues for consideration.*
- *Practitioner research.*
- *Professional relationships, including relationships between the teacher or teacher educator and the student teacher. Again, this could involve more than one person and might involve modelling features such as listening and respect.*
- *Professional values, such as those involved in developing relationships with teachers and valuing the teachers' own experiences.*
- *Problem solving around teaching by sharing planning or by identifying issues that arise and asking teachers to suggest solutions.*
- *Study skills e.g. different approaches to note-taking, engagement with texts, reading academic texts.*
- *Thinking processes such as developing an argument and interaction with ideas.*
- *What it is like to be a learner (Boyd, 2014) and different forms of learning.*
- *Working effectively with others. This could involve more than one person or the tutor to be explicit about others' roles in contributing to a session.*

You could model by:

- *Articulating when things go wrong in a session, asking for reasons and solutions.*
- *Co-teaching with a colleague or with a student teacher.*
- *Demonstrating e.g. showing how to do group work or how to work with pupils in a particular age group.*

- *Doing it 'wrong', perhaps by deliberately doing a very poor presentation or by planning or organizing a poor session and then asking teachers to identify issues and ways the issues could be addressed. This could be as part of articulating modelling and its purpose. It involves experience including emotional engagement.*
- *Explaining why a room has been set up in a certain way and linking this to school classrooms.*
- *Providing a written rationale of a session.*
- *Sharing personal experiences.*
- *Stopping a session at a certain point and identifying what has been modelled.*
- *Teaching and 'de-briefing' sessions in which one teacher educator teaches and a second leads follow-up questioning and reflection on learning and teaching that involves student teachers and provides opportunities for modelling 'professional critique' of practice (Loughran & Berry, 2003, p. 4).*
- *Using role play, visual aids, storytelling and talking partners.*
- *Using 'thinking aloud' (Loughran, 1995, p. 431) or 'self-conscious narrative' (Boyd, 2014, p. 58), or by revealing a 'thought bubble' (White, 2011, p. 487) during a session to explain features of practice.*
- *Using video to capture moments of teaching and then recalling and talking about them.*
- *Using voice over text of a session plan to reveal thinking.*

You could also model how to enquire into modelling itself by documenting; by asking colleagues to observe; by looking at planning and considering whether modelling is specified or whether it is there but unspecified; by asking teachers for feedback on what has been modelled; by reflecting alone or with a colleague; or by planning with a colleague.

You could also consider how you might prompt teachers to use what they learn through teacher educator modelling to inform the development of their own teaching practice (Loughran, 1997).

Activity 1.2: Linking practice and research or theory

- Read through Narrative 1: 'Individualised support' again. This time highlight or underline any part(s) of the story where you think the teacher mentor could link their practice, what they are doing, with research or theory.
- In the part(s) of the story you have highlighted or underlined, what research or theory could the teacher mentor use to support their practice?
- How could they model to the student teacher to make clear links between their practice and this research or theory?

Ideas to consider:

Some parts of the story are underlined below together with some research or theory that the teacher mentor could use to support what they are doing.

> *To improve his ability to ensure pupils were listening, I sent him to observe a number of teachers who had a quiet disposition, rather like him.*

Here, the teacher mentor could discuss Mason's (2011, p. 35) 'discipline of noticing'. This centres on the view that 'noticing is a collection of practices designed to sensitize oneself so as to notice opportunities in the future in which to act freshly rather than automatically out of habit' (Mason, 2011, p. 35). Reflection is integral to noticing, which involves readiness to notice and reflecting on recent experiences to identify issues to notice and be able to practice in a different way (Mason, 2011).

> *We discussed what he had learnt and then reviewed how he could improve pupils' behaviour when he was supporting different pupils.*

The discussion here is an example of 'critical dialogue' (Parker et al., 2016, p. 137) that allows the student teacher to use their experience to construct understanding through collaborative discourse around teaching and learning – moving their thinking forward about what it takes to develop as a teacher and leading to improved practice.

> *We identified his position in the classroom as a new area to focus on, and this meant he didn't have to project his voice from different locations but from one point nearer the front. The ability to move around the class could come once the relationships with pupils were more developed.*

> *The positioning at the front also allowed him to keep a handle on the progress of all pupils, supporting them from a few metres away rather than from right next to each pupil. The behaviour improved greatly because the pupils were able to see him, and he was able to scan around the room. This was put as an on-going weekly target, and the professional mentor was made aware.*

The teacher mentor could link developing a classroom presence to the use of body language, voice and non-verbal communication (Altun, 2019). They could make a chart for the student teacher to use for observing others and checking which forms of body language they are using and the impact that is having. This way the student teacher could create an aide-memoire for how to position themselves and what body clues they can use. The teacher mentor could share Altun's (2019) paper with the student teacher and they could discuss together or with peers.

- Finally, think again about your approach to modelling (Part 3 of Activity 1.1) and then reflect on your learning from this story. Can you identify how you could develop your approach to modelling to make clearer links between your practice and the research or theory that underpins it?

Ideas to consider:

You could review the examples above and identify how you might like to use some of them with a focus on making explicit links between what you are doing and the research or theory that underpins it.

Conclusions

Narratives of practice can be used to enable teacher educators to explore their practice and make links with theory and research. By using these resources, teacher educators can grow in confidence in articulating the links between research and practice and develop an appreciation of the benefit of using public knowledge to develop and refine or challenge practical wisdom (Lunenberg *et al*., 2007). This in turn provides a model for how teacher educators can work with teachers, looking at narratives of their practice, to identify underpinning theories and links to research. Explicitly modelling the interplay between research, theory and practice can be supported using

the resources developed here. In this way teachers and teacher educators will be able to develop their research literacy, and the profession will be better equipped to surface future areas for practitioner research where practical wisdom and local practices do not have a strong underpinning by the professional knowledge base.

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Further resources

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CHAPTER EIGHT

Teacher Educators' Need for Powerful Research-Based Critical Reflective Learning

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ABSTRACT

In this chapter, we focus on reflection that is a bridge between theory and practice and a strategy for learning from practice to solve everyday teaching problems. The aim of the text is to analyse this phenomenon, its scale and to indicate the consequences of such an approach for the daily practice of teacher educators. The theoretical framework of the analyses is embedded in critical pedagogy. In the chapter we present results of qualitative research among 14 language teacher educators working at universities in Poland. Our main conclusion is that what is crucial for teachers-researchers is the ability for critical reflection and academic interpretation of the information gained through various lenses.

KEY WORDS: teacher educator, reflection, research literacy

Introduction

One of the requirements of a modern teacher as well as teacher educators is "the ability to reflect" (Illeris, 2006) and to analyze one's behaviour from the perspective of the effectiveness of one's own actions. So, teachers are expected to be "reflective practitioners" and show reflexivity, which is understood as a specific type of competence to consciously and critically self-correct one's intentions and motivate actions (Dróżka, 2017) as well as to take personal, professional or social decisions. Reflection is a constant reflection, consideration over facts, weighing the problem (Kwiatkowska, 2012), rational and critical judgment of the educational situation and their consequences for the development of people and social changes (Czerepaniak-Walczak, 1997). It is therefore a confrontation with the surrounding reality or a symptom of criticism towards one's own behaviour and emotional states, as well as the behaviour and experiences of other people (Mikut, 2001), including students or other teachers. Teachers are required to reflect on the meaning of their own actions, refer to previous events and examples of good practice. Otherwise, they become "prisoners of the program" (Day, 1993) or only "fulfill assigned tasks" (Czerepaniak-Walczak, 2007). Reflection is thus recognized as a bridge between theory and practice, a strategy for learning from practice in order to solve everyday teaching problems. It is a necessary tool helping a teacher to become a research literate, as it can help them improve their practice and solve problems in the classroom (Elliot, 2010). Becoming research literate is crucial for the transformation of the teacher (Leitch & Day, 2001) as the subject of educational interactions, for the transformation of other participants in these interactions, and for the transformation of the conditions in which these interactions take place. An example is the use of research in action methodology by teachers (Červinková & Gołębniak, 2010, 2013) to transform and improve everyday educational life.

The ability to reflect critically is related to the courage to change the well-established patterns of behaviour, and thus to go beyond oneself, to exceed the imposed limitations. It is also expressed in the ability to recognize hidden assumptions justifying the existing order at school and university. Studying your own practice and its foundations is crucial for its improvement and adaptation to the dynamically-changing social and educational reality. This is related to the ability to conduct research on one's own practice and to critically analyse it in terms of the will to improve it and use it to transform

the organizational, social, political and cultural context in which education takes place.

The chapter presents the ways in which teacher educators working at various universities in Poland use reflections to improve their practice. The framework for the analyses is Brookfield's conception of four lenses of critical reflection. The aim of the text is to show the level of critical reflection displayed by Polish teacher educators. We propose a thesis that Polish teacher educators, if they use reflection in order to change their practice, usually do it in a mechanical, craftsmanship way – leading to the exchange of one method, one didactic means for another: more popular, used by colleagues, modern. Their choice in this matter is not preceded by a reliable diagnosis of the contextual determinants of the teaching-learning process, which leads to the determination of the problematic aspect, the selection of an appropriate method of verifying activities and then the evaluation of the adopted approach. We argue that teacher educators use superficial forms of critical reflection which comes down to methodological aspects. It is an instrumental reflection which concerns the effectiveness of the teacher's practice. However, it does not verify the assumptions and implications underlying the adopted levels of effectiveness, learning outcomes, and qualification frameworks. These aspects are touched by deep, critical reflection, which is called for by critical pedagogy (Giroux & Witkowski, 2018; McLaren, 2015).

Teacher educator as a reflective practitioner

Academic education plays an important role in educating the young generation of citizens, as well as students of the teaching profession. It is within universities that students should be given space for critical reflection on the reality that surrounds them and the rules, norms, rituals and interpretations which form that reality. Giroux claims that "Finding our way to a more human future means educating a new generation of scholars who not only defend higher education as a democratic public sphere, but who also frame their own agency as both scholars and citizen activists willing to connect their research, teaching, and service with broader democratic concerns over equality and justice, and with an alternative vision of what the university might be and what society might

become" (Giroux, 2020, p. 146). Teacher educators' approach to teaching practice plays a key role in achieving these goals.

The issue of critical reflection of teacher educators usually comes down to emphasizing its didactic, methodical nature. This approach takes into account only one aspect of the teacher's activity – the instrumental aspect. This does not lead to a change in the actual conditions of the education process, but to the improvement of the existing solutions and the reproduction of the established social order. Critical reflection is reduced here to the level of "technical intelligence" (Aronowitz, 1972, p. 278) subordinated to solving operational problems.

Deep critical reflection, on the other hand, is multifaceted and goes well beyond the area of didactics and teaching methodology. Its aim is to think carefully about the surrounding reality, including the educational one, and to strive to change it. The emancipatory interest prevails here, which "is a force stimulating activism aimed at learning and changing one's own practice, freeing the mind and actions from the bonds which limit asking questions, formulating non-standard answers and undertaking innovative activities" (Czerepaniak-Walczak, 2010, p. 326). This is also emphasized by Habermas (1987, 1999), for whom adult education comes down to creating conditions for the bottom-up organization of society and freedom of debate, and thus practising communication activities. Its essence lies not only in the relationship of an academic teacher – student, but also in the relationship of these entities with the third element, which is thinking, as indicated by Readings (1997) while making a critical analysis of the situation of contemporary universities.

Role of reflection in teacher's practice

The importance of reflection in the teacher's work was emphasized by Schön (1983) in his concept of "reflective practice". He was the first to note that

> …the success of a professional individual's actions is determined by the self-awareness of actions, or more precisely – by maintaining mental judgment over him and conversation with the current situation of work. (Kwiatkowska, 2012, p. 64)

The author presented two types of reflection: in action and on action. Reflection-in-action is a dynamic process, acting with simultaneous reflection and its immediate modifications if necessary (Schön, 1983), it is a procedure in a specific professional situation (Czerepaniak-Walczak, 1997). Reflection-on-action, on the other hand, is a reflection made from a time distance, in two forms: planning and evaluating – that is, after the occurrence of a specific situation (*Ibidem*). Pre-task analysis is the so-called reflection on action (Cowan, 2006) or anticipatory reflection (Van Manen, 1991). The figure below (Figure 1) shows a model illustrating the course of reflection called the Cowan diagram, which consists of three loops illustrating the changing types of reflection.

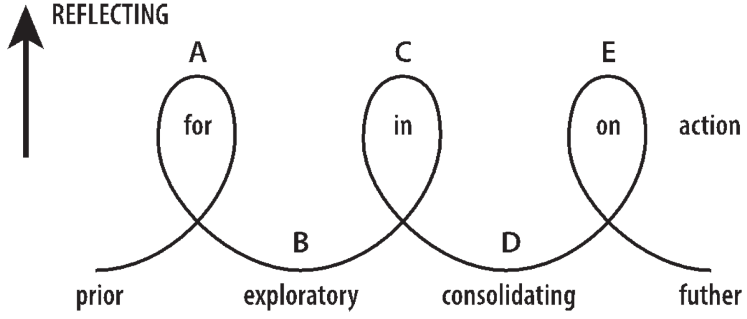

Figure 1. Cowan's Diagram (Cowan, 2006, p. 53).

Previous experiences direct the current behaviour of teachers and prepare them for work and performing specific tasks (reflection for action – loop A). Loop B reflects the tasks performed, associating new information with previously possessed and analyzing it. This provokes reflection in action (C loop), of an analytical nature, requiring classification and generalization. The next stage (loop D) is the consolidation of ideas, i.e. planning and their use in practice. The use of new knowledge in one's own actions entails reflection on the action taken (E loop), of an evaluative nature. Reflective thinking needs also critical analysis and cannot rely only on previous experience. Critical thinking is the ability to purposefully make multi-faceted analysis in order to make decisions and solve problems, a search for new and better solutions (Perkowska-Klejman, 2015). At first, reflection involves going back to experiences, but later it demands an analysis

of the feelings that have arisen in a particular situation. Then, people need positive feelings and remove emotions that block free behaviour, re-assess the importance of past experiences and link the new knowledge to existing patterns. As a result of reflection, a new look at one's own experiences appears, as well as changes in the behaviour of the individual who is ready to act (Boud, Koegh & Walker, 2005).

However, teachers often solve problems and undertake tasks in which they cannot refer to well-known events. Therefore, regardless of the professional position, they always function like novices – they have neither theoretical knowledge to explain a given situation nor effective behaviour patterns (Kwiatkowska, 2012). Under the new conditions, each teacher puts himself/herself in the position of a beginning teacher for a short time (Farell, 2007). The same situation happens in case of teacher educators. In a new situation, when previous experiences cannot be used, the teacher-reflective practice creates new values. Szadzińska describes this feature as "the ability to create knowledge" (2001, p. 106).

Reflection brings multiple effects, such as (Moon, 2001): learning and gaining new food for thought, action or other learning outcomes; critical review; reflection on the learning process; theory development; personal development; making a decision or clearing up uncertainty; personal empowerment and emancipation; feelings, emotions and knowledge about them; and other, sometimes even unexpected, effects such as a mental image or idea that may solve the classroom problem. Reflection also plays a significant role in the process of making meaning and creating relationships between new and previously acquired information, and transformative learning. It brings "the learning process upgrade", because it allows teachers to remind themselves of their previous stages of learning and redefine them on the basis of the current way of thinking. (Examples of such situations are described by the interviewees who assessed their own teachers in the past with the perspective of actual knowledge and present personal experience).

Self-reflection is a crucial and initial stage of pedagogical reflection as it consists of understanding own identity, giving meaning to previous experiences and subjective assessment of the teaching process and personal relationships in the community of practitioners. Reflecting brings the teacher significant benefits, most of all it frees the teacher from routine and ill-considered reactions, and consequently develops appropriate teaching strategies. A critical look at own behaviour allows teachers to find justification

for their own decisions and understand them, and, finally, to gain self-confidence as professional educators.

The content of the teacher's reflection is also analysed in the concept of Zeichner and Liston (1996) who distinguish five types of reflective practice:

1) Academic, focused on the content and methods of teaching.
2) Social efficiency, that is, determining the effectiveness of the teacher's activities in the technical aspect (realization of the set goals) and discussion (own judgment built on the basis of information from many sources).
3) Developmental, based on knowledge about students and the conditions of their development.
4) Social reconstruction, aimed at specific social or political changes.
5) General, concerning the entire teaching process, not the reflection itself or socio-institutional contexts.

All kinds of reflective practice demand deep reflection and contemplation of own actions and behaviour, as well as of educational situations. Moon (2001) distinguishes three types of reflection according to its depth and shows how they contribute to reflective practice. They are:

1) Descriptive reflection, which is a simple description of a phenomenon or situation, without going deeper into its meaning and role in professional development, not taking into account different points of view.
2) Dialogical reflection, requiring reference to situations and experiences and entering into "discussions" with them, i.e. meditation, internal conversation with oneself, understanding one's own role in events. This reflection also requires determining the importance of one's own assessment of the situation and searching for possible ways of explaining or hypothesizing.
3) Critical reflection, which requires full self-awareness and the ability to look at one's own experiences from several angles, taking into account various contexts and dependencies, including looking from the point of view of various fields of study (it should be easier for teachers of foreign language teachers as people with two-paths-education).

Critical reflection may also take the form of a second-order-reflection (Moon, 2004) or a composting reflection (Cowan & Stroud, 2016). These terms are used to denote the process of using previous reflections, re-examining

them deeply and doing further transformations. It happens when teachers discover and examine their assumptions by viewing their practice through four lenses (Brookfield, 2005): own autobiography as teachers and learners, students' eyes, colleagues' experiences, and educational literature. The first two lenses are used by teachers who can be described as "good". The next two – by "outstanding" teachers who can be described as transformative, critical intellectuals (Giroux, 2020). Brookfield (1995) argues that such teachers are constantly trying to transform the educational environment into democratic spheres of knowledge exchange and construction. This approach expresses their critical reflection and striving for proficiency in conducting research, diagnosing, and transforming the educational space in schools and universities.

Methodology

The chapter presents the findings from the research conducted in 2018 among 14 language teacher educators in Poland. The aim of the research was to explore the way teacher educators reflect on their own practice. We focused on the **conditions under which teachers' reflection occurs and what they do to develop and enhance one's teaching**. The collected data was selected and coded to identify Brookfield's four lenses of critical reflection.

The qualitative research (Szplit, 2019) was carried out with the use of semi-structured interviews. The group was chosen by snowball sampling, and the main criteria of selection were the setting (university, college or academy teaching) and fields of "double" specialisation (teacher education and foreign language teaching). The target group includes 3 men and 11 women, with teaching experience from 12 to 30 years, with master (1), doctor (11) and post-doctor degrees (2): teachers of English (8), German (4), English and German (1) and French (1). All the interviews took about two hours and were held face-to-face in the natural surroundings of the educators or via Skype. They all were typed and double-validated by the respondents who did the transcript and the interpretation validation. The interviews were carefully analysed, and the coded and categorised fragments were compared with each other in order to search for common threads, complements, elaborations, exemplifications or oppositions and counterarguments.

Research findings

In the interviews (Szplit, 2019) we found many examples of teacher educators who reflect on their own didactic performance and improvement of the teaching process and personal development. Teacher educators reflect on their own behaviour in order to understand and interpret it; they constantly look for answers to questions that arise during their professional work. Based on these considerations, they make decisions about how to improve or enhance their own teaching practice.

The collected data let us identify Brookfield's four lenses of critical reflection that were defined and described in many interviews.

Professional autobiography lens

The first lens is the lens of their own autobiography as teachers and learners.

> I worked for a year in a primary school. This was a chance to confront my routine behaviour which I had practiced with older youth (…). I was just able to revise it, adjust my behaviour, typical tasks, communication in the classroom with the children.
>
> (Peter)

> You had to endure someone's first failure, when I see someone is trying, but still getting a fail mark. (…) And then (…) I referred to my experiences, to the mistakes I had made. I am not afraid to say that I made mistakes as a young teacher. (…) At the beginning, something like this [the way of organizing the lessons – author's note] worked, and then it turned out that it was nonsense.
>
> (Martin)

The quoted parts of the respondents' statements reflect the use of reflection referring to their past experiences in the field of educational activity. The respondents refer to their teaching failures which they experienced at the earlier stages of their educational path and drew conclusions from them. They refer to the didactic aspects of their work.

Autobiographical reflection is more or less systematized, which is reflected in the following statements:

Systematic reflection

> I am throwing all these handouts [materials for students – author's note] to a special file. Usually, I do not have time to introduce changes immediately after the class, so that these improved materials will be waiting for the next year, for the next group. But I have a set of them which I carry home when I start teaching the same subject. Then I look at them again, and always something else will come to my mind after some time. And I will always think about my comments again.
>
> (Eve)

> I write them [thoughts, comments – author's note] in my script, so I look at them regularly. I conduct my classes and I look at the notes from previous years, (…) I add more notes. Such class materials are often used and I appreciate them very much because they are rich, they contain my additional thoughts or my subsequently-made notes.
>
> (Paul)

Non-systematic reflection

> Sometimes a step back and a look from above at certain phenomena, certain things that happen in the classroom, are needed. I do it, just not so analytically. (…) I will carry out a given subject for a year, two, three and I see what is good and what is not.
>
> (Monica)

> I have never sat down with myself and said to myself "listen, starting from today you will be teaching this way or that way", because these are hours, hundreds of hours spent with individual students and groups, with classes, with students.
>
> (Barbra)

> I see that something is not working, I am trying to find a solution, it bothers me. I don't really try to match my clients with my abilities, but rather fine-tune myself. Improve whatever I can.
>
> (Peter)

Students' eyes lens

Another lens which focuses teachers' reflection is the lens of student's eyes. Using this approach, teachers pay attention to feedback from students, both

verbal and non-verbal. The ability to read the latter is an essential teacher's competence. Students' feedback can be a trigger for a change which can be noticed in the statements below.

> Students sometimes comment on something spontaneously in the classroom. Then I come to the conclusion that maybe I'm doing something wrong.
>
> (Mary)

> In fact, my every lesson, every one of my classes ends with such a short reflection, often exchanged with the students, asking a question "Does what we have done today suit you? Is this the way you like it? For example, has there been too little grammar, too little vocabulary today?". Because each group is very specific.
>
> (Barbra)

Non-verbal messages and the involvement of students in the activity during the lesson are indirect forms of its evaluation. They could be a good source of information as well.

> If it was loud, the students discussed the topic and they were interested, I know that the lesson was successful, and if it was quiet, sluggish, I feel that I should not repeat what I was doing anymore.
>
> (Clara)

> I remember that the way the students sat coincided with the way I made contact with them. The group which sat closest to me actually made contact, worked with me actively, worked well. In another group, they sat far away, hiding behind their books and papers. There was no contact from the beginning.
>
> (Lucy)

The above statements concern the importance of information obtained from the students spontaneously or with the use of tools created by teacher educators for the purpose of their own evaluation of classes. Such forms are positively valued by teachers' educators.

Teachers' teachers use different techniques for collecting information from the students:

1) Evaluation, standard, i.e. using a questionnaire prepared in accordance with the methodology of pedagogical research. Such questionnaires

are handed out at the end of the course. The questions they contain are closed and open. Teachers consider the obtained results as reliable: "students write quite honestly" (Monica).

2) Evaluation, "guiding", handed out after a few classes (Jary talks about three meetings) "to check whether we are going in the right direction."
3) "Assessment cards" in the form of free statements of learners regarding the teaching process, presented immediately after the class. "This is how teacher Monica describes them: I made such feedback in the form of a note. Everyone wrote what they liked and what they didn't, the pros and cons. There were no detailed questions. As these meetings were rare, I did not have such a need for detailed questions."
4) "Micro-questionnaires" (the name is taken from the interviewee) in which the students rate "three aspects on a scale of 1 to 5 (…) how much they like them" (Paul). Conversations with students. Teacher Jary collects information regularly, after the class: "I always ask: Do you want to talk about something or is there anything I should know?"
5) Entries and comments on the blog or using social media and e-mails. Teacher Paula mentions this form and claims that she obtains a lot of information from students through the use of modern technology. Teachers mention the topics of the questionnaires they conduct. Most often they ask their students about the "organization of classes, methods of providing knowledge and assessing this knowledge, selection of materials, student-teacher contact." (Sara)

It should be emphasized that, in the opinion of teacher educators, the situation of assessing the quality of classes by means of an institutionally-created questionnaire answered by students is not the basis for in-depth reflection on their practice. The respondents have a negative attitude towards university questionnaires, claiming that the questions are often inadequate to their subject or too general.

> The questionnaire is the same for everyone – from physicist to PE teacher and educator. When we have questions which are beside the point, we will get answers which are also beside the point. Or too general. About anything and everything – whether the teacher is late or communicative. Whether you understand him. And if someone does not know a foreign language and does not understand the teacher because they do not know it? And not because the teacher is bad? After all, we cannot drastically lower our requirements to the level of understanding of each student.

> It is the student who should rise to the level which is needed. But what will come out in the questionnaire? A bad teacher.
>
> (Eve)

Teachers also emphasize the need to properly *educate students* (Eve) to conduct a reliable and adequate assessment of their own educators.

> We talk about what was well done during the lesson, what was wrong, etc. Unfortunately, students do not always want to say what was wrong, but after a few introductory lessons they are ready to open up. At the beginning, students do not know exactly how to ask, how to behave, you have to work it out with them.
>
> (Clara)

Colleagues' experiences lens

Another type of reflection distinguished by Brookfield is done through the prism of the lens which is the experiences of colleagues from work. Polish teacher educators also use this lens as a stimulus to verify the methods of teaching.

> I simply changed the time devoted to the analysis of practical examples because all the teachers paid attention to it, and it was a plus for them that they were given some materials which they can use in class, during the lesson. Certain ready materials. So, during the second meeting, that's exactly how I tried to prepare everything.
>
> (Monica)

Compared to the previous bases for reflection regarding your own practice, this lens is the least frequent source of reflection. Teacher educators are more likely to use this lens as a method of working with a group of students, where adepts of the teaching profession evaluate each other.

> The student-teacher was a bit confused. (…) You have to be prepared for plan A and plan B. If the class is not discussing the topic, you ask additional questions. It was the experience acquired after this practice, which later had some bearing on the style of work.
> I gave the ready solution to the students, and they improved.
>
> (Monica)

The interviewee describes her reflections as being created "in action", in order to improve the didactics. This is a reflection in action, dynamic and spontaneous:

> We focused only on what was good, which also needs to be emphasized, and what was bad, how it should be improved. And later [the students – author's note] conducted the second class. Then there was an analysis of whether the problem was corrected, etc.
>
> (Monica)

Educational literature lens

Literature is also an inspiration to reflect on one's own practice. In the case of Polish teachers, it is methodology literature aimed at improving, modifying and introducing new teaching methods.

> I could learn the method and procedure of doing a given exercise from this methodological journal. On the other hand, the material needed to do this exercise was most often already in the textbook or in some other publication, which I used constantly during the classes. (…) I was inspired by what I read in this methodological journal.
>
> (Sara)

> Just being aware of the fact that I know these methods exist, that I learned about the additional methods myself, that I had to understand them myself to be able to explain to students what it is about, this really gave me a lot.
>
> (Barbra)

The participants in the study appreciate the importance of theory for reflection on educational and didactic practice.

> I assume that this theory is something "higher". The theory combined with practice gives us a new practice or a slightly changed practice.
>
> (Martin)

> I'm more of a theory person. Not like some students or teachers who think that theory is abstract, and only practical experience counts. It seems to me that I am trying to make students realize that theory allows you to see problems, and seeing a problem is the beginning. Without

> having such theoretical basis, we may misinterpret certain things or overlook certain problems.
>
> (Mary)

In the analysis of teacher educators' attitudes to the relationship between theory and practice, the following approaches may be identified:

1) Theory (scientific pedagogical knowledge) and practice are separated from each other, while theory is the overarching category which initiates the process of developing expertise. For example, teacher Daria is not aware of the constant influence of theory on her current practice. She placed the knowledge outside the realm of professional development, on the side.
2) Theory may be completely separated from practice if it belongs to another field (e.g. language pragmatics). The deliberate actions of the teacher, however, may result in its integration in the didactic process. Certain theoretical issues are then an inspiration and are transformed into practical activities. This situation is described by teacher Martin who presents both areas as clouds: "I would like to combine the research I conduct in the field of linguistics and language pragmatics. I would like to somehow combine them with the practice of teaching, but it is so far and distant at the moment. Nothing is precise. For now, this cloud is just churning, and I wonder how to put it all together." (Martin)
3) The relation is presented as a sum (Paula). Its components are knowledge and own practical thoughts, but also interactions with others.
4) The development of expertise is visualized as a relation of two elements: one is theory, the other – life experiences. Practice is their common element. (Sara).
5) The relationship between theory and practice is one-way (direction indicated by arrows): theory influences practice, and thanks to that "a new enriched practice is created" (Martin).
6) The mechanism of the development of expertise is the mutual interaction of theory and practice. Teachers do not specify which is more important, they talk about their full combination.

Discussion

The analysis of the gathered empirical material revealed the presence of four sources of teacher reflection indicated by Brookfield. As Leitch and Day (2000) point out, reflection is a necessary condition for a teacher's professional development. In the case of Polish teacher educators who participated in the study, reflection plays an important role in their daily practice. It is critical in terms of the methodological aspect, which corresponds to a weak form of reflection on the educational reality which comes down to rethinking and introducing new solutions in the instrumental aspect of the teacher's work.

When reflecting on their practice, teacher educators, who participated in our study, usually use more or less structured practices referring to their own previous professional experiences. They use them as a source of knowledge to solve current problems. Student feedback also plays a key role in reflecting on one's own practice. For this purpose, the research participants usually use observation or original student feedback questionnaires. In the opinion of teachers' educators, only questionnaires prepared by themselves, or their colleagues constitute a reliable source of information and bring about real changes in their didactic practice. University-created questionnaires do not motivate teachers to modify the teaching process because the questions are too general. In the case of formal evaluation of the work performed by students, teachers also show great distrust, which is also confirmed by other studies (Garbacik, 2001; Kotysz-Marczak, 2001; Matos-Díaz & Ragan, 2010). On the other hand, teacher educators often and willingly use their own evaluation and assessment techniques. They emphasize the fact that they approach them selectively, guided only by the comments of students which, in their opinion, have substantive meaning. Many students wish for reduction of requirements or no testing, which is not possible. However, the interviewees show quite a lot of confidence in the opinions of students, although they approach them with caution and common sense.

Using self-reflection and students' opinions when reconstructing one's teaching practice places the research participants in the group of the so-called good teachers. They are characterized by care for the quality of the didactic process in its instrumental dimension.

Undergoing evaluation by colleagues is by far the least common practice. As the research findings suggest teacher educators are reluctant to consult

other teachers about their practice. This is probably due to the fear of criticism and the conviction which is well-established in the Polish academic tradition that the teaching practice of another teacher should not be assessed, unless there are circumstances, such as very low grades awarded by the students to the quality of the conducted classes (Kościelniak, 2015; Sułkowski, 2016). Currently, the situation is slowly changing due to the introduction of visits assessing the quality of education, which is to apply to all teacher educators. Its aim is to recognize good practices and their dissemination, as well as friendly criticism aimed at improving the quality of education.

Research participants perceive professional literature and participation in methodological and scientific conferences as a source of reflection on their own practice. According to them, it is an excellent way to improve one's methodological skills, as well as a way to self-development. However, it is an activity which is focused rather on searching for, discovering new ways of education, coping with problems, and not using the scientific knowledge about the hidden mechanisms of the dominant culture's operation to create a space for real dialogue between the socially-involved participants of educational interactions. Education focused on exposing, reconstructing the dominant mechanisms of oppression, is a manifestation of teachers' deep reflective awareness. For such teachers, education is a space for creating active and responsible citizens, future teachers who will boldly contest the imposed standards and rules of conduct. As Giroux (2020, p. 115) claims: „If higher education is to reclaim itself as a site of critical thinking, collective work, and public service, educators and students will have to redefine the knowledge, skills, research, and intellectual practices currently favoured in the university. Central to such a challenge is the need to position intellectual practice as part of a social complex web of rigor, morality, and responsibility that enables academics to speak with conviction, use the public sphere to address important social problems, and demonstrate alternative models for bridging the gap between higher education and the broader society". The participants of our research used theoretical knowledge and training to gain knowledge about new teaching methods, broaden the range of didactic solutions, and not to make profound changes in their own thinking and teaching practice. The result of this procedure is the lack of theorizing and understanding of academic teaching as a craft. Klus-Stańska (2015) emphasizes this even by the choice of words: the educator is referred to by her as a "foreman" who uses a "toolbox" and various "equipment". Klus-Stańska

claims also that the main reason for this is "losing reflection regarding the meaning of one's actions" (*Ibidem*, p. 117), and the most important aspect on which teacher educators focus their attention is the way of organizing the teaching process, including the techniques and methods of work during classes. Excessive focus on those elements causes the instrumentalization of education. The teacher educator is therefore a "professional – applicator" and not a reflective practitioner. Teaching strategies should, however, positively influence the creation of in-depth knowledge and competences of students.

Summing up, on the basis of the presented empirical research we draw the conclusion that the participants of our research reflected for and in action. Reflection on action seemed not to take place.

Conclusion

As Waring and Evans (2015) claim research literacy involves the ability to draw on and integrate different kinds of evidence found intuitively as well as rationally. Teachers need the knowledge how to use the research tools and skills to conduct research, but what is crucial for them is the ability to use the research findings in reasonable ways and "synthesize them into a useful working theory" (Xerr & Pioquinto, 2018, p. 18). It is essential for teachers to develop the ability to critically evaluate the information they gain through own experience, studies of professional publications and empirical research, as well as taken from their colleagues and students. And the findings should be practically employed to improve teaching and to design effective learning environment.

In order to act adequately and take effective action, educators need more than reliable substantive and methodological preparation. They should be able to generate the evidence, but also to evaluate it properly. Being a teacher educator requires reflection on what appears from the collected data. It is thanks to critical reflection that observation and gathering information about one's own practice can be considered scientific research. Reflection is a systematic study and theorizing of one's own practice. It enables the effective application of what has been discovered and presented in a scientific form and the explanation of facts and phenomena observed in everyday practical action. Only deep reflection makes it possible to take advantage of these facts, which are apparently unrelated to the scientific study on teaching reality, but which,

when subjected to critical analysis, constitute valuable evidence essential to enhance the quality of teaching. What teacher educators need is research-based knowledge and reflection-based practice.

Reflection is a necessary condition for a teacher's professional development; however, in practice much teacher reflection fails to achieve a critically reflective stance and needs to shift towards or borrow from action research approaches. What is more, reflections focused mainly on practical issues referring to teaching methods, testing, or classroom management. Our analysis shows that teachers' engagement in reflective practice may be limited and impermanent. What we wish to emphasize is the great need for research literate teacher educators to shift from weak forms of reflection to powerful inquiry-based critical reflective learning, and knowledge-based critical thinking. Teachers-researchers need deep critical insight into their own practice, thus gaining deeper understanding of themselves, own reactions and perceptions, and, finally, greater support for their professional development process.

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PART THREE

The research literacy of experienced teachers

CHAPTER NINE

Teachers' Embracing or Resisting Policy on Lifelong Learning through Practitioner Research

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ABSTRACT

Practitioner research is increasingly gaining attraction because of its research and educational potential. Teachers, who are usually not educated or paid to conduct practitioner research, are the ones to be actively involved in this process so their attitudes are crucial. This paper aimed to study Croatian teachers' attitudes towards participating in lifelong learning programs and practitioner research. We conducted a regional survey completed by 372 primary and secondary school teachers whose answers were statistically analyzed. The survey results show that the teachers participate in lifelong learning programs because they believe each teacher should engage in such activities. Even though they are familiar with research procedures and occasionally read scientific/professional literature, the teachers do not feel that they are very research literate. Consequently, they rarely conduct or apply other researchers' results in their classes but are willing to acquire knowledge and skills to do so.

KEY WORDS: Croatian teachers' attitudes, lifelong learning programs, practitioner research, regional survey, SPSS

Introduction

Lifelong learning has been recognized as a cross cutting element inherent to all life spheres, especially education. Aiming to build a knowledge-based society, which can face the 21st century challenges, embedding lifelong learning in education is of the utmost importance because it is perceived as a core component in employees' development. It facilitates efficient adaption to fast economic and societal changes because of which the majority of employers organize some forms of continuous learning. Moreover, some even make it obligatory. In Croatia, all educational workers are required to complete a five-year study program and after a year of an internship, they have to take a national teacher's exam upon which they are qualified for unsupervised teaching. If interested, teachers can apply for a promotion to a teacher mentor, teacher adviser and an excellent teacher adviser; however, they have to meet the continuous learning-based requirements. Pursuant to the New Regulations on Promotion of Teachers, Professional Associated and Principals in Primary and Secondary Schools (2019), in a five-year period, some of the requirements they have to meet are to participate in a lecture or a workshop, prepare students for competitions, coordinate or participate in a project, publish professional or research papers, etc. In order to meet the aforementioned requirements, teachers need to be research literate. During their formal five-year university education, teachers are not educated enough in the field of research literacy, which inspired us to conduct this research and study how research literate Croatian teachers are. Our goal was to find out if Croatian teachers participate in lifelong learning programs since they are not obliged to. We were also interested in the way Croatian teachers acquire research literacy skills, if applicable, whether they conduct and apply practitioner research results in their classes and the reasons why they decide (not) to do that.

Theoretical background

According to Waring and Evans (2015) and Borg (2013), research literacy refers to the teachers' ability to find relevant information, critically scrutinize and synthetize it into a useful working theory. When it comes to practitioner research, research methodology is somewhat different than in academic

research. As Nunan and Bailey (2009) explained, practitioner research involves conducting research in school settings and deals with issues related to teaching and learning for the teacher to better understand one's own work. Teachers are frequently afraid of or discouraged from conducting research and/or are encouraged to be passive consumers of information provided by scientists working outside of the school system (Anwarudding, 2015), which can actually skew teaching practices. Being practitioners, teachers are perceived as implementers of research results published by researchers. There is a growing need to challenge this view because teachers cannot rely on context-free findings without testing or directly applying them in classrooms. Current developments highlight the importance of connecting research and teaching practices (Diery *et al*., 2020; Bauer & Prenzel, 2012). Based on the idea that empirical evidence is a critical source of information to be applied in teaching practices, an agenda of educating teachers to efficiently use and integrate empirical evidence in their classrooms is an imperative.

According to Brown *et al*. (2017), teachers should use empirical evidence, comprised of teaching approaches, learning strategies and (gloto)didactics, as a resource and orientation for planning and decision-making in their classrooms. Empirical evidence can be acquired in design-based research, action research or lesson study since practitioner research lies between academia-led theoretical inquiries and research-informed practice (Groothuijsen *et al*., 2020). An ever-increasing body of recent research (Joyce & Cartwright, 2020; Farley-Ripple, 2018; Guldberg, 2017; Nelson & Cambell, 2017; Coburn & Penuel, 2016; Kvernbekk, 2016; Mehrani, 2014; Vanderlinde & van Braak, 2010; Biesta, 2007; Broekkamp & van Hout-Wolters, 2007) points to a discrepancy between practitioner research and practice caused by practitioner research not yielding (enough) valid and evidence supported results, producing limited information on practice, not making enough sense for teachers or teachers having limited or no skills to implement practitioner research findings in their classes.

The urgent need to bridge the gap between practitioner research and actual practice is widely reflected in national agendas and initiatives worldwide (Kaur *et al*., 2020) putting an emphasis on the use of research-driven pedagogy. In promoting evidence-based teaching practices, teacher mentors or second order practitioners play a vital role (Darling-Hammond, 2016; Lunenberg *et al*., 2014). They are expected to engage themselves in critically reading research literature, grounding their teaching on the best

empirical evidence, conducting practitioner research and disseminating research-based knowledge thus role modelling for future or novice teachers (Diery *et al*., 2020; Geerdink *et al*., 2016, Loughran, 2014) and enhancing their teaching skills and students' learning outcomes.

A growing body of recent research (Cain, 2019; Obwegeser & Papadopoulos, 2016; Borg, 2015) demonstrates various benefits of practitioner research such as improved teaching practices, easier data collection and findings implementation, broadening horizons and enhanced collegiality. Therefore, it is essential to develop teachers' research competence (Koustoulas, 2017) and experience in conducting research (Rebolledo, Smith & Bullock, 2016) because such research bring immediate practical value (Al-Maskari, 2015). Scholars have argued for the relevance of using practitioner research. Brown (2015) depicted two values of practitioner research, namely usability and signifying value. Usability refers to addressing classroom-related problems and the latter refers to empirical evidence having superiority over the quality of information sources. As Awang-Hasim *et al*. (2019) and Brown (2017) found, teachers conduct practitioner research to develop better teaching strategies and materials, students acquire learning outcomes, solve specific teaching and learning problems, manage their classes, understand individual differences among students and implement appropriate curriculum and pedagogy. That being said, it is important to study teachers' views and attitudes towards conducting practitioner research, implementing findings in their classrooms, disseminating results among their peers and being research literate as a prerequisite for the said activities.

Methodology

Our research aimed to study Croatian teachers' attitudes towards lifelong learning and practitioner research. We conducted a regional survey sent electronically to the teachers teaching in five eastern Croatian counties where there is one or two teachers' representatives for each school courses. We applied a non-probability convenience sampling method by sending the survey to provincial and federal teachers' representatives who were asked to solicit practitioners (teachers) to respond to the survey. Each school course teacher representative has a mailing list of all teachers teaching that course in his/her district and usually communicates with his/her representees via email so we

estimated that teachers' representatives recruiting representees to complete the survey will be the most efficient way of getting the most surveys completed. However, since the survey was sent only to eastern Croatian counties, where the authors work at and have contacts, the results cannot be generalized to cover all Croatian teachers' attitudes towards lifelong learning and research literacy. Yet, the methodology and sampling technique can be applied to conduct the same research in other Croatian counties. The survey was completed by 372 teachers 86% of whom are female and 14% male teachers, which corresponds to the prevalence of women in the teaching profession in Croatia. 82% of the participants teach in primary schools, 17.7% in secondary and only 0.3% in both primary and secondary schools, which points to primary school teachers being more willing to take part in a survey. In order to avoid biased results, the teachers' working place, as a categorical variable, will not be taken account when conducting statistical tests. Furthermore, as presented in Figure 1, the participants' working experience is equally distributed, which contributes to the research merit.

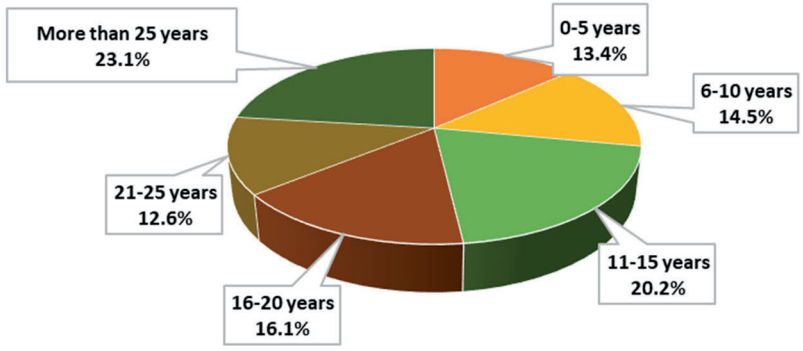

Figure 1. Participants' working experience

As illustrated in Figure 2, the courses our participants teach are not equally distributed, which we did not expect. One unanticipated finding were low numbers of teachers teaching Croatian and foreign languages (English and German teachers) willing to participate in the research because that subset of teachers are not representative of their population unlike other courses' subsets.

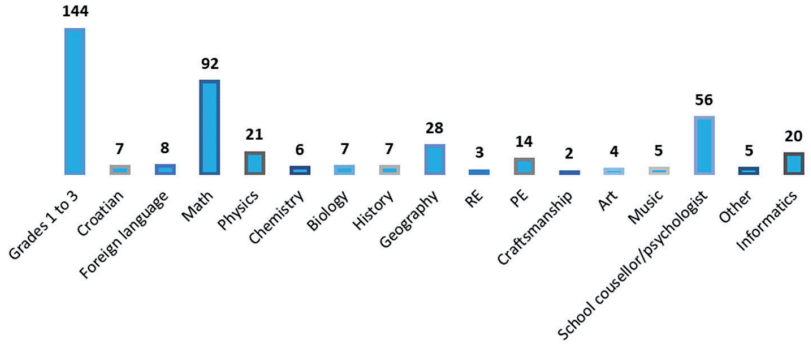

Figure 2. Participants' teaching courses

Another finding we were surprised about is presented in Table 1. Teachers with up to five and ten years of working experience do not meet the working experience requirement to apply for teacher mentors or advisers, respectively, so zeros in these two columns come as no surprise. Low numbers of promoted teachers in other work experience groups do come as a surprise because a promotion results in a significantly higher salary. On the other hand, it requires continual lifelong learning activities a lot of teachers, as our results point to, are not ready to carry out.

		Teachers' promotion				Total
		Teacher mentor	Teacher adviser	Excellent teacher adviser	I have not been promoted	
Working experience	0–5 years	0	0	0	49	49
	6–10 years	3	0	0	53	56
	11–15 years	14	2	0	59	75
	16–20 years	6	7	0	48	61
	21–25 years	13	8	0	25	46
	more than 25 years	16	23	2	44	85
Total		**52**	**40**	**2**	**278**	**372**

The survey conducted in a Googledocs form consisted of three parts, namely information about the participants' professional life (presented in this chapter), lifelong learning related questions and scientific/professional work part. The questions were both close and open-ended because different parts required (un)guided answers. Upon conducting the survey, the results were uploaded in the *Statistical Package for Social Sciences* (SPSS) where descriptive statistics, Mann-Whitney, independent sample t-test, one-way ANOVA and Spearman correlation test were performed.

Results and discussion

Lifelong learning activities

Even though only a quarter of our participants got promoted, 98.4% of them believe that a teacher should engage in lifelong learning activities. Contrary to Uzunboylu and Hursen's (2013) findings on novice teachers being more eager to learn, a one-way ANOVA test showed no statistically significant difference (p = .174) between our teachers in their attitude towards lifelong learning.

The lifelong learning activities the teachers participated in during the last two years were *workshops/seminars/lectures/webinars* (367 of them), *activities resulting from teacher networking* (118), *conferences and round tables* (100), *mentoring pre-service teachers* (74), *certified educational programs* (49), *conducting research* (34), *school visits/exchange programs* (28), i.e. only three teachers did not participate in any lifelong learning program because they believe a teacher does not have to participate in such activities. The results are not very encouraging because, on average, every teacher participated in two lifelong learning activities in a two-year period or one activity per year.

However, 62.4% of the teachers wanted to participate in more lifelong learning activities. The reasons why they did not participate in more activities are listed in Figure 3.

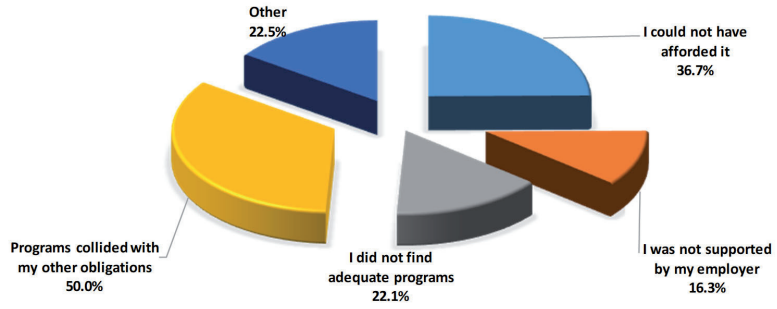

Figure 3. Reasons for the teachers not participating in more lifelong learning activities

Similarly to the findings reported by Livingstone (2015), the top three reasons, namely a lack of financial resources and employers' support as well as collision with other obligations (usually classes) were rather expected. In Croatia, teachers are not allocated any funds to be spent on lifelong learning programs so they either take free of charge ones (if there are any available) or invest in themselves if they are intrinsically motivated to take a certain program. Employers (principals) cannot support teachers financially; however, what they can do is to organize and pay substitute teachers to cover for classes. When collisions happen, teachers usually have to organize their substitutes by asking colleagues to cover for them. It functions in larger schools with more teachers teaching the same course. In schools with fewer students and one teacher teaching a course, there are no substitution options. It is also possible that a teacher refuses to substitute for a colleague for various reasons. The fact that 98 teachers (26.3%) paid for a lifelong learning activity speaks in favor of the teachers being intrinsically motivated to learn and acquire new experience. Only two teachers promoted to excellent teacher advisers paid for some lifelong learning activities, which is expected because they reached the highest level of promotion and can participate in free activities when they are organized. The independent sample t-test $t(278) = -2.501$, $p = 0.013$ points to the excellent teacher advisers not paying for lifelong learning activities like the teachers who still have not been promoted do but given the low number of the former group, the statistical significance cannot be taken into account. Finally, the teachers selected the fields they would like to specialize in as presented in Figure 4.

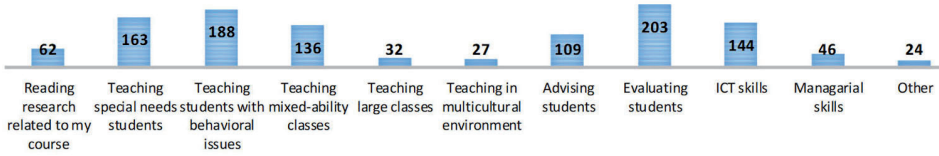

Figure 4. Fields the teachers would like to specialize in

Since the majority of the teachers teach in primary schools, their wishes to specialize in the fields of teaching special needs, mixed-ability and students with behavioral problems were somewhat intuitive and in line with Tovkanets' (2018) results. What we found interesting was that 32 teachers would like to specialize in teaching large classes and 27 in teaching in multicultural environment. Since all classes are of moderate sizes (up to 30 students) and the region where the participants teach is very homogenous culture wise, these findings point to some teachers' readiness to gain experience which they might not be ever able to exercise. The teachers' desires to gain more knowledge in advising and evaluating students and well as ICT skills were expected. Some of the participants might eventually apply for the position of a school principal so timely gaining managerial skills seems like a reasonable investment in one's future. Finally, 62 teachers would like to read updated research carried out in one's respective field. A possible explanation for a relatively low number of teachers interested in reading research results might be related to a usual teachers' practical rather than theoretical point of view. Moreover, Pozilova *et al.* (2020) listed reading as one of five problems in adult lifelong learning. The next subchapter deals with the teachers' views on conducting research so we will see whether this result points to the teachers not being very keen on conducting research or it was just a less attractive option next to an abundance of more desirable ones.

Scientific/professional research

Since what is meant by research can be subjectively interpreted, we opened this subchapter by asking the teachers to provide their definition of conducting research. The responses can be categorized in three groups – general definition, personalized definition and a negative attitude towards

conducting research. Given the fact that the survey was done in Croatian, the following examples are translated and summarized by the authors.

1) *Defining a problem, formulating hypotheses, analyzing and publishing results.*
2) *Observing a form or behavioral pattern over some time, collecting data, interpreting and drawing conclusions.*
3) *Research includes gaining knowledge, professional and personal advancement and pride.*
4) *Research is an active and systematic process of studying issues aiming to discover, interpret and apply results in classes.*
5) *Enhancing the quality of research area and providing peers with new insights.*
6) *Being motivated to keep on learning new things thus progressing in one's field.*

Having read the general definitions, we can conclude that the teachers are familiar with the parts and procedures of the research process.

Some teachers decided to provide more personalized definitions as follows:

1) *Research means to study relevant references, conduct a survey and write a paper.*
2) *Get to know attitudes of the population I work with. Conducting research results in professional satisfaction.*
3) *Learning from experience and applying what you had learnt. This way of learning is more interesting and knowledge remains permanently.*
4) *Understanding theory more efficiently.*
5) *Fieldwork.*
6) *It is more applicable to university professors because primary school students are not used to a research-based way of studying.*

Contrary to the recent results reported by Diery *et al*. (2020) and Reddy *et al*. (2017) who reported positive attitudes of teachers towards conducting practitioner research, not all teachers in our study have positive or even neutral viewpoints on conducting research, which is in line with Drill *et al*.'s (2012) and Korkmaz *et al*.'s (2011).

1) *Research means additional tasks and plenty of paperwork.*
2) *Spending personal resources and time, which I do not have.*
3) *I will not engage in conducting research because no one appreciates it.*

These results might be related to our next research question on the importance and applicability of research results.

Contrary to our expectations, only two dozen teachers believe that conducting practitioner research and applying results in classes have no significant role in a teacher's professional life. This number is even lower than the number of the teachers who expressed negative views on conducting research, which can be interpreted as some teachers believing that conducting practitioner research is important but other factors (e.g. lack of appraisal or financial support) discourage them from doing it. The majority of our responders believe in the importance of conducting practitioner research and applying results in the classes and their reasons can be summarized as follows:

1) *Conducting practitioner research nurtures teamwork, fosters networking and enhances development of research, organizational, communication and critical skills of students.*
2) *It improves educational process and school culture as well as develops trust between schools and parents.*
3) *Based on research results, I plan my teaching activities and design resources.*
4) *It pinpoints specific problems and helps us (self)evaluate learning outcomes.*
5) *It gives me points for professional development.*

The responses suggest that the teachers are intrinsically motivated to (self) evaluate their teaching methods and learning outcomes in order to adapt to the needs of their students as also found by Diery *et al.* (2020), Darling-Hammond (2016) and Kutlay (2013).

In order to be able to conduct any research, a potential researcher needs to be familiar with previous findings, relevant literature and appropriate research methods. Figure 5 shows that 13.2% teachers read scientific and/or professional literature on a daily basis, 10.2% on a weekly basis, 29% several times a month and 43.8% once a month, which is very encouraging and completely contrary to the results reported by Kutlay (2013) who found that English teachers rarely read research. 14 teachers (3.8%) never do it thus being consistent with the answers to the two previous questions.

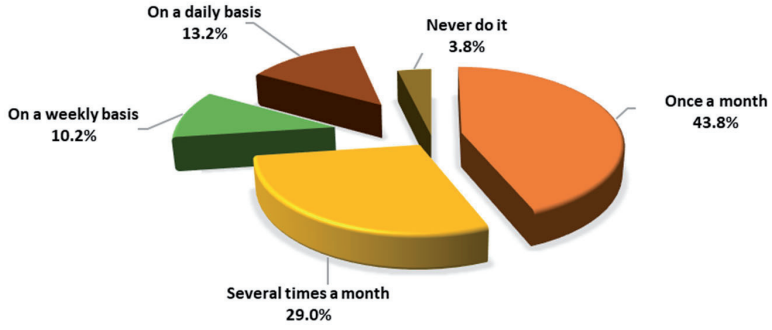

Figure 5. Frequency of reading scientific and professional literature

According to one-way ANOVA test results ($F(3, 368) = .629$, $p = .000$), all 14 teachers who never read scientific and/or professional literature have not been promoted yet. This statistically significant result can suggest that those 14 teachers do not plan to get a professional promotion or ever conduct any practitioner research. We were interested in learning more about those 14 teachers, i.e. we wanted to examine if those 14 people are novice or more experienced teachers soon to be retired. To our surprise, 3 teachers have up to 5 or 15 years of working experience and 5 have up to 10 years of working experience. To paraphrase, 11 out of those 14 teachers are relatively young teachers, working experience-wise, who will stay in the system for a long time so their unwillingness to read scientific/professional literature at an early career stage is a serious warning sign. Even though we expected that more experienced teachers who are soon to be retired would have a more negative attitude towards reading and practitioner research, our results support those of Tack and Vanderlinde (2016) and Lunenberg *et al.* (2014) who concluded that more experienced teachers perceive reading and conducting practitioner research less demanding than their less experienced colleagues. Furthermore, 13 of the mentioned 14 teachers believe that teachers should engage in lifelong learning activities so they accept proclaimed principles of lifelong learning but refuse to practice that. Lifelong learning principles were probably proclaimed during the teachers' university education; however, it is possible that higher education institutions fail to instruct and educate future teachers on how to engage in lifelong learning activities, which should be changed. 59.9% of the teachers

claim that reading scientific and/or professional literature has a great or an extremely great impact on them as teachers thus being in line with our previous question's results.

The results related to the frequency of the teachers studying literature and conducting research among their students, parents and colleagues are presented in Figure 6.

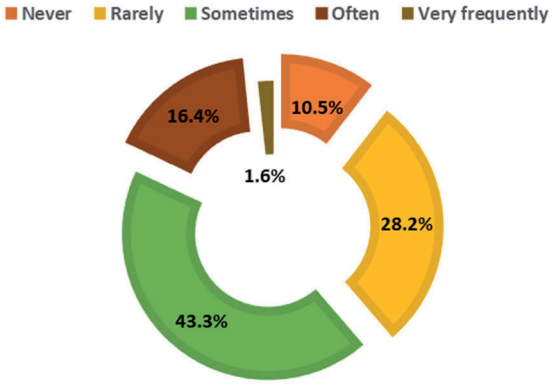

Figure 6. Frequency of conducting research

As expected, the majority of the participants do it sometimes thus being in line with Chow *et al.* (2015) and Kutlay's (2013) research. A statistically significant difference between the groups of the participants was recorded with a one-way ANOVA test ($F(5, 366) = 3.228$, $p = .007$). Being in line with Sekerci *et al.* (2017) research, a post-hoc Tukey test revealed that the novice teachers (those with up to 5 years of working experience) conduct research significantly less frequently than the teachers with up to 25 ($p = .040$) or more than 25 ($p = .047$) years of working experience, which seems very logical because novice teachers are still getting to know their working environment, responsibilities, teaching methods and plans, etc. and have no spare time to conduct research. A related one-way ANOVA test ($F(3, 368) = 2.616$, $p = .025$) pointed to intragroup differences with respect to the teachers' job promotion and a post-hoc Tukey test proved that those teachers who still have not been promoted (or are not interested in applying for a promotion) conduct research significantly less frequently ($p = .046$) than teacher advisers. One

of the requirements for professional promotion is to occasionally conduct research so teacher advisers being more interested in gaining points by conducting research is expected. Another significant difference was found related to the teachers' gender. Namely, the female teachers conduct research significantly more (p = .017) than their male colleagues as proven by the Mann-Whitney test and reported by Sekerci *et al.* (2017). It seemed logical to check if there is a correlation between reading scientific and/or professional literature, literature having an impact on a teacher and conducting research so we ran a Spearman correlation test, which showed that the more they read scientific and/or professional literature ($rs(372)$ = .356, p = .048) or believe it has a great impact on them ($rs(372)$ = .318, p = .000), the more likely they are to conduct research. This correlation was statistically significant for all teachers' working experience groups expect for the teachers with up to 25 years of working experience (p = .230). Many studies (Soodmand Afshar & Hosseini Yar, 2019; Corcoran & O'Flaherty, 2018; Gomendio, 2017) have postulated that practitioner research has increased the level of teaching professionalism in terms of teachers becoming cooperative, increasing their analytical and solving problem skills, boosting their self-esteem, class autonomy and job satisfaction overall so even if they are not obliged by the system, teachers can greatly benefit from conducting research.

The reasons why the teachers decide to conduct research are listed in Figure 7.

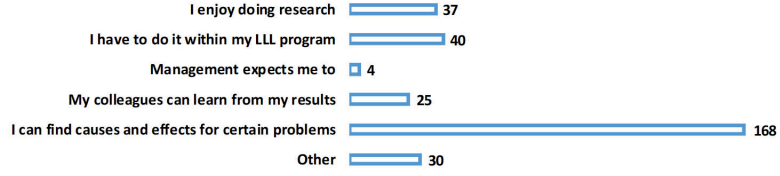

Figure 7. Reasons for conducting research

It is evident that the majority of the listed reasons stem from the teachers' intrinsic motivation to find out causes and effects for certain problems they encounter in their classes thus supporting Kutlay's (2013) results. If they find out causes for a certain phenomenon, they will be able to tackle the issue more efficiently. Some of the teachers also think about their colleagues' benefiting from their results. We believe that this number is a bit low because

teachers are aware that their colleagues are a bit reluctant to use research results in their classes. Since this was a multiple-choice question, the answers *I enjoy doing research* and *I have to do it within my lifelong learning program* could have been chosen by more teachers. Pursuant to Article 8 of the *Guidelines on the progress of teachers, professional associates and principals in primary and secondary schools and dorms*, teachers are awarded fewer points if they conduct research and publish their results in (inter)national journals than if they participate in (online) conferences or webinars, mentor students for competitions, share their class materials on certain educational platforms, volunteer in educational organizations, etc. To paraphrase, teachers are more encouraged to pursue other education-related activities or even discouraged to conduct time-consuming practitioner research. That being said, the fact that only 4 teachers believe their management expects them to conduct practitioner research is logical. here are teachers who do not conduct research for various reasons listed in Figure 8.

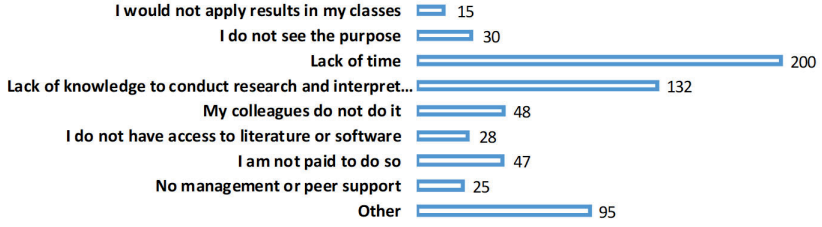

Figure 8. Reasons for not conducting research

Corroborating Diery *et al.* (2020) and Kutlay's (2013) results, the two most chosen reasons are lack of time or knowledge to collect data, evaluate them systematically, interpret statistically and disseminate. During their undergraduate and graduate university education, teachers do not obtain knowledge to conduct research so the reported lack of confidence or time, due to heavy workload, is rather expected. Other three frequently mentioned reasons, namely *my colleagues do not do it, no management or peer support* or *I am not paid to do it,* are related to school research culture. In order for teachers to conduct practitioner research, internal and external support from their colleagues, management, higher education institutions and parents are of the utmost importance. Chow *et al.* (2015) found that supportive and

sympathetic management plays a significant role in providing teachers with necessary time and resources (workload reduction) to conduct practitioner research thus establishing research-oriented school culture. In Croatia, if they wish to conduct research, teachers can only do it in their free time by using their own resources (e.g. software for statistical analysis), i.e. principals cannot reduce teachers' workload and consequently, they cannot create inviting research-oriented school culture. Finally, some teachers feel reluctant to carry out practitioner research because they do not see its purpose or they would not apply research results in their classes. It seems possible that the teachers perceive research as something theoretical and done by university professors. As opposed to university professors/researchers who are looking for clarity and coherence, school teachers are interested in pedagogical content knowledge (Groothuijsen *et al.*, 2020). While looking for pedagogical content knowledge, teachers think in a case-based way and consider each situation to be unique so if they conduct research whose findings conflict with their classroom experience, they are inclined to dismiss general research-based knowledge and give precedence to their professional experience (Cain, 2017), which explains teachers' reluctance to conduct research.

Since teachers are not formally educated to conduct research, we asked them whether they would conduct practitioner research if they were educated in collecting data, analysing them statistically and disseminating results. The male teachers had a divided opinion – 50% of them would and 50% would not conduct research if they were educated to. In comparison, 66% of the female teachers would and 34% would not conduct research, which is a statistically significant intragroup difference (p = .024). An interested finding was recorded with respect to the teachers' gender and working experience. Namely, in all working experience groups, except for one, more teachers chose that they would do research if they were educated to do so, i.e. the male and female teachers with 6 to 10 years of working experience said that they would not conduct research even if they were formally educated to do so. Once again, young teachers (experience-wise) were recorded to be narrow-minded and reluctant to improve their teaching and analytical skills by hypothetically carrying out practitioner research. Openness to new teaching approaches and novelties is expected from all teachers but this group is on the top of the list. We recorded a strong positive correlation (rs(372) = .215, p = .000) between the teachers' desire to conduct practitioner

research if receiving formal education and their wish to participate in more LLL programs, which points to the consistency in their replies. As anticipated, a strong negative correlation was recorded between the teachers' habit of and a wish to conduct practitioner research. However, this does not apply to both gender groups. The female teachers who rarely conduct practitioner research would do it significantly more often if they were educated how to ($rs(320) = -.209$, $p = .000$). Also, those female teachers who frequently apply other researchers' results in their classes wish to be educated to conduct their own practitioner research ($rs(320) = -.166$, $p = .003$). The last two statistically significant correlations point to the female teachers' strong desire to get formal education to be able to conduct practitioner research so higher education institutions or teachers' associations might want to consider introducing some courses or workshops on methodology and practitioner research for interested teachers.

Some teachers listed not being paid to do so as one of the reasons for not conducting practitioner research so we asked them if they think that those who do conduct research should be financially rewarded and 80.1% believe that they do. They are very united on this issue, i.e. no statistically significant differences were found in terms of gender ($p = .320$), working experience ($p = .245$) or promotion ($p = .612$). A strong positive correlation ($rs(372) = .229$, $p = .000$) was recorded with Spearman test – those teachers who would conduct practitioner research if they were educated to do so believe that teachers who conduct research should be additionally paid. This seems reasonable because in addition to gaining some insights, teachers need some external motivation to invest a lot of time and energy into something that is not a part of their jobs. Interestingly, not all teachers think in the same way. Less experienced teachers (three groups of teachers with up to 15 years of working experience, $p = .104$, $p = .154$, $p = .280$, respectively) would not consider conducting practitioner research if they were educated to even if teachers are additionally paid for doing it. Being consistent with our previous results, this phenomenon has a research potential so the reasons for less experienced teachers being so reluctant to conduct practitioner research would be worth examining.

The final set of questions was in the form of a five-level Likert scale. The first question was related to a comparison of conducting research and other teaching tasks as presented in Table 2.

Table 2. I have better things to do than to conduct practitioner research

	Frequency	Percent	Valid Percent	Cumulative Percent
I completely disagree	32	8.6	8.6	8.6
I mostly disagree	116	31.2	31.2	39.8
I cannot decide	111	29.8	29.8	69.6
I mostly agree	87	23.4	23.4	93.0
I mostly disagree	26	7.0	7.0	100.0
Total	372	100.0	100.0	

The results show that the teachers are not homogenous in their views on this question, i.e. roughly a third of the teachers believe they have better things to do in classes than conduct practitioner research, a third think that conducting practitioner research is as important as their other tasks and a third cannot decide. After running a one-way ANOVA and post-hoc test, we realized that the less experienced teachers (those teaching from 6 to 10 years) believe that they have better things to do in classes significantly more (p = .049) than their colleagues teaching from 21 to 25 years, which is in line with our previous results of less experienced teachers being very reluctant to conduct practitioner research. Spearman correlation test revealed significant correlations – the teachers do not apply other people's (p = .000) or their own (p = .000) research results in their classes because they think they have more important things to do in classes or because implementing practitioner research results in their classes require knowledge and additional time and energy (p = .000) but they would if they knew how (p = .000). Intuitively, the teachers with up to 5 ($rs(49) = .577$, p = .000) and from 6 to 10 years of working experience ($rs(56) = .624$, p = .000) believe it would be difficult to implement practitioner research results in their classes. The aforementioned correlations are very significant because they reveal that the main reason why the teachers (especially less experienced ones) do not deal with practitioner research is that they do not know how to conduct it, interpret results and apply them in their classes.

Table 3 lists the teachers' opinion on purposiveness of conducting practitioner research.

Table 3. There is no point in conducting practitioner research

	Frequency	Percent	Valid Percent	Cumulative Percent
I completely disagree	104	28.0	28.0	28.0
I mostly disagree	153	41.1	41.1	69.1
I cannot decide	82	22.0	22.0	91.1
I mostly agree	29	7.8	7.8	98.9
I completely agree	4	1.1	1.1	100.0
Total	372	100.0	100.0	

Evidently, the teachers see the purpose in conducting practitioner research. While there were no gender differences (p = .684), a one-way ANOVA test showed significant differences in the opinion of the teachers teaching from 6 to 10 years and from 11 to 15 years (p = .009, p = .015, respectively) with other groups. To clarify, 23.2% of the teachers teaching from 6 to 10 years and 29.4% of those with 11 to 15 years of working experience believe that it is pointless to conduct practitioner research while the percentages in other groups are around 5. Since there is a strong positive correlation (p = .000, p = .000) on the purposiveness of conducting research and difficulties caused by implementing results in their classes, we can conclude that the aforementioned groups of teachers do not see the point of conducting practitioner research because they do not know what to do with results.

In a recent study, Cain (2017) claimed that teachers consider students and classes to be specific and unique cases so we decided to study this hypothesis by asking our participants whether they perceive each student generation as unique or similar to others. 57.8% disagree, 20.7% agree and 21.5% cannot decide whether generations are alike. Upon splitting the file based on the teachers' gender, we got the results shown in Table 4.

Table 4. Similar teaching methods can be applied to every student generation

Gender		Frequency	Percent	Valid Percent	Cumulative Percent
Men	I completely disagree	9	17.3	17.3	17.3
	I mostly disagree	13	25.0	25.0	42.3
	I cannot decide	11	21.2	21.2	63.5
	I mostly agree	15	28.8	28.8	92.3
	I completely agree	4	7.7	7.7	100.0
	Total	52	100.0	100.0	
Women	I completely disagree	58	18.1	18.1	18.1
	I mostly disagree	135	42.2	42.2	60.3
	I cannot decide	69	21.6	21.6	81.9
	I mostly agree	52	16.3	16.3	98.1
	I completely agree	6	1.9	1.9	100.0
	Total	320	100.0	100.0	

It is evident that the female teachers disagree (60.6%) with perceiving and teaching each student generation equally while almost the same percentage of the male teachers (dis)agree on this question. This gender difference might stem from psychology of women adapting to other people and their needs more often than men; in our case, this gender difference, recorded by Mann-Whitney test, is statistically significant (p = .013) and corroborated the research of OECD (2009).

Policy makers, management and teachers alike intuitively accept the idea of engaging parents in some school activities because parents' awareness and involvement can have a positive effect on students' academic life (won Kim, 2019; Nix *et al*., 2018; Bierman *et al*., 2017). Based on their experience, we asked the teachers if parents and teachers would positively react on conducting practitioner research summarizing the results in Table 5.

Table 5. Students and parents would not positively react on conducting research

	Frequency	Percent	Valid Percent	Cumulative Percent
I completely disagree	63	16.9	16.9	16.9
I mostly disagree	114	30.6	30.6	47.6
I cannot decide	118	31.7	31.7	79.3
I mostly agree	62	16.7	16.7	96.0
I completely agree	15	4.0	4.0	100.0
Total	372	100.0	100.0	

The teachers' answers are dispersed between three options even though more of them believe that students and parents would positively react on conducting practitioner research. The third of them cannot decide pointing to the possibility that the teachers have not conducted practitioner research yet. A one-way ANOVA and post hoc Tukey tests revealed that the opinion of the teachers with 6 to 10 years of working experience significantly differ from the opinion of their most experienced colleagues (p = .022). Namely, 33.9% of the teachers teaching 6 to 10 years believe that students and parents would not positively react to conducting practitioner research compared to 14.3% of their most experienced colleagues, which is in line with our previous results on the former groups of teachers. Additionally, upon running Spearman correlation test, we found a statistically significant negative correlation ($rs(56)$ = -.310, p = .020) revealing that the teachers teaching from 6 to 10 years do not conduct or implement their or their colleagues' research results in their classes so they cannot have any predictions on students and parents participating in research because they had never (or rarely) conducted it.

The last question, whose answers are shown in Figure 9, illustrates what the teachers believe others expect them to do.

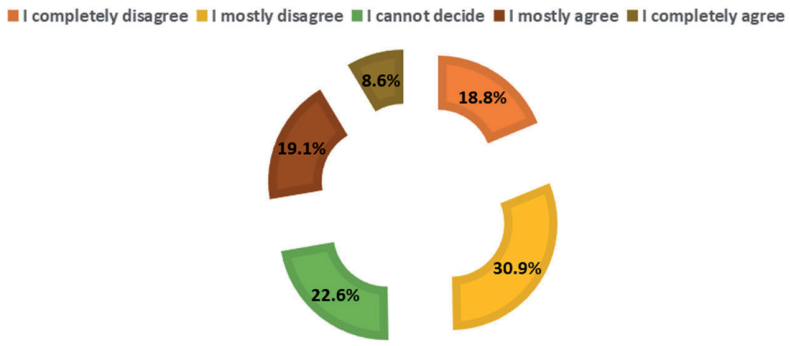

Figure 9. Teachers are expected to teach and not conduct practitioner research

49.7% of the teachers disagree with a view that teachers are only expected to teach thus supporting Cekic *et al.* (2018) research results. There are no statistically significant differences in terms of gender (p = .324), work experience (p = .225) or promotion (p = .638), which leads to a conclusion that they are generally aware of a possible (future) paradigm shift, the necessity to conduct practitioner research and apply research results in their classes.

Conclusions

The aim of this research was to study Croatian teachers' attitudes towards participating in lifelong learning programs and conducting practitioner research. Upon carrying out a regional survey completed by 372 teachers, we conducted a series of statistical tests to analyze their answers. We learned that primary school teachers, especially those teaching from grade 1 to 4, are the most and language teachers the least eager to participate in research.

Almost all teachers believe that a teacher should engage in lifelong learning programs. They mostly participate in free of charge lectures/workshops/seminars/conferences, activities stemming from teacher networks or they mentor pre-service teachers. They are willing to participate in more lifelong learning programs but they are not supported by their employers in terms of their classes being taught by substitute teachers while they are away. The teachers are mostly interested in specializing in

the fields they directly work in; however, some of them would like to gain knowledge and skills to be potentially used in the future.

When it comes to conducting practitioner research, our study showed that the teachers are familiar with research procedures; they occasionally read scientific and professional articles and believe in the importance of applying research results in their classes. A disturbing finding is that the teachers who are the least eager to read scientific/professional literature and conduct practitioner research are teachers who will be in the system for a very long time and possibly negatively influence a lot of generations if they teach them solely by using traditional methods and not applying more recent approaches suggested by recent literature. They try to find an alibi by claiming that students and parents would not positively react to practitioner research, which is something they cannot possibly know because they had never (or rarely) conducted research. Additionally, experience-wise young teachers think that conducting educational research is pointless because they do not know how to conduct research, interpret results or apply them in classes, i.e. if they were educated or instructed how to do it, they would probably be more eager to do it. Especially female teachers who are more willing to acquire new skills and adapt to each student generations' needs. Therefore, provincial and federal teachers' representatives should initiate and try to organize lectures/workshops on research literacy and methodology.

An encouraging finding is that when they do, the teachers conduct practitioner research because they are intrinsically motivated to learn about their students' problems and tackle them and not because their superiors or the system requires them to do so. A lack of time or knowledge are the main reasons why they decide not to engage in carrying out practitioner research. These problems can be solved by providing teachers with formal training on research literacy and methodology and reducing their workload or financially rewarding those who invest time and energy into (self) educating and conducting research, which the teachers would support. Counterintuitively, less experienced teachers are the most reluctant to improve their teaching and analytical skills even if they would be financially rewarded for that. Perhaps they work in schools with poorly developed research culture and/or are surrounded by unmotivated colleagues, which can be tried to be solved by promoting research activities and results applicable potential. Also, during their one-year internship, pre-service teachers should be exposed to and encouraged to engage themselves in

more research literacy related theoretical courses and practical workshops, which policy makers and stakeholders could make obligatory. Educating pre-service teachers would increase the number and quality of practitioner research, which would consequently enhance the quality of classes.

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CHAPTER TEN

Master Teachers: The Constrained Role of Research Literacy

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Introduction

What we know about the professional knowledge and learning of teachers is complex, multidimensional and, above all, incomplete. Teachers gain experience, work together, and talk amongst themselves. Those of us who work with teachers need to understand how professional knowing is described and conceptualised by teachers, that is how they themselves talk about their professional knowledge and learning in relation to school development and change in classroom practice. The study that forms the basis of this chapter gathers and analyses narratives around practice from 15 established teachers. The analysis focuses in particular on how the teachers engage with theory and empirical research.

The matter is complicated by the multi-layered contexts of culture and jurisdiction which are significant to our inquiry, based in England, and also by the nature of the subject discipline, education, more a field than a discipline, multifaceted and contested. First the cultural context: internationally, and as a response to the challenges of knowledge economies and societies, development of professional education for teachers has been informed by the need to improve teachers' qualifications and skills (White, Fox & Isenberg, 2011). National strategies have generally supported the development of teachers' professionalism through higher qualifications and consolidating

the professional qualification of teachers at Master's level has been adopted across Europe and the developed world (Buchberger *et al.*, 2000). However, beyond the general global context of contemporary economic demands the precise focus of professional education at this enhanced level is not always specified. There is not a compelling body of research evidence around the impact of advanced higher professional education for teachers (Wellington & Sikes, 2006; Drennan & Clarke, 2009).

The Context in England

In school teaching in England there has been increasing policy intervention by governments and their agencies, including both curriculum and pedagogy, particularly since the 1980s. This situation has developed despite there being no consensus in England around pedagogy or even ways of knowing related to pedagogy (Alexander, 2004; Simon, 1981). At the same time, policies on curriculum and pedagogy have been implemented within a system that is increasingly scrutinised by high stakes inspections accountable to central agencies and provided only with fragile forms of institutional autonomy (Ball, 2007). Most recently there has been a policy shift towards 'education-system led' initial teacher education and continuing professional development for teachers (Hopkins, 2007). This shift signals a move towards independence from other sources of knowledge, such as university departments of education, consequently the ways of knowing of teachers and schools has become critical.

The fluctuating and fragmented approach to developing teaching as a Masters profession is an important element of the context in England and is in contrast to most of Europe. In England there has been some progress over the last twenty-five years towards developing teaching as a 'Masters' level profession, by which we mean that professional education includes assessment at a postgraduate academic standard beyond first degree level. Overall policy in England has not been as consistent as in many European nations and establishing Masters awards as a central pillar of advanced professional education for teachers has followed an erratic trajectory and is not yet complete. In England many student teachers gain some Masters level credits during their initial teacher education programme. At a later point some experienced teachers go on to study part-time and gain their

full Masters level award. In the past, central government funding to cover some of the fees for this part-time study was available. A full Masters level qualification has been seen as an advantage in seeking promotion to senior posts, although it is not specifically required by regulation.

This bumpy path to establishing teaching as a Masters level profession has followed and illustrates a somewhat ambivalent view of academic qualifications in England. The equivocal position of the Masters qualification and indeed qualifications in general was illustrated by a government drive to professionalise the role of running schools and to provide specific training for people aspiring to be become principals (headteachers). In England, a national professional development programme for head teachers and aspirational head teachers was introduced in 1997 and was for a period a mandatory requirement. It is telling that these head teacher qualifications were not at Masters level although many universities incorporated them as an element within their Masters programmes. Since 2010 changes to teacher education and the induction of newly qualified teachers in England have generally been developed as non-academic professional 'training' and to some extent the ambition of a Masters level profession is stalled or even abandoned.

In spite of these major disjunctions, universities in England and the government are united by a common thread, a positive relationship between research and teaching, and this same common thread unites development of teaching in England with the rest of the world. This thread unites but also includes contested elements around whether the purpose is for teachers to read and use research or to become researchers or both or merely to operationalize authority approved findings of research with consequent further divergence around the research and other skills required (Loxley & Seery, 2012; Frankham & Hiett 2011; Alegre & Villar, 2009; Drennan & Clarke, 2009).

A consistent pattern in England has been the approach of Masters programmes which support teachers to become practitioner researchers. These Masters programmes generally support workplace(school)-based enquiries in which teachers critically engage with theory and research evidence. This 'teacher researcher' approach has a long history in England, building on the work of Lawrence Stenhouse (1975). By engaging critically with theory and research evidence, teacher research offers critique of different kinds of teacher knowledge and learning and contrasts with views of good teaching as 'common sense' whilst, at the same time, existing within

a policy framework in which good teaching *is* seen as common sense and in which high stakes external quality assurance and accountability for grade-based student achievement targets are seen as a necessity.

Teachers' Professional Learning

Subject disciplines have been characterised as 'hard' versus 'soft' and 'pure' versus 'applied' (Biglan, 1973; Smart & Elton, 1982). 'Hard' disciplines have a high paradigm consensus, meaning a single body of theory that most members of the field subscribe to (Becher, 1989). Education, as a field, is multi-paradigmatic, meaning that in studying an issue, such as children's motivation, teachers will find several theoretical perspectives and languages used to offer explanations. Wishing to understand the nature of different subject disciplines, but more explicitly from a pedagogical perspective, Bernstein developed the idea of vertical and horizontal discourses by which he aimed to differentiate between different forms of knowledge (1999). In Bernstein's perspective 'horizontal discourse' is 'segmentally organised', meaning that it is realised in different sites and is likely to be oral, local, context dependent, tacit and contradictory between but not within segments (Bernstein, 1999, p. 159). In contrast, vertical discourse is coherent, explicit, and hierarchically organised (for example in the sciences) or 'it takes the form of a series of specialised languages' (as in the social sciences and humanities) (Bernstein, 1999, p. 159). In developing this theory Bernstein argues that within a particular horizontal knowledge structure, especially in a multi-paradigmatic field, the learner needs to acquire a particular 'gaze' in order to participate. Hence our study concerns the influence of advanced professional education at Masters level on the gaze of teachers; with queries such as 'what do teachers notice; what is figurative in their discourse?'

We were open to the possibility of many theorisations, but had in mind as a useful tool, Boyd and Bloxham's characterisation which builds on Bernstein and addresses the relationship of public and practical knowledges (Boyd & Bloxham, 2014; Boyd, 2014). Metaphors are important linguistic devices by which we capture experience including experience of learning (Lakoff & Johnson, 1980). Building on Bernstein's thinking and focusing on the professional learning of teachers, Boyd and Bloxham identify the inter-related 'vertical' domain of public knowledge and the 'horizontal' domain

of teachers' practical wisdom. Teacher knowing is seen as the interplay between these domains and illustrated in Figure 1 (Boyd & Bloxham, 2014; Boyd, 2014). This metaphor is developed within a sociocultural perspective in which professional knowing is considered to be mediated, situated, social, dynamic and contested (Blackler, 1995).

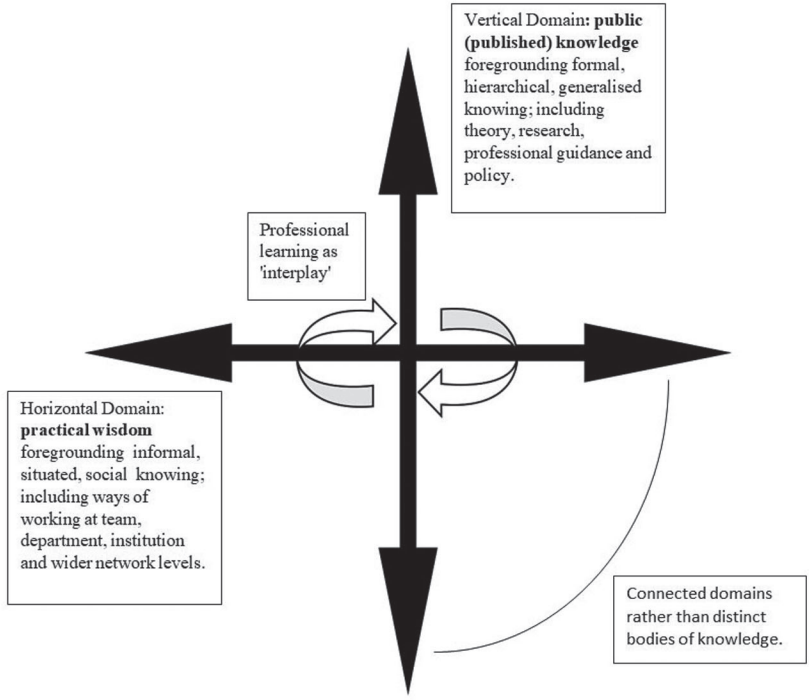

Figure 1. Professional learning of teachers as 'interplay' between practical wisdom and public knowledge

The vertical knowledge domain foregrounds published knowledge including learning theory, research evidence, professional guidance and policy documents. It adopts a vertical and hierarchical nature because of the processes of authoring, peer review and publication. The value of the vertical knowledge will be affected by its characteristics but may include knowledge created within a range of acceptable but contested paradigms because of the nature of the field of education. The horizontal domain of teachers' practical wisdom foregrounds the practical ways of working that are dominant within

a particular school setting. This knowledge is held socially by the team of teachers and teaching assistants and will include unwritten rules and tacit knowledge that is hard to specify and not always evident to the actors. The practical wisdom of a particular school will have historical and cultural elements as well as relationships with education subsystem policies and moving from one school to another will involve a shift in the local practical wisdom and ways of working. The vertical and horizontal domains are seen as merely foregrounding public knowledge and practical wisdom and are not separate bodies of knowledge.

This metaphor for professional learning as 'interplay' captures a struggle between different kinds of knowledge that teachers engage in when deciding what and how to teach. Engagement with the vertical public knowledge domain might be expected to be developed through Master's level study by teachers and be evident in teacher talk. Advanced professional education for teachers might be expected to enhance awareness of interplay between horizontal and vertical knowledge domains. Buried within the horizontal domain of practical wisdom will be hidden the mediated bones of public knowledge; teachers will have consciously or subconsciously been influenced by learning theory, research evidence, professional guidance and policy to their way of working and the features of their particular setting.

Master Teachers

It seems likely that epistemologies, beliefs about ways of knowing and research in education, as well as the ways in which they are expressed, are likely to vary between educational researchers based in universities, teachers based in schools and student teachers moving between the two settings. A study of teachers in Australia and USA found that 'teachers overwhelmingly dismissed academic research on the grounds that it is not practicable, contextual, credible, or accessible' (Gore & Gitlin, 2004). In that study 82% of final year student teachers acknowledged that research addressed their 'concerns about teaching' at least 'sometimes'. However, in the same study practising teachers were much more sceptical and only 8% found research addressing their concerns at least 'sometimes'. To explain this rejection of the value of research the researchers in that study focused on power between academic researchers and teachers and on the (in)accessibility of much published research. They propose

a re-thinking of educational research to begin to address this situation by creating spaces for genuinely collaborative research. And Constable (2018) questions whether universities themselves, whilst claiming to meet the needs of teachers in professional development, promote a rigid and limited view of desirable professional development and do not come very near to meeting the professional development needs of many teachers.

Joram (2007) working in US found that student teachers were seeking a bag of tricks to use in their teaching and insisted that teacher knowledge was particularistic, whereas university-based professors emphasised critical thinking and the use of generalized theory and research evidence. Experienced teachers fell somewhere in the middle of this range of beliefs. Joram used short classroom vignettes to provoke responses from her interviewees concerning how they might solve a pedagogical problem. Partly in order to strengthen the links between different research studies in education we originally set out to use this technique in the current study.

In a case study of teachers completing a Masters programme in England, Turner and Simon (2013) develop a concept of 'professional assertiveness' that includes knowledge of the field and the ability to defend a personal stance, as well as a belief in one's capacity to support pupil learning and to take risks and experiment, adopting a questioning approach to policy and research reports. They argue that teacher graduates of their case study Masters programme showed increased capacity for critical reflection and increased confidence in the practice of teaching. They also appeared to be less afraid of failure.

Methodology

Our study makes a preliminary investigation into how 15 teachers in three secondary schools incorporated Masters study into their working life. In what ways were insights they had gained evident in their working lives? In particular we were curious about the enhanced research literacy that teachers may be supposed to gain from Masters level study.

The study reported here takes a Masters degree as a recognisable level of attainment, selected because it has consistency and international relevance, and is especially pertinent in England where continuing professional development has been piecemeal and, where a Master's degree indicated a level

of advanced study. In England entry to teaching has not required a Masters qualification, in contrast with many European education systems where the entry qualification has been a Masters qualification. In using the term Master teacher for our teachers we are also recognising a status which evokes the idea of a Master craftsman.

Masters programmes completed by school-based teachers and leaders share some common features but allow a wide variation in the balance found by different programmes between critical engagement with research evidence produced by others and with becoming a teacher researcher by developing skills and conducting practitioner research within their own workplaces. Teachers may learn through informal workplace activity and in England there is a considerable range of formal courses and projects for teachers that do not carry academic credits. In addition, a proportion of teachers pursuing school leadership roles complete Masters programmes that are focused on leading organisations rather than having a focus on classroom teaching and learning. Despite these issues we would argue that the measure of holding a Masters does provide some indication of advanced professional education. It is worth noting that none of the three schools in this study in England routinely included the Masters qualifications of their staff in school brochures or in staff information on their web-sites.

The findings presented in this paper are based on group interviews completed with Master teachers held at three different secondary schools in England, each with a roll of about 1000 students aged 11 to 18 and around 75 teachers. All three were state funded non-selective schools in the north-west of England. Formal ethical permission for the study was obtained through University procedures and controls. The group interviews were audio-recorded and transcribed with the necessary care to achieve anonymity for teacher participants within the data.

We invited all the teachers who had a Masters degree from each of the three secondary schools. These discussions were hosted by the secondary schools and involved voluntary participation by their teachers. In each school we worked with a single group of all those teachers with whom this request had been communicated and who had agreed to take part. We gave the schools code names of Diamond, Ruby and Sapphire and in all fifteen teachers took part in groups (Diamond 4, Sapphire 7 and Ruby 4).

All of the teachers had gained at least one Masters level degree. The majority had a Masters in Education but some school leaders had gained

an MBA in organizational leadership and change applied to schools and one had a Masters degree in a science subject. These Master teachers had between 5 and 27 years of professional experience in schools with a median of 16 years. They had gained their Masters award between 3 and 27 years after gaining their initial teacher qualification with a median of 11 years of teaching experience prior to gaining their Masters. In Diamond school all the participants were members of the senior management team.

We devised workshop discussions which were to function as semi-structured group interviews. We were conscious that teachers in England have heavy workloads and wished to match the contribution of time made by teachers by holding a discussion which was itself developmental – by being an opportunity to participate in a wide-ranging discussion of professional skills and development. In this respect the study was preliminary in that it was intended to allow us to develop a research method.

Our aim was to gather narrative data concerning the approach of the teachers to professional learning and the value they placed on different kinds of knowledge. The group interviews consisted of two main stages. Following a warm-up introduction, a classroom vignette was introduced to the group. The vignette was based on a study of teacher use of research developed by Joram (2007). In the vignette of a lesson scenario a Primary school trainee teacher notes two dilemmas and the teachers were asked to consider how they would support the trainee teacher once she had identified the dilemmas. This approach was not without merit but in the form in which we had introduced it needed further development to get at teachers' ideas of advanced professional skills and knowledge, probably as a separate research project.

In the second part of the interview prompt questions were used to provoke discussion of the impact of their Masters programmes on the teachers and this stage forms the basis of the work reported here. In outline we were asking how teachers thought their advanced professional education had affected their practices and approaches. Three questions were used asking, first, about the process of and learning from completing research for their dissertation (the capstone assessment of their Masters level programme); the possible characteristics and practices of a 'Master' teacher, and finally the possible contribution of a university to developing practice in a school. The first question was intended to and did open up a relaxed and wide ranging conversation recounting what had been studied, what had been learned from the dissertation and other aspects of the programme at the time and

a retrospective appraisal of its significant features. The discussion also allowed follow-up questions from us the researchers on such matters as: had the teachers in their Masters added to their understanding of how children learned.

We adopted a thematic analysis approach, reading and re-reading the scripts then using coding and the generation of themes (Braun & Clarke, 2006, 2019). We used a hybrid approach, developing inductive coding and themes but also introducing existing theorisation, the interplay metaphor, into the analysis (Fereday & Muir-Cochrane, 2006; Braun & Clarke, 2019).

Findings

This section presents an analysis of the Master Class group interview discussions using selected quotes to illustrate the themes identified.

Multiple motivations

A theme which emerged was the reasons teachers recalled for completing a Masters award programme. The motivations were various, ranging from fulfilling a long-held ambition to apparently serendipitous circumstances and many of the participant teachers did not appear to have had a particularly strategic approach, for example related to career development or promotion.

> …the flyer for the Institute of Education course came along and the structure of the course looked interesting and I thought "Yeah I quite fancy doing that".
>
> Master Teacher Ruby School

However, two of the teachers reported being prompted by their head teacher or senior member of staff to complete a Masters, and in some cases the availability of some help with programme fees facilitated the decision.

> My motivation for doing it was purely prompted by my then line manager who suggested that I did it … and therefore, you know, I felt a bit under pressure to do it.
>
> Master Teacher Diamond School

Other motivations mentioned included keeping in touch with their subject discipline, and making use of Masters level credits gained during initial

training. One teacher had taken on a partnership role with a university and took the opportunity to complete a fully funded Masters as part of that arrangement. A more recently qualified teacher said:

> They scared you a little bit saying if you don't do your Masters now you'll lose all your credits… and then through just my interest and support from the school, something to do when waiting to progress to Head of Department and I thought I'd…

This theme of multiple motivations relates to the intended purposes of the teachers with an overall impression was of a relationship to professional development but with little overt evidence of strategic focus on career development.

Engaging with Public Knowledge

An identifiable theme was engagement with public knowledge. Some teachers talked about gains in terms of a new habit of reading, a hunger or thirst for new knowledge and continued research since completing their Masters inspired and informed by their studies:

> It's all the reading isn't it? Reading massively…
>
> Master Teacher Sapphire School

Although one teacher mentioned the frustration that at the time much educational research was not open access and so was not available to them:

> I no longer have access to electronic journals and things and it's causing a real issue…I can't find the right research.
>
> Master Teacher Ruby School

Despite these challenges many teachers referred to continuing their reading and engagement with public knowledge as part of ongoing inquiry or scholarship:

> Because this chapter that I've written is nothing to do with Dance. It's actually about IT so it really helped shape me and research underpins – I read about things now whereas perhaps reading was not my favourite activity.
>
> Master Teacher Ruby School

In contrast, especially in Diamond school discussions, there were also some frank responses showing that, whilst finding ideas for practice was useful, this did not always take the form of critical in-depth engagement:

> I've read many things on pedagogy and craft in the classroom and various things is basically learning to cherry-pick lots of ideas and then to put it into this particular project
>
> Master Teacher Diamond School

Overall this theme of engagement with public knowledge reveals an impact of Masters awards on some of the teachers of being interested in reading and perhaps implicitly of developing a level of research literacy.

Ways of knowing

In terms of engaging with public knowledge a more specific theme was a more critical awareness of ways of knowing.

Two teachers with backgrounds respectively in natural sciences and in psychology described their initial scepticism about much educational research and their conversion to being more comfortable and more confident with the range of methodology and methods, one of them saying:

> At first I was a little bit sniffy about educational research when I went to work at the university and they were talking about it and I was thinking 'that's not proper research' And then you realise why: you cannot just do that in educational settings…
>
> Master Teacher Sapphire School

Several teachers acknowledged provisionality as an outcome of their work and acknowledged an inquiry-based approach that involved interplay between practical wisdom and public knowledge:

> I'm experimenting with stuff. My Masters is finished but I'm now experimenting with stuff. I'm still researching now.
>
> Master Teacher Ruby School

Some comments positioned teacher inquiry within the broader context of the development of schools and teaching:

> If you do research, you become very much more likely to be constantly self-evaluating your own teaching and realising that there is no perfect way to teach. And so you are constantly reassessing things and trying to improve your own teaching. If research isn't done, then teaching is going to stagnate and political ideas won't get challenged.
>
> Master teacher Sapphire school

The teachers acknowledged that there is useful evidence, public knowledge, worthy of consideration:

> Well, I think it does come back to trying to have a strong evidence base before you make some fairly major decisions. I think that's one aspect and like a lot of these guys I do a lot of reading around and try and be at the top of my game. I'm trying to be involved in a wide range of things outside of my institution so you're kind of learning from the best.
>
> Master Teacher Ruby School

This theme of ways of knowing, related to the developing epistemological understanding of teachers, seems significant because it shows a progression towards an interplay in professional learning. It also hints at an explicit engagement with a wider context.

Impact on practice

A strong element of the teachers' perspectives was their recognition of significant and lasting impact on practice of their Masters dissertations. It is worth listing the topics on which the teachers completed their dissertations, the capstone research project of their masters. The topics give some initial insight into the kind of research and development work being completed, including its synergy with the teachers' everyday work and its ambition for change at school level:

> Shifting the school's focus from teaching to learning
> Enhancing the school's approach to assessment and monitoring progress
> Subject knowledge and teaching effectiveness in a humanities team
> Engagement of reluctant students across the school
> Whole school change in culture in a struggling school
> Developing students' creativity through the expressive arts
> Enhancing the teaching of dance by Physical Education teachers
> Developing a Special Educational Needs Unit within a school

Evaluation of extra-curricular activity and participation by different students
The use of feedback by teachers and students in Music
Trainee teacher knowledge of and attitudes towards student mental health issues
Leading the transformation of a weak department
School ethos in relation to religion and multiculturalism
Teacher perspectives on co-operative learning
The quality of induction support for newly qualified teachers
Leading whole school transformation in a struggling school

Overall teachers claimed their Masters projects impacted on their classroom practice and in many cases on their school's development. They supported these claims by describing the changes in practice or policy. In some cases the impact seemed to be at department or teaching team level:

> …we identified all the different kind of [curriculum subject] techniques, which would be the skills, we give them… techniques and we ensure that across Year 7, 8, 9 we cover them more.
>
> Master Teacher Ruby School

In other cases, the impact was seen as more focused on the particular practice of the Master teacher within their role in school:

> …it changed everything; my whole practice for supporting the NQTs [newly qualified teachers]…
>
> Master Teacher Sapphire School

It is important to note that some school leader Master teachers expressed reservations, considering that their Masters to have been intellectually stimulating but having had had only limited impact on their practice:

> So, it probably made me think…and that thought process may have helped us improve in future years but it was probably marginal. We probably would have thought about that ourselves anyway without having to write a dissertation…
>
> Master Teacher Diamond School

These Master teachers generally supported the positive impact of completing their programme. The themes of impact on themselves and on their practice may not seem surprising given the commitment they had made to gain

the award, but it is in contrast to studies of initial teacher education and of some professional development courses where teachers have expressed scepticism about their value.

Internalising academic skills and disposition

A significant theme was the development of aspects of a critical approach, for example where the evidence of their own inquiry had changed a teacher's view of long held practices or even values. This is illustrated by a participant who was already committed to extra-curricular activities and focused their dissertation on that:

> It was a real eyeopener and I ended up at the end of it completely changing my view because I guess that I learned or what my belief is now is that [extra-curricular activities] are absolutely fantastic if they are targeted – If they are not targeted they cannot possibly justify the effort that goes in – at the kids that will gain most benefit.
>
> Master Teacher Sapphire School

The following teacher articulates a theorised change which emerges as s/he studies and reflects; their position moves from constructing and delivering feedback to using feedback to support subsequent learning and teaching:

> I wanted to look at how students access that [feedback] themselves … and I thought: All I'm doing is assessing summatively… And then it got me on to think. actually, …what's really important to the student is that formative feedback, so I looked at many, many ways of delivering feedback…
>
> Master Teacher Ruby School

In some cases teachers revealed how completing their Masters had prompted a clear articulation of an organising theoretical perspective or challenged their underlying assumptions:

> …because my dissertation was looking at how you develop your teaching …and the conclusion I came to …was that, you know, to be able to be creative within expressive arts as it was, they needed the skills. That has influenced me considerably because [now] we look at the different Drama skills that we can give them…

> **Interviewer:** …so, in one sense you learned that to be creative they needed the skills, but you might have said that before then [the masters] so there was something more about coming to apprehend that in a new way?
>
> Well, I probably didn't – I thought maybe the students are naturally creative or … There are some students that are naturally creative I feel but I think for some students, having that skills base there, so when they're coming up with an idea they've got something to draw on and add to it. Well I think: before, but it's a long time ago … I think in my initial stages of my teaching career I thought, you know, they can just "be creative".
>
> Master Teacher Ruby School

In this case a teacher speaks of learning:

> Being stuck is actually the critical thing because its only when you're stuck do you force yourself to learn. In a way part of the issue we've got is were trying to rush kids through solving problems, to hit deadlines and to hit targets and things and what we're teaching them is actually being stuck is wrong. And it isn't.
>
> Master Teacher Sapphire School

Some participants saw the Masters as having provoked a fundamental change in their position as a teacher:

> For me the main thing… I'm not the best teacher but I thought "Yeah I'm pretty good. I've got a good grasp on this". I …did my MA and it's now …It's just that I have a new way of thinking, but it's oh I'm not happy with how I did it to them and that was great but I wonder, I just wonder this and that, for me, the MA trained me to do that. It's trained me to become this reflective practitioner and that's it. I see myself as that, you know, I'm a teacher but I'm a reflective practitioner.
>
> Master Teacher Ruby School

The sustained and sometimes long-term impact of courses not merely on their current practice but on their ways of learning and incorporating reflexivity was an important theme in the responses.

Continuing Professional Development in the Workplace

The teachers revealed how participation, as students, in an advanced professional education programme had influenced their conceptions of and thoughts about learning:

> Being stuck is actually the critical thing because its only when you're stuck do you force yourself to learn. In a way part of the issue we've got is were trying to rush kids through solving problems, to hit deadlines and to hit targets and things and what we're teaching them is actually being stuck is wrong. And it isn't.
>
> Master Teacher Sapphire School

Participants welcomed having time to think and the opportunity to work with other adults. Where there had been residential elements these were welcomed for the same reasons. In these respects, teachers enjoyed their programmes and liked being presented with new ideas:

> One of the frustrations I have as a teacher compared to what I did before [previous career] is the lack of time to talk to other adults. It's like five or ten minutes here and that's it and so many issues are dealt with as a fix or as a just do it, don't talk about it and doing a Masters or doing something like that gives you a chance to think much more and talk much more about any aspect of education which you don't get as a day to day teacher…
>
> Master Teacher Sapphire School

Time or lack of time to reflect in school was seen as a continuing challenge, one that necessarily hampers development. The teachers confirmed that pressure in schools remains on immediate solutions rather than fundamental examination of issues:

> …the job of teaching in the modern era has grown to the point where I don't feel that we've got sufficient time as a luxury to be able to do – the thinking time and the reading around time… so in an ideal world, yes, research is important to being a good teacher, but I don't think we have the time for it as much as what we might.
>
> Master Teacher Diamond School

The teachers identified what appeared to be temporary benefits of their Masters, for example the formal programme gave them permission to prioritise their research and learning ahead of other work:

> I think for me it reminded me of how much I enjoyed learning, so it gave me some of my enthusiasm back in the classroom. Because I love learning but you get caught up in the rush of school and the progress of students and targets and everything else and then when I did the Masters I thought actually I'd forgotten how much I really enjoyed just learning something and I think I pass that on to my students now…
>
> Master Teacher Sapphire School

The teachers also identified more long-lasting benefits, beyond the life of the programme, including the idea that the Masters was part of their extended teacher education or training:

> [my research] was about the how the teacher affects the children's learning and what I discovered more than anything is how complex teaching is. I'd been a teacher for 6 years already but hadn't – I don't think I'd fully realised how complex it is, going into a classroom
>
> Master Teacher Sapphire School

As learners some teachers were critical of the Masters programme format, having found it constraining:

> I think, for me, the future needs to be something that is more flexible and is less sort of institutionalised in terms of the traditional Masters.
>
> Master Teacher Ruby School

Typically, in Masters programmes for teachers, the dissertation is seen as the synthesis and orchestration of skills that will be internalised as a foundation for future professional practice. By contrast some teachers saw the content of the modules preceding their dissertations as the protein in their diet and the dissertation as something to be 'got through':

> The actual dissertation itself, I'm not sure I got a great deal out of…
>
> Master Teacher Diamond School

> Yes, it was a chore…
>
> Master Teacher Diamond School

In Sapphire school the teachers identified a possible relationship between schools and universities in which, rather than attempting research themselves, schools commission research from universities, revisiting an idea proposed by Stenhouse but which has not hitherto been substantively implemented (Stenhouse 1979).

One teacher pointed out that pursuing practitioner research in a pressurised workplace and in a field where research evidence is contested is located, not in a neutral context, but in one which is value laden:

> …my sort of fear is and perhaps I'm a bit more cynical than the rest of you, but if you're having a funded Masters or if your workplace are funding your Masters, you're never going to be free of restraints; you're never going to have that kind of academic freedom to write whatever you want to write because you are always going to be writing with an agenda…
>
> Master Teacher Sapphire School

A school leader Master teacher suggested that not all teachers can or should engage in research or even in engaging with research evidence, but rather that school leaders would take on the role of research broker:

> …I think that there is a gift there in turning the research into something useable that staff can go away and use because many of them do not have the time or the wit to actually do that and I think that's something that people in our position have to do for them.
>
> Master Teacher Diamond School

Despite their multiple motivations for enrolling on Masters programmes participant teachers were united in intending improved practice. They recognised the emphasis on critical engagement with public knowledge, research and theory, but were less clear about their developing understanding of ways of knowing, the epistemology of the contested multi-paradigm field of education.

Gathering data through these school-based group interviews rather than through interviews with individual teachers risked a sense of group-think developing within the social situation of each workshop. As facilitators moving from one workshop to the next we certainly felt aware of unwritten rules or at least of careful use of language within each workplace setting – the teachers were, of course, contributing to a discussion with outsider researchers in the presence of their peers. This was something we

bore in mind and in a future study the mediation of the social and situated shared ethos of the teachers within their school workplaces would be of great interest and a possible research focus itself.

In Summary

At the time of undertaking their Masters programmes, the experience had been significant and positive for all our participants, even when reported some years after their programmes had been completed. What happened subsequently was very much more varied: some descriptions treated the Masters as a 'moment in time' – significant, positive but in the past; other descriptions noted programmes prompting a shift to a changed professional disposition towards a greater interest in or engagement with a reflective or sometimes research-informed stance and some emphasised confirmation of existing views leaving teachers views essentially unchallenged.

Teachers reported changing their minds in response to their Masters level study and research and brought a critical eye to ideas which had come and gone, such as 'Brain Gym', identifying them as fashions. Some teachers expressed fully articulated theorisations with confidence. Following their Masters programmes, some teachers said they had internalised practitioner research as a means of addressing professional challenges and reference was made by some to being reflective practitioners. There were only a few mentions of continuing to read primary research material although references were made to increased reading in relation to, for instance, professional guidance materials. Some said they had gained enhanced reading skills and an increased appetite for reading.

Some respondents valued other elements of their programmes more highly than their practitioner research projects. Some teachers had developed connections with a university through engagement in training schemes or the wish to work in a university which supported their commitment to engagement with research and reading. Practical wisdom remained privileged compared with public knowledge and two respondents claimed not to strongly value public knowledge and emphasised the over-riding significance of practical wisdom.

Discussion and Conclusions

In evaluating the impact of their Masters programmes, participating teachers referred to the boost to their professional learning from engagement with public knowledge. However explicit critical engagement with public knowledge was not strongly or explicitly evident and the same teachers, when discussing the vignette, did not seem to foreground engagement with the vertical domain of public knowledge, for example by referring the student teacher to relevant professional guidance or research evidence.

We can say that teachers came away from their advanced study with an enhanced level of level of awareness of some possibilities for the place of public knowledge and some skills in practitioner research. It was less clear after Masters study what support was available to build on this start and to support continuing development of critical and mature intellectual skills. For instance, it was evident that teachers could identify problems in implementing policy but not so apparent how they were to identify underlying assumptions on which school practices were built or to develop a critical response. One somewhat surprising finding illustrating this point was the absence of learning theory in teachers' study, sometimes including their initial training. A consequence was that teachers were exposed to unexamined theorisations and were also not well placed to identify their own or others implicit learning theories.

There was no evidence that schools had been strategic in maintaining or developing the levels of critical engagement with research or public knowledge achieved in Masters programmes. This raises the important question for providers of Masters programmes concerning the extent to which their programme problematises the different ways in which relevant course elements might influence or interact with the school and professional development settings of the teachers. Is it sufficient to address this within the timescale of the programme or does it need to continue afterwards, and if so how?

One of the Master teachers portrayed part of the challenge:

> One of the frustrations I have as a teacher, compared with what I did before, is the lack of time to talk to other adults. In previous jobs, if there's problems, you get a half-hour, one-hour, two-hour meetings to thrash it out. Whereas here [in school] if you've got a problem here (in school) "Think of a solution, that'll do! We'll look at it again next summer".
>
> Master Teacher Sapphire School

The continuing challenge of making time to think in schools in England remains unresolved, nevertheless the key to professional and institutional development is the quality of discussion rather than the time allowed for it. Dedicated time may be a necessary condition but it is not sufficient. The need for solutions to practical problems, and fast, pushes the balance towards closing on a solution rather than investigating the underlying issues. A consequent risk is that engagement with public knowledge and research fails to become strategic and critical and remains sporadic or superficial.

A further dimension was evident in the different ways that the teachers in the three schools reported themselves and the ways that the schools incorporated the enhanced skills of the teachers. Since the research method we adopted was open to polarisation of responses through group-think this can be only a speculative finding. Notwithstanding that caveat, the discussions in the three schools had different colourings potentially relevant to the organisational incorporation of practitioner research and engagement with public knowledge. Commonly senior leaders position themselves at the interface between classroom teachers and the outside world, sometimes acting as intermediaries and sometimes gatekeepers, however it was striking that one school, Diamond, included brokering of 'research' as part of these responsibilities. In this school, where the interview group consisted of the senior management team, there was a less positive appreciation of the value of Masters study and the ongoing critical perspective adopted leant towards considering government policy and practices in other schools rather than considering research-based knowledge. The relevance of research was firmly positioned as the business of the senior leadership team and this was a clear intervention in the knowledge power interplay of teachers' professional learning. In the other two schools, Sapphire and Ruby, the view of research and relevance to practice was seen more generally as an expression of professionalism in teaching, the schools' responses appeared more inclusive although also more disparate. The Master teachers appeared to be trying to maintain a research-informed approach and looking for ways to sustain the interplay between vertical and horizontal knowledge domains. These differences between the schools illustrate the localisation of practical wisdom, denoted as an aspect of segmentation by Bernstein (Boyd & Bloxham, 2014; Bernstein, 1999).

Connecting the themes, our analysis reveals that hard-working Master teachers handle competing demands for their time and would benefit from means and support to sustain their engagement with research-informed

practice beyond the period of their Masters programmes. The issue is, for teachers, school managers, university departments and policy makers, incorporating the added value brought by critical engagement with public knowledge. Part of that work might involve partnership with universities but it also requires development of the workplace learning environment, language and culture of schools.

Overall teachers expressed beliefs around the value of reflective learning and used the idea of 'reflective practitioner' to capture the progression that they saw in their own professionalism. The concept of the 'reflective practitioner' appears to have been attractive and functioned in mediating the development of research-informed practice by the teachers. Indeed, teachers seemed so comfortable with the idea that it suggested a reluctance for them to move on from this terminology. References to practitioner-research emphasised identifying challenges and reflection. Critical appraisal of starting points and critical review of evidence were less evident and reflective practitioner imagery was more evident than the vocabulary of research-informed practice. A range of views were heard related to what counted as research and what counted as being critical with some examples falling short of Masters level that these same participants had achieved. For instance, looking up a topic using the world wide web was described as researching and not discriminated from systematic and critical enquiry.

In England it is Stenhouse's work which is often named as the starting point for the development of practitioner research in teaching. Stenhouse's ground-breaking work challenged the idea that good teaching is common sense, already known or fixed, and replaced it with a sense of critique and constant improvement expressed in the idea of teacher-as-researcher. Since then teacher practitioner research has been supported by many developers and networks. Reflective practitioner, practitioner research, teacher as researcher are terms which include rather more than they exclude but do not *by themselves* guarantee a critical edge and can degenerate into 'common-sense' or technical evaluation of schooling (Kemmis, 2006). The challenge seems to be internalising and incorporating into school culture and development a level of critical engagement with practical wisdom and public knowledge research and theory. However, our analysis confirms the big step from individual teachers gaining some mastery of research-informed practice and development and the cultural shift required at school workplace level for this to become a significant element of change in practice.

The teachers managed tensions amongst different kinds of knowledge within their professional field and the values and status given to those knowledges amongst which the vertical domain of public professional knowledge had only a precarious hold.

We found that domains of Boyd and Bloxham (2014) provided a theorisation that lent itself to further development, in particular in navigating the challenges for teachers in consolidating the gains of advanced study and for schools in incorporating these advanced professional attributes as assets. The metaphor of interplay between vertical and horizontal domains provided a theoretical framework for understanding how teachers in our study conceptualised their experience. We saw the domains as freely pivoted (like scissors) and where the domains may be aligned (scissors closed) or far apart. In Mastery and subsequent school and professional development teachers need ways of bringing the horizontal and vertical domains into alignment or at least into conversation with each other. We recommend developing conversations explicitly addressing how the two aspects of knowledge are, or are not, in alignment as a framework for supporting teachers and schools in improving practice.

Our analysis does not support the dismissal of 'research' by teachers as found by the Gore and Gitlin (2008). To some extent our master teachers have invested in research activity and so this is not surprising. We did find the growth of professional assertiveness and confidence identified by Turner and Simon (2013), in the case of Ruby and Diamond schools expressed individually and diversely, and in Diamond school expressed more corporately. We found it useful to adopt the metaphor for teachers' learning as interplay between two domains of practical wisdom and public knowledge, (Boyd & Bloxham, 2014) to be useful in analysis and this small-scale study allowed a nuanced language of engagement with research-informed practice by teachers to emerge. Overall, the Master teachers participating in this study revealed how they managed and resolved the tensions amongst different kinds of knowledge within their professional field. When a teacher emphasises practical wisdom and local ways of working, this should not be interpreted as a dismissal of research evidence but could be seen as an insistence that such evidence needs to be accessible and practicable.

Teachers' Masters level study and practitioner research projects offer important professional development and may lead to school improvement outcomes. For the advantages of Masters study to affect a school as a whole, it

is necessary for schools to engage with ideas of research and engage critically with public knowledge as a contribution to continuous improvement. However, this is not an excuse for programme providers in universities to shuffle responsibility onto schools; in fact, the opposite. Masters programme teams need to consider how they help participant teachers to position their inquiries as part of collective school leadership and cultural change. In addition, university departments need to consider their direct engagement with schools to maximise the benefit of the additional intellectual capital and critical edge provided by teachers with advanced professional qualifications. After a diet of critical engagement with public knowledge, how might Master teachers be better supported in developing their impact on school practice and how might schools be supported in incorporating the professional development of teachers?

Gathering the threads together, our analysis shows how, within the interplay of professional learning, the workplace tends to privilege the practical wisdom of teachers and constrain or suppress critical engagement with public knowledge, research and theory. The teachers did seem to value 'research literacy' they had developed through Masters level study, but overall they seemed to resort to practical wisdom in considering development of practice. In becoming a 'Master teacher', teachers still have to operate in the world of real schools. This involves collaboration within a a workplace learning language and culture and a contribution to collective school leadership.

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CHAPTER ELEVEN

Enhancing Research Literacy for Educators: A Living Educational Theory Research Approach

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ABSTRACT

We extend the notion of teacher's research literacy to include skills and knowledge, which enable teachers to fulfil their professional responsibility to research their educational practice to understand, improve and explain it and to contribute to their professional knowledge-bases. Education is a values laden activity. As professional educators, teachers have a responsibility to enable their pupils/students to progress through a given curriculum and to generate and progress through the learner's evolving educational curriculum. A given curriculum is a programme of study developed by the Education organisation the teacher is working in. A person's 'evolving educational curriculum' is comprised by the lifelong programme of study they develop to improve their ability to live a satisfying, productive and worthwhile life for themselves and others. We illustrate how, as they engage in Living Educational Theory Research, teachers develop their research literacy as they realise their educational responsibilities as professional educators.

KEY WORDS: educational-practitioner research, continual professional development, Living Educational Theory Research, values-led praxis, life-enhancing energy flowing values

Introduction

In this chapter we respond to the intention of Chapter One to provoke debate by presenting an extended view of, "… the detailed knowledge and skills a teacher should demonstrate in order to be considered to be 'research literate.'" We intend to extend Boyd's ideas of research literacy and continual professional development programmes for educators, proposed in Chapter One, with a Living Educational Theory Research approach. But, why should you be interested? Developing research literacy skills takes time and effort. Adopting a Living Educational Theory Research approach to your professional development also takes a good deal of time and effort. You are very busy meeting the daily demands from the learners towards whom you have an educational responsibility. There are also demands from managers and administrators to demonstrate that you are fulfilling the responsibilities of your professional role. So, why would you want, as a professional educator, to devote time and effort to developing your research literacy and engaging in Living Educational Theory Research as part of your professional development? We believe the answer to that question lies in why you have continued being a professional educator and why you are reading this book. We believe your motivation is similar to our own. We have a passion for education. We also have a passion for developing a professional approach to contribute to improving educational practice, opportunities, experiences, relationships and knowledge.

What is the meaning and purpose of 'education' as a values-laden activity? Many have offered answers, which form the bases from which they hold professional educators to account for the efficacy of their practice. English can be a confusing language in that the same word can carry different meanings and, as Wittgenstein points out, the meanings can be influenced by their context of use (Rayner, 2014). It is therefore important teachers are clear about the context that is influencing the meanings of research that can be used to improve their practice; one of the research literacy skills Boyd identifies in Chapter One.

Eleanor Roosevelt speaking in the context of her role as 'First Lady' in 1930 USA offered her answer to the question, 'what is the meaning and purpose of education?':

> What is the purpose of education? This question agitates scholars, teachers, statesmen, every group, in fact, of thoughtful men and women.

> The conventional answer is the acquisition of knowledge, the reading of books, and the learning of facts. Perhaps because there are so many books and the branches of knowledge in which we can learn facts are so multitudinous today, we begin to hear more frequently that the function of education is to give children a desire to learn and to teach them how to use their minds and where to go to acquire facts when their curiosity is aroused. Even more all-embracing than this is the statement made not long ago, before a group of English headmasters, by the Archbishop of York, that "the true purpose of education is to produce citizens." (Roosevelt, 1930)

This quote connects closely with our own thinking and is written by a woman who is communicating to us from a different culture almost a century ago. It reminds us of the importance of developing research literacy skills. Skills not only to read research in order to critically and creatively engage with knowledge which exists, but also to be able write research in order to realise our professional responsibilities as educational-practitioners, professional educators and citizens. These responsibilities include contributing to a knowledgebase for the flourishing of Humanity, which transcends time and location.

As professional educators we believe it beholds us to say what meaning and purpose we give to 'education' as that forms the bases from which we hold our selves accountable to and the standards by which we judge the efficacy of our practice. The context of our view of the meaning and purpose of education is influenced by our personal histories and our ongoing collaborative work with educators. This includes locations which span the world, including Mongolia, New Zealand, India, Pakistan, Croatia, Nepal, Australia, South Africa, Ghana, Canada, Ireland, Albania and Hawaii.

We see education as a life-long process of learning to live a loving life that is satisfying, productive and worthwhile for self and others. As such we believe everyone not only can, but also has a responsibility to, engage in trying to improve their educational practice whatever their age, stage or context. As professional educators we are committed to trying to improve the educational opportunities, experiences, relationships and knowledge of those who learn with us to realise their responsibilities for themselves and towards others as 21st century citizens (Huxtable & Whitehead, 2021).

To create, offer and accept knowledge of any form requires learning. By learning we mean not only learning to acquire and use the skills and

knowledge created by others. We mean learning to create and make contributions to an educational knowledgebase from which we can all benefit. Educational learning is learning that keeps connection between learning to create, value and work with knowledge of the world, and learning to create, value and work with knowledge of our selves and of our selves in and of the world. Hence the importance for professional educators to devote time and energy to developing their research literacy and that of their pupils/students.

A literate person can both read and write. In Chapter One Boyd addresses the need for teachers to develop their ability to 'read' research in education but not to 'write' educational research. By 'research in education' we are referring to research undertaken by those engaged in researching within the disciplines such as the philosophy, psychology, sociology, economics, politics and leadership of education.

We distinguish education research from educational research by the focus of educational research on generating valid, evidence-based, values-laden explanations of the educational influences of individuals in their own learning, in the learning of others and in the learning of social formations that influence practice and understandings. We highlight the importance of life-affirming and life-enhancing values in explanatory principles in the explanations of educational influences in learning. We see the focus of education research to be on research that is making contributions to the disciplines of education such as the philosophy, psychology, sociology and history of education.

We distinguish an educational practice as a practice that involves learning with values of human flourishing. We develop Boyd and White's (2017), 'Professional Inquiry: 10 steps' to show what a teacher can do to develop their research literacy by engaging in educational-practitioner research, such as Living Educational Theory Research.

We agree with Boyd (quoting Northedge), that:

> …we cannot persist with models of teaching as 'knowledge transmission'… Students need practice at participating both vicariously, as listeners and readers, and generatively, as speakers and writers, so that they can develop identities as members of the knowledge community and move from peripheral forums to more active, competent engagement with the community's central debates. (Northedge, 2003a, p. 31)

We go further to argue that teachers also need practice, as part of their continual professional development, at participating as listeners and readers and generatively, as speakers and writers, in contributing to the intellectual and scholarly discourses that shape educational practice and policy.

Winch (2013) posits an answer to the question, 'What kind of occupation is teaching?' He illustrates the limited understanding of what it is to be a professional educator:

> The ability to make sound professional judgments in educational contexts is central to good teaching. Teachers with a more complete understanding of their practice will create better learning opportunities in the classroom more consistently than the pure craftworker or executive technician. Such teachers will require, among other forms of understanding: a good grasp of the conceptual field of education and debates concerning its interpretation; a good grasp of the philosophical underpinnings of and debates about the foundations of the subjects that they teach; a critical understanding of the scope and limits of empirical educational research; the way in which such research can and should warrant professional judgment and a good grasp of the ethical dimension of their work. (Winch, 2013, p. 14)

We quote at length to enable you to 'see' what is missing. Winch, like many others, does not clarify what constitutes educational practice. He does not bring into focus teachers' responsibilities as *professional* educational practitioners to create and contribute their knowledge to the growth of their profession's educational knowledgebase or a global educational practitioner, research knowledgebase. We use Shulman's definition of a knowledgebase as:

> ...a codified or codifiable aggregation of knowledge, skill, understanding, and technology, of ethics and disposition, of collective responsibility – as well as a means for representing and communicating it. (Shulman, 1987, p. 4)

CPD at times is taken to stand for 'Continuing Professional Development' and often is taken to refer to what members of a profession are required to do to maintain their qualified status. A professional has to keep sufficiently abreast with skills and knowledge of the field of their practice. This means demonstrating that their practice meets the ethical and competency standards specified by their community of practice and the wider context,

such as the organisation for which they work. In turn these are influenced by complex ecologies, which Lee and Rochon (2010) allude to, within which an individual lives and works.

There is a difference between being a professional and being professional, as many have pointed out. The two are not necessarily synonymous but often treated as though they are. For example, Hargreaves succinctly illustrates with respect to teachers:

> Ask teachers what it means to be professional and they will usually refer to two things (Helsby, 1995). First, they will talk about being professional, in terms of the quality of what they do; and of the conduct, demeanour and standards which guide it. The literature usually refers to this conception as professionalism (Englund, 1996). (Hargreaves, 2000, p. 152)

The professionalization, to which Hargreaves (ibid) refers, can be seen as reflecting the values of a form of society that was prevalent throughout the world in previous centuries, within which professional bodies have originated and been evolved. As the 21st century progresses it is becoming clearer that ontological and social values, the rights and responsibilities of individuals and the relationships between the individual and local and global communities, are changing. This is reflected in the evolving definition of 'professionalism' as illustrated in the changes in the definition Hoyle is reported to have made between the 1970's and the start of the 21st century:

> In 1975, Hoyle defined professionalism as 'those strategies and rhetorics employed by members of an occupation in seeking to improve status, salary and conditions' (Evans, 2007). In his other work, Hoyle (2001) states that professionalism is related to the improvement in the quality of service rather than the enhancement of status. (Vijayalakshmi & Rajasekar, 2019, p. 610)

In this evolving understanding of professionalism we are advocating a shift from a representative form of democracy, where a few make decisions which others implement, to a more cooperative form of democracy. This evolution can be understood as each person accepting and expressing their responsibility for contributing to decisions and implementation which enhances the flourishing of their local communities with values of human

flourishing. This evolution is reflected in the definitions of professionalism that recognise a professional's autonomy and the associated responsibilities to:

- To hold themselves to account with respect to the ethical standards of their community of practice and to hold themselves to account with respect to the life-enhancing ontological and social values by which they judge their contribution as of value.
- To stay up to-date with the skills and knowledge of their field of practice and those necessary for them to be able to hold themselves to account for their practice.
- To extend their cognitive range and concern by critically and creatively engaging with the knowledgebase of their field of practice, to contribute it and to critically and creatively engage with it in a knowledgebase created by a global community of educational practice.
- To keep abreast with the ethical standards of their community of practice (Wenger, 2000) and contribute to the evolution of those standards in the context of a 21st century global community of educational practice within which Humanity can flourish.

Mounter (2021, private correspondence) has often pointed to the erosion and dilution of meaning of a core idea through abbreviation. For example Living Educational Theory Research, a form of practitioner self-study educational research, is at risk of being corrupted into a form of psychological study of self and therapy as a result of being abbreviated to Living Theory or LET. Similarly we want to point to the difference between **Continuing** Professional Development and **Continual** Professional Development and the implications for educational practice.

The chapter is organized as follows:

In section 1, we clarify our meaning and purpose of 'education' as a life-long, values-laden, process of learning to live a loving life that is satisfying, productive and worthwhile for self and others. This includes the implications for pupils/students' and teachers' educational development and progression. These include an establishment's given curriculum, an individual's evolving educational curriculum and the relevance of learning the skills and habits of mind associated with research literacy.

In section 2, we distinguish between the responsibilities of a teacher as a member of a profession and as a professional educational-practitioner. This includes the implications for a teacher's programme of continual professional development, which includes developing research literacy.

In section 3, we illustrate the importance of enhancing research literacy. This includes the ability to 'read' and 'write' educational research, practitioner research and other research.

In section 4, we give a brief summary of Living Educational Theory Research. This includes research literacy in a form of educational-practitioner self-study research, and offers an approach to continual professional development of teachers as educational-practitioners and professional educators.

In section 5, we provide examples of how, as they engaged in Living Educational Theory Research, teachers developed their research literacy as they realised their educational responsibilities as professional educators and educational-practitioners.

In section 6, we examine research literacy in professional development In terms of continual enquiry, leading to inquiry, leading to educational research.

The chapter concludes with suggestions of where to look for information and support should you wish to explore further a Living Educational Theory Research approach as part of your continual professional development programme; a programme, in which developing research literacy is integral to your ability to realise your educational responsibility. This responsibility includes enhancing your educational influence in the learning of your profession, the organisation for which you work and, in the learning of your pupils/students and others (including yourself) who comprise the social formation. We see this responsibility in terms of education as a values-laden practical activity that is contributing to systemic change with values of human flourishing.

1. Meaning and purpose of education and research literacy

We clarify our meaning and purpose of 'education' as a life-long, values-laden process of learning to live a loving life that is satisfying, productive and worthwhile for self and others. This includes implications for pupils/students and teachers educational development and progression through given and evolving educational curricula. In the research literature there is a well-developed language of learning but only a weakly developed language of education. Biesta (2006) points to some of the issues this raises (including some similar to those Eleanor Roosevelt spoke of in 1930):

> The main problem with the new language of learning is that it has facilitated a redescription of the process of education in terms of an economic transaction, that is, a transaction in which (1) the learner is the (potential) consumer, the one who has certain "needs", in which (2) the teacher, the educator, or the educational institution is seen as the provider, that is, the one who is there to meet the needs of the learner, and where (3) education itself becomes a commodity – a "thing" – to be provided or delivered by the teacher or educational institution and to be consumed by the learner. (Biesta, 2006, pp. 19–20)

In explaining educational influences in learning it is necessary to be clear about the nature of the values that distinguish educational influences in learning. We focus on 'influence', rather than 'impact' because of the requirement that an individual, intentionally responds in their own learning to what is being done by an educator.

In writing this text we are aware of a difficulty in communicating, solely through printed text, the meanings of embodied expressions of values in educational practice. We have shown the differences in meaning that can be communicated through a solely printed text and a text that draws on digital visual data from educational practices (Whitehead & Huxtable, 2006a, 2006b). The difficulty can be appreciated in the difference between lexical definitions of meanings and ostensive expressions of meaning. In a lexical definition the meanings of words are defined in terms of other words. For example, the meaning of punishment can be defined lexically as the intentional infliction of pain by someone in authority on someone who has broken a rule. Foucault (1977) offers an ostensive expression of punishment at the beginning of 'Discipline and Punish' with the description of the punishment of a regicide. This communicates very different meanings to those in the lexical definition.

The importance of finding appropriate ways for communicating the meanings of values, as these are expressed in educational practices is, for us, at the heart of developing a research literacy in education. There is a difference between ethics and the values expressed in educational practice. The difference can be appreciated by comparing the seminal text on 'Ethics and Education' (Peters, 1966) and the values clarified in the course of their emergence in educational practice by Whitehead (1993) in 'The Growth of Educational Knowledge: Creating your own living educational theories.' In 'Ethics and Education,' the ethics are clarified lexically in terms of consideration of interests,

respect for persons, equality, freedom, justice and the procedural principle of democracy. In 'The Growth of Educational Knowledge' the meanings of values such as academic freedom are clarified in the course of their emergence in researching an educational practice that includes the existence of 'I' as a living contradiction. The 'I' is a living contradiction in the sense of holding together the value of academic freedom and its negation. Feyerabend (1975) has emphasised the importance of recognising that the creation of a value and creation plus full understanding of the idea of the value, cannot be separated without brings a process of education to a stop:

> We must expect, for example, that the idea of liberty could be made clear only by means of the very same actions, which were supposed to create liberty. Creation of a thing, and creation plus fully understanding of a correct idea of the thing, are very often parts of one and the same indivisible process and cannot be separawted without bringing the process to a stop. The process itself is not guided by a well-defined programme and cannot be guided by such a programme, for it contains the conditions for the realization of all possible programmes. It is guided rather by a vague urge, by a 'passion' (Kierkegaard). The passion gives rise to specific behaviour which in turn creates the circumstances of the ideas necessary for analyzing and explaining the process, for making it 'rational'. (Feyerabend, 1975, p. 17)

We are focusing on enhancing research literacy in continual professional development programmes for educators, through a Living Educational Theory Research approach. We are stressing the importance of learning from and contributing to research literacy. This contribution includes the clarification and communication of the values-laden meanings of explanatory principles, in explanations of educational influences in learning, in the course of their generation and sharing.

2. Responsibilities to be research literate

We distinguish between the responsibilities of a teacher as a member of a profession, as a professional educational-practitioner, and the implications for a teacher's programme of continual professional development.

The Government documents lay out what qualifies someone as a member of the teaching profession in state schools in England (DES, 2016). For the

most part they detail the instructional aspect of a teacher's responsibilities and the importance of keeping their guild skills up-to-date. Hidden among the text are details related to a teacher's responsibilities as an educator. It is however the passion for education that keeps most teachers teaching in the most stress inducing contexts. Also in the text are allusions to what is expected of teachers as members of a professional educational-practitioner, community of practice.

In the previous section we identified the meaning of education as a values-laden activity and the implications for teachers accepting their educational responsibilities as educational-practitioners. Here we wish to make clearer what it means to be professional as distinct from being a member of a profession.

As a professional educational-practitioner a teacher has a responsibility to continually ask questions such as, 'Am I having an educational influence in the learning of my students?,' 'Is what I am doing contributing to education or are the unintended consequences having a negative influence?', 'Am I contributing to the growth of educational knowledge, my own, that of my students, that of other members of my community of practice and that of the institution/organisation/social formation within which I am practicing? Asking such questions is a process of 'enquiry'. We use the following distinction between 'enquiry' and 'inquiry' and will not be using these words as if they are interchangeable. Most of the time questioning stops with 'enquire' – asking questions and gathering information etc which inform an often unarticulated answer. However, some questions evolve that demand a more focussed and systematic exploration – you begin to 'inquire', to systematically explore a question to answer it. And for most of the time it goes no further than this. However, there are times when as a professional you have to take the step to extend your inquiry to researching into your question to create and make public your answer – why make it public? In order to test the veracity of your answer and contribute to the knowledgebase from which we can all draw – as the saying goes, 'none of us being as smart as all of us'.

Can you go as far as 'researching' every question you have? Of course that is not possible and efforts to do the impossible are not productive. However, as a professional you have a responsibility to select a core question to not only to enquire and inquire into but also to research into to test the validity of your otherwise implicit assumptions and knowledge. You

have a responsibility to contribute what you learn to your professional knowledge-base for the benefit of all. A professional educational-practitioner has a responsibility to not only develop practice but to also develop educational praxis (Huxtable, 2012) by engaging in educational research *as* continual *professional* development. To do so a teacher needs to develop their ability to write research in order to recognise, value, test and work with knowledge emerging through their research and to create a valid account as a contribution to their professional knowledgebase. There are various understandings of 'validity'. In educational research Habermas's (1976, pp. 2–3) four criteria of social validity are often used . These criteria focus on strengthening the: comprehensibility; the evidence used to justify assertations; understanding the normative background that influences understandings; enhancing the authenticity of the communications in the sense of showing that the researcher is living the values they claim to hold as fully as possible.

Developing research literacy has to be integral to a programme for the *continual professional* development of educators, such as teachers. As professional educators teachers have to be able to read research in order to keep up to date with the skills and knowledge of their field. They also have to be able to realise their responsibility for their own practice and to contribute to the growth of the knowledgebase of their field of practice and associated disciplines. Engaging in Living Educational Theory Research, as continual *professional* development, enables an educator to realise their educational responsibilities. These include improving their educational practice and praxis in contributing to our shared endeavour of benefiting from, a world wide educational knowledgebase and associated discourses such as those of policy.

Living Educational Theory Research is a form of educational-practitioner research, whereby a practitioner realises their responsibility for their practice and contributes to the educational knowledge they create as they research their educational practice to understand, improve and explain it. In doing this they are contributing to a knowledgebase and associated discourses which bring into being a world within which Humanity flourishes. By a 'world within which Humanity flourishes' we are pointing to a world where the humanity of each of us individually and collectively can flourish and a world where our species, can flourish. We wish to stress that we are concerned with the 'flourishing' and not simply the 'survival' of our species. Humanity

can only flourish if we each accept our responsibility to live our values of human flourishing by acting locally whilst thinking globally.

Through the process of Living Educational Theory Research an educational-practitioner creates their living-educational-theory. This is a valid, values-laden explanation of their educational influence in their own learning, the learning of others and the learning of the social formations, which their educational practice is contextualised by and is intended to contribute to. The purpose of personal development in this context is not for self but to make a *contribution to systemic change, which contributes to the flourishing of Humanity*.

The process of Living Educational Theory Research encapsulates what it is to engage not only to improve educational practice. It goes further than other forms of practitioner research in contributing to enhancing educational praxis. Creating a living-educational-theory praxis is to create an account of practice and theory that are held together with life-enhancing values.

So, what are the implications for a teacher adopting a Living Educational Theory approach to their continual professional development with respect to developing their research literacy?

3. Research literacy: reading and writing research

A literate person can both read and write. Often the need for teachers to develop their ability to 'read' is highlighted but not their need to develop their ability to 'write' educational research and research in education. By 'research in education' we are referring to research undertaken by those engaged in researching within the disciplines such as the philosophy, psychology, sociology, economics, politics and leadership of education. We think that it bears repeating that we distinguish education research from educational research by the focus of educational research on generating valid, evidence-based, values-laden explanations of the educational influences of individuals in their own learning, in the learning of others and in the learning of social formations that influence practice and understandings. It is therefore important a teacher develops research literacy, which includes the ability to 'read' and 'write' educational research, practitioner research, education research and research in associated disciplines and fields of endeavour.

In Chapter One Boyd includes 'dissemination and peer review' as step 8 in his proposal for professional inquiry.

8. Disseminate findings and gain peer review	Local dissemination and may be included in institutional quality assurance reports	**Local and wider teacher network dissemination, seeking some level of peer review**	Aiming for national / international dissemination and often peer reviewed research journal publication

We are emphasising and extending this aspect of teachers contributing to knowledge creation and to development of educational impact locally and more widely. When a teacher prepares to disseminate a valid account of their living educational theory research, in writing or presenting, it also helps to shape and refine their thinking.

There are numerous reasons not only for teachers to develop research literacy. The development of democratic societies requires an educated citizenry who are able to discriminate between authentic and fake information on which to base their decisions. The consequences of not incorporating research literacy into education for all stages and ages were evidenced by what happened in America, 6th January 2021. The seat of government in the USA was invaded by a violent mob demanding the overthrow of a democratic election. In spite of 50 States affirming that the election was fair and legitimate, Donald Trump successfully continued his propaganda claiming the election had been stolen from him to convince American citizens to descend on Washington, as the Senate was about to confirm the election results in favour of Joe Biden, and overturn the results. This highlights the importance of an educated and courageous citizenry and their representatives to recognise and resist the allure of popularist politics using false information and analyses.

In Chapter One Boyd mentions philosophical critiques of education research, especially of randomised control trial intervention studies (Gale, 2017; Malone & Hagan, 2020). The authors of these papers come closer to our position, of emphasising the values-based nature of education, but they do not extend research literacy into an examination of the nature of the knowledge generated by practitioner-researchers in their living-educational-theories.

Boyd also identifies the skills that are necessary to critically engage with knowledge created by others. One such skill is to recognise the inappropriate use of statistical analyses in educational research. For example, the data

gathered in research can be nominal, ordinal, interval or ratio. Nominal data can be categorised, but not ordered into a hierarchy. Ordinal data can be categorised and ordered into a hierarchy or taxonomy. Interval or ratio data can be categorised, and ordered with a known interval between the categories. Non-parametric statistics are appropriately used in the analysis of ordinal data with parametric statistics appropriately used in the analysis of interval and ratio data. Educational researchers who are analysing data from values-laden educational practices gather nominal data on the meanings of the embodied expressions of the values of educational practitioners that are resistant to ordinal representation. This resistance was recognised by Husserl (1912) in his seminal work on Phenomenology:

> … in the transcendental sphere we have an infinitude of knowledge previous to all deduction, knowledge whose mediated connections (those of intentional implication) have nothing to do with deduction, and being entirely intuitive prove refractory to every methodically devised scheme of constructive symbolism. (Husserl, 1912, p. 12)

Hence it is important for teachers, who are seeking to understand and improve educational practice to be able to recognise what constitutes valid data and ways of analysing them to identify processes of improving educational practice. They also need to have developed their research literacy in a way that enables them to comprehend the appropriate and inappropriate use of statistics in the analysis of data. For example, one area where the use of statistics is appropriate is in highlighting the contexts and issues where values of freedom, equality, justice and respect as well as procedural democratic principles are being denied or could be lived more fully. In their analysis of the factors influencing the career interest of SENCOs in English Schools, Dobson and Douglas (2020) present a quantitative analysis of the factors that influence the motivations of SENCOs. They show the importance of research literacy in comprehending their claim that:

> … these factors can now be fully harnessed and utilised in the pursuit of inclusion and high-quality education, the recruitment of a skilled and committed workforce and the retention of teachers within this field. (Dobson & Douglas, 2020, p. 1275)

Research literacy includes the skills knowledge and ability to create and communicate knowledge in the form of an artefact which stands beyond

self, such as that demonstrated by Dobson and Douglas, for critical appraisal and for contributing to the education of all citizens as well as those who are professional educators.

Living Educational Theory Research is a form of professional educational-practitioner research methodology that enables anyone, whatever their location, discipline or field of practice, to realise their responsibilities as a professional and to be professional. We shall now give a brief summary of Living Educational Theory Research, as a form of educational-practitioner self-study research that offers an approach to the continual professional development of educational-practitioners and professional educators.

4. Living Educational Theory Research

Whitehead (1989) coined the term 'living-educational-theory' to mean, a researcher's valid, values-laden explanation of their educational influence in their own learning, the learning of others and the learning of social formations. Living Educational Theory Research is a continual process of a practitioner researching their practice to understand and improve it, create valid values-laden explanations (the why) of their educational influences in learning ***and*** contribute to a global educational research knowledgebase. Therefore, adopting a Living Educational Theory Research approach enables a practitioner to fulfil their responsibility to contribute to improving professional practice of their profession and/or the community of practice they are a member of, and to contribute to the growth of a global educational practitioner research knowledgebase from which we can all benefit.

Employing a Living Educational Theory Research approach the educational-practitioner clarifies their ontological and social values, as they emerge in the course of researching their practice, to understand, improve and explain it. Those values form the explanatory principles of the explanation of their educational influence in their own learning, the learning of others and the learning of the social formations within which they live and practice. The values also form the standards of judgment by which the practitioner holds them self to account to be improving practice and the standards by which the validity of their claim that the knowledge they have created makes a contribution to a global educational

practitioner research knowledgebase, can be judged. Many universities around the world are now recognising such knowledge as valid by awarding Masters and Doctorates. Some of these can be accessed from http://www.actionresearch.net/living/living.shtml. The global professional educational practitioner research community is also recognising the validity and practical use of such knowledge by publishing accounts of their living-educational-theory research in their various journals.

Research literacy in Living Educational Theory Research requires an understanding of what distinguishes the practice of an educational-practitioner in terms of the purpose of the practice, which, borrowing from Reiss and White (talking about the purpose of schools), is to learn:

- 'to lead a life that is personally flourishing, and
- to help others to do so, too.' (Reiss & White, 2003, p. 1)

There are many forms of practitioner-research and research in education. Living Educational Theory Research is the only form we have found that is explicitly concerned with researching into *educational* practice to understand and improve it, *and* to generate valid explanations of educational influence in learning as contributions to a global educational knowledgebase. By contributing knowledge, that meets the highest standards of intellectual and scholarly rigor and validity to a global knowledgebase, an individual is contributing to discourses, which offer hope for the flourishing of Humanity.

Living Educational Theory Research is a form of educational practitioner research that enables each person:

1) To contribute to and benefit from a global educational practitioner research knowledgebase.
2) To participate in academic, intellectual and scholarly discourses which contribute to realising in practice a world where humanity flourishes;
3) To connect with others of a like mind who are also developing educational knowledge, theory, practice, relationships and opportunities that contribute to the flourishing of humanity.

We are advocating the development of research literacy in a Living Educational Theory Research approach to the continuing professional development of teachers over a life-time commitment to education exploring the implication of asking, researching and answering questions of the kind, 'How do I improve my professional educational practice?'. We have explained elsewhere (Whitehead & Huxtable, 2016) how Living Educational Theory Research can contribute to enhancing a profession of educators. The approach

requires many forms of research literacy. One form is the research literacy required to understand and use the contributions from research in the disciplines of education, in the generation of a living-educational-theory. Another is the research literacy required to understand and use the contributions of other living-educational-theories in the generation of one's own. For example, Briganti (2020) engages with both research literacies in the generation of her own living-educational-theory of as an International Development practitioner. All of the living-educational-theories accessible from https://www.actionresearch.net/living/living.shtml engage in both forms of research literacy. Qutoshi (2016), for example, develops his research literacy as he researches transformative teacher education in Pakistan in the creation of his own living-educational-theory of his practice as teacher educator influencing national educational policies and practices. He also engages with other living-educational-theories accounts in the generation of his own.

5. Extending research literacy

We provide examples of how, as they engaged in Living Educational Theory Research, teachers developed their research literacy as they realised their educational responsibilities as professional educators and educational-practitioners.

Mounter (2008) has researched her practice when working as a class teacher in an English rural primary school. Mounter enabled her 6 and 7 year old pupils to create and to contribute valid and valuable educational knowledge to their own learning and to the learning of fellow pupils and school staff[1].

Bognar and Zovko (2008) working in Croatia have shown how Bognar working as teacher educator enabled Zovko, as class teacher, to work with Key Stage 2 pupils in Croatia to do the same[2].

Sanja Lišnjić (nee Mandarić) also working with Bognar developed her research literacy over time. She developed her ability to write research of her educational practice to create a democratic educational learning environment

1 https://www.actionresearch.net/writings/tuesdayma/joymounterull.pdf
2 https://ejolts.net/node/82

for her pupils learning English (Mandarić, 2011) and subsequently giving a keynote presentation at an international conference (Lišnjić, 2019)[3].

Cartwright (2008) working with students in an English secondary school showed how by enabling her 16 to 17 year old to take a Living Educational Theory Research approach to their educational development as they engaged in their Advanced Supplementary (AS) Extended project. Their course work was awarded the highest grades and you can hear for yourself what educationally they learned in the process (Huxtable, 2009, p. 135)[4].

Tofail (2020) researching in Bangladesh with teachers, examines responses to the policy level introduction of communicative approach to English Language Teaching and dissatisfaction of different stakeholders, particularly teachers, with curricular reform that was not resulting in learners' 'increased proficiency'. Despite considerable consensus about the efficacy of teacher-research what practitioners from postcolonial communities actually say, think or believe about this and the influence on practice of teachers engaging in teacher-research, has remained considerably under-reported. Tofail explains her developing research literacy working and researching within a project that examines whether collaborative research promoted a better understanding of teachers' own beliefs and policy level changes, and empowered them to make informed choices and devise context-sensitive pedagogies in their unique teaching-learning contexts.

Rawal (2018) extends her research literacy in the context of influencing a life-skills educational policy for the Ministry of Education in India. Rawal highlights the importance of developing research literacy with faculty members at Sardar Patel University, India. Their engagement in curriculum development is related to their understandings of curriculum and their teaching and research experiences. This article deals with how Swaroop confronted the 'system' and became a more socially responsible thinker:

> An important aspect of this experience is that of my learning and transformation. Reassessing my assumptions and challenging them enabled me to transform my understanding and act on my renewed perspectives and become a more socially responsible thinker. (Rawal, 2018, p. 65)

3 https://www.youtube.com/watch?v=t8tFTBOsdJY&t=63s

4 http://www.youtube.com/watch?v=tMpaItNH7kg

6. Enquiry leading to inquiry

Members of a profession, such as teachers, who work in Education, have to develop a variety of competencies. What is not explicit is what constitutes 'educational practice' as distinct from the competencies necessary to 'do the job' of a professional working in Education. This includes writing reports fit for various purposes, managing time and resources using the latest technology making research-based, professional development presentations, an running workshops.

What is the difference between Inquiry and Enquiry?

- 'It is clear then that the word inquiry is used where a formal investigation is done or carried out to get to the root of a puzzle or a case.
- An enquiry is a quest for knowledge or information, whereas inquiry is also a quest but more in the form of a formal investigation.

The two words are often used interchangeably, but those who are learned know the difference between inquiry and enquiry and use it appropriately.'[5]

What is the difference between Inquiry and Research?

> The main difference between Inquiry and Research is that the Inquiry is a process that has the aim of augmenting knowledge, resolving doubt, or solving a problem and Research is the formal work undertaken systematically to increase the stock of knowledge.[6]

In British English people sometimes distinguish between enquire and inquire, using enquire for the general meaning of 'ask for information' and inquire for the more particular meaning of 'officially investigate'

> '"Enquire" ask questions to find out more about something.
>
> "Inquire" to formally investigate to resolve doubt or solve a problem (is it better to use this or that?).
>
> "Research" a formal work undertaken systematically to increase the stock of knowledge.'[7]

5 https://www.differencebetween.com/difference-between-inquiry-and-vs-enquiry/
6 https://www.askdifference.com/inquiry-vs-research/
7 https://www.oxfordlearnersdictionaries.com/definition/english/enquire

A Living Educational Theory Research approach to continual professional development involves the educator developing their research literacy so they cannot only develop their ability to ask 'good' questions and resolve problems of practice. They also develop their ability to create educational praxis, support them with well reasoned, rational arguments and in the course of making them public, rigorously testing the validity of their knowledge claims.

By developing their research literacy educational-practitioner researchers can extend their cognitive range and concern and critically and creatively engage with various methodologies to improve their living-educational-theory research (Whitehead, 2018). Other methodologies commonly include, for example, Narrative Inquiry, Phenomenology and Ethnography; Self-Study Education Practitioner Research; Action Research; Autoethnography and Phenomenography.

Conclusion

The chapter concludes with suggestions of where to look for information and support should you wish to explore further a Living Educational Theory Research approach as part of your continual professional development programme. This involves developing research literacy as integral to enhancing your educational influence in learning and contribution to education as a values-laden practice.

One purpose served by teachers developing their research literacy is so they can critically engage with what researchers in education and policy makers publish. They do so to improve their ability to engage their students in the given curriculum, success being measure by the degree to which learning objectives are met. It is important for teachers to develop their subject knowledge and skill to impart it. It is at least of equal importance that they develop their practice as educators to enhance their educational influence in their learning and that of their students to develop and pursue their life-long educational curriculum. Shulman (1987) refers to this knowledge as Pedagogical Content Knowledge (PCK).

Bassey (1991), in his presidential address to BERA, 'Creating Education Through Research', describes three ways of creating education. He speculates that most of us, most of the time, create education, "… by playing hunches, by using intuition without challenge and without monitoring the consequences."

and "… repeating what has been done before." He goes on to offer another way, which is particularly relevant to an audience of teachers faced with the challenges of trying to improve educational experiences, opportunities and relationships in education establishments, from nursery schools to universities, which are now business enterprises. The other way is:

> … by asking questions and searching for evidence. It is creating education by asking about intentions, by determining their worth, by appraising resources, by identifying alternative strategies, and by monitoring and evaluating outcomes. It is creating education through systematic and critical enquiry. It is creating education through research. (Bassey, 1991, p. 3)

He also proposes, "… that researchers have three levels of engaging in criticism in relation to other researchers."

> Level One is the personal level, where one is working more or less alone in designing an enquiry, collecting data, analysing and interpreting it, drawing tentative conclusions, and reflecting on the process and outcomes…
>
> Level Two is the informal interactive level, where the enquiry is shared with selected others (orally or in writing) for critical appraisal of its meaningfulness…
>
> Level Three is the formal dissemination level where an account of the enquiry and its findings is published in the literature… (*Ibidem*, p. 4)

By realising their professional responsibility to contribute their knowledge to the growth of their professional knowledgebase teachers (level 3) teachers extend their cognitive range and concern and explore their practice through other lenses. This holds the possibility of going beyond 'what has been done before' to enhance their educational influence in learning and to contributing to the professional knowledgebase.

We conclude with an invitation to teachers to explore further a Living Educational Theory Research approach as part of their CPD programme, in which developing research literacy is integral to enhance their educational influence in learning and contribute to creating education as a life-long, values-laden practical activity.

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CHAPTER TWELVE

Neither Consumer nor Producer: Addressing Low Levels of Teacher Research Literacy across a National Education System

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ABSTRACT

The present chapter analyzes from a historical perspective various attempts made in Israel to improve the research literacy of teachers throughout their career paths. Significantly, it also explores the extent to which teachers have been positioned as consumers or producers of research. Methodologically, the study leans on an extensive bibliographic search for relevant national and institutional policy documents, local research articles, and international reports shedding light on the research literacy and research knowledge levels of Israeli teachers. The findings indicate that the research literacy among Israeli teachers is low throughout their career path. The study reveals tensions within the curriculum content of initial and advanced professional education programmes, between universities and teacher education colleges, and between the academic identities of teacher educators as teachers and researchers. Above all, the study highlights the importance of the professional status of teachers, including social status and practical issues of working conditions and salaries, and how this relates to development of research literacy. The distinction between teachers as consumers and producers of research adds a useful dimension to the concept of teachers' research literacy by creating a focus on power and knowledge and to the status of the profession.

KEY WORDS: research literacy, teachers' knowledge, initial teacher education, professional development

Introduction

Engagement with research has been recognized and recommended as improving the professional practice of teachers (Waring & Evans, 2015). Since the mid-1990s, there have been calls to substantially increase research-oriented teacher education programs to advance the complex processes entailed in becoming, being, and developing as a professional teacher. While a consensus seems to exist about the importance of research-acquired knowledge, opinions differ on how research knowledge is translated into and reflected in teachers' training programs and continuous professional development. The terminology used to describe teachers' research changes according to its underlying ideology and includes terms such as research-informed practice, research engagement, practitioner research, evidence-based practice, critical inquiry, and research literacy, to name but a few. These diverse perceptions raise questions about the scope of research that training programs should comprise, the type and nature of research that teachers should cover, and the extent of research they should conduct themselves.

Alongside various developments made over time, teacher education around the world has thus placed varying degrees of emphasis on teachers' research literacy. In Israel, the ongoing discontent with the performances of the national education system and its mediocre achievements in international comparative education studies urged education policymakers to promote the quality and professionalism of its teaching force. To this end, much attention has been given to promoting teachers' academic status and boosting their knowledge, including their research literacy. The Israeli bodies in charge of teacher training – the Ministry of Education (MoE) and the Council for Higher Education (CHE), have initiated several policy actions to academize teachers and develop their knowledge. These included integrating various professional development programs into all the stages of teachers' careers, from their initial pre-service training through their in-service career path. Yet, although four decades have gone by since the beginning of the process of teachers' academization, dissatisfaction lingers. While teachers' research literacy is obviously not the only factor that enhances or hinders the success of the education system or teacher training, it is undoubtedly an essential factor worthy of scrutiny (Winch, Oancea & Orchard, 2015). This article describes various attempts to change and improve teachers' research literacy made in Israel over the years by the

MoE and the CHE. It outlines the main policy measures taken and tries to identify the extent of research literacy Israeli teachers possess. The analysis thus sheds light on the micro and macro political, social, and economic factors that affect teachers' knowledge directly and indirectly, particularly their level of research literacy.

Teachers' Research Literacy

Engagement with research is considered an opportunity for teachers to examine what works and why, develop their knowledge, and foster a critical and reflective attitude towards their practice (e.g., Hargreaves, 1999; Hemsley-Brown & Sharp, 2003; Schön, 1983). Research literate teachers are likely to make more informed decisions in their day-to-day work and become more effective teachers (Boyd, 2021).

While there seems to be agreement that teachers should be research literate, achieving this goal has encountered many pitfalls perpetuating the gap between practice and research (e.g., Ball, 2012). School teachers continue to make little use of research (e.g., Borg, 2010; Dagenais *et al*., 2012) due to lack of interest, time constraints, scarcity of resources, and insufficient skills in tackling the specialized language and statistical procedures often involved in research (e.g., Hemsley-Brown & Sharp, 2003; Papasotiriou & Hannan, 2006). Another noteworthy factor hindering research is the absence of an organizational culture that values and supports evidence-based knowledge in school settings (Anwaruddin & Pervin, 2015). Perhaps the most alarming aspect, however, is teachers' feeling that research is irrelevant to their practice (e.g., Kennedy, 1997; Zeichner, 1995).

To overcome the research-practice gap and strengthen teachers' engagement with research, teacher education programs should strengthen the association between the two. It has been argued that teachers' training and experience are essential factors in determining their view of the contribution of research evidence to practice (Papasotiriou & Hannan, 2006). Furthermore, the curricula of teacher education institutes should include appropriate training that allows teachers to use and benefit from the research of others as well as to conduct their own research (e.g., Korthagen, 2010). Over time, these and other arguments have led to worldwide deliberation about ways to enhance teachers' research literacy.

The term "research literacy of teachers" has had two possible meanings: engagement *with* research and engagement *in* research (Borg, 2010). This distinction conceives of a researcher as either a consumer of research findings or a producer of research-based knowledge. Thus, different countries and scholars often interpret the term somewhat differently. In the UK, for example, research literacy tends to refer to improving access to research evidence and disseminating research findings rather than engaging in research (Williams & Coles, 2007). In line with this, the British Educational Research Association has defined the research literacy of teachers as "the extent to which teachers and schools and college leaders are familiar with a range of research methods, with the latest research findings, with the implications of this research for their day-to-day practice, and for education policy and practice more broadly" (BERA, 2014: Appendix 2). In Germany, teachers are also regarded primarily as consumers of research findings, and Educational Research Literacy (ERL) is therefore defined as the ability to ask an appropriate question, search for relevant information, evaluate the evidence, and synthesize information to draw conclusions (Groß Ophoff *et al*., 2015).

Cochran-Smith and Lytle see teachers' research literacy as the ability to conduct research and produce knowledge (Cochran-Smith & Lytle, 2015). They distinguish between knowledge *for* practice, *in* practice, and *of* practice, and view the two latter types as leading to "inquiry as a stance." This metaphor describes the active engagement of teachers in research, learning in communities, generating local knowledge, envisioning and theorizing their practice, and interpreting and interrogating the theory and research of others. In countries where teachers train in universities and teacher education is academically oriented, teachers are expected to be capable of conducting research, adopt an analytical approach in their work, and produce professional knowledge. Examples of such countries are Sweden and Finland. In Sweden, research engagement focuses on knowledge production that leads to professionalization and reinforces the status and autonomy of teachers (Arreman, 2008). In Finland, where teachers' education has traditionally been research-based and where research is part of the teachers' initial education, students must conduct inquiries such as observations and action research alongside their courses (Toom *et al*., 2010). Both countries aim to train autonomous and reflective teachers capable of using research in their teaching and producing research knowledge of their own in the form of Bachelor's and Master's theses.

Some definitions combine the two meanings of research literacy and regard research-literate teachers as both consumers of published research knowledge and creators of knowledge through research and evaluation of their own practice. Waring and Evans (Waring & Evans, 2015; Evans, Waring & Christodoulou, 2017), discuss this type of combined definition. They maintain that research literacy stands for the ability to use, apply, and develop research as an inseparable part of teaching. They add that it should include the ability to draw on and integrate different kinds of evidence gained from inquiry-oriented practice, active engagement in research, and examination of others' research findings. A combination of these two meanings also appears in Boyd's definition (2021) of research literacy. Boyd uses the term "Collaborative Professional Inquiry" to describe the teacher not only as a critical consumer of research knowledge but also as a producer of knowledge via collaborative research that leans on practical wisdom and evaluative practices.

Tack and Vanderlinde (2014, 2016) propose the term "researcherly disposition" to elaborate on the two meanings of research literacy. They describe teachers' habit of mind to engage with and in research – both as consumers and producers – for improving their practice and contributing to the knowledge base on teacher education. It is possible to conceptualize "researcherly disposition" as a theoretical construct encompassing three interrelated dimensions: an affective dimension, i.e., valuing research; a cognitive dimension, i.e., the actual ability to conduct research; and a behavioral dimension, i.e., the alertness to research opportunities in one's daily practice (Tack & Vanderlinde, 2014). Tack and Vanderlinde (2016) further propose a four-factor structure of teachers' "researcherly disposition" that advances from the consumer to the producer of research: valuing research, being a smart consumer of research, being able to conduct research, and conducting research.

Following international trends, the advocacy of teachers' research in Israel and the desire to promote their professionalism became part of the educational discourse. The influence of those trends and the ongoing discontent with the achievements of the educational system eventually led to academizing teachers' education and addressing their research literacy. In addition to analyzing the state of teachers' research literacy in Israel, this study also explores the extent to which teachers have been viewed as consumers or producers of research.

Methodology

The methodological basis of this study was an extensive bibliographic search for relevant resources that could shed light on the extent of Israeli teachers' research literacy and research knowledge. Our four primary sources were: (a) original policy documents issued by the Ministry of Education (MoE), the Council for Higher Education (CHE), and the colleges of education; (b) research of the Israeli context as manifest in local and international peer-reviewed journals; (c) research reports and statistics published by Israeli national centers such as Central Bureau of Statistics (CBS), The National Authority for Measurement and Evaluation in Education (RAMA), and the Israeli Parliament Research and Information Center; and (d) data published in International Comparative Studies (e.g., TALIS). The online searches were conducted with Google Scholar, ERIC, and PROQUEST, using the keywords Israeli teachers, pre-service/initial teacher education programs, in-service/continuous professional development, in conjunction with various terminologies that describe research literacy such as practitioner research, professional inquiry, research-informed practice, critical stance, inquiry as stance, critical evaluators, reflective practice, action research, and self-study. The search yielded a few dozen documents, articles, and reports. The following section describes the findings extracted from the most relevant ones.

Teachers' research literacy in Israel

The analysis of teachers' research literacy in Israel follows two axes. The first is a historical perspective, and the second regards the structuring of teacher education. The historical perspective looks into the development of research literacy in the Israeli teacher education system over three main periods: the pre-academization period (1950s–1970s), the academization phase (1980s–2000), and the professionalization period (2000–onwards) (Dror, 1991; Hofman & Niederland, 2012). The structural perspective analyzes teachers' research literacy along the "learning to teach" sequence beginning with the pre-service phase, i.e., from studying for a bachelor's degree and a teaching certificate to in-service professional development, which includes in-service professional development through continuing education and master degree studies. The events that occurred over each of the mentioned

periods influenced the research literacy of teachers in every stage of their education and development both as consumers and producers of research knowledge.

Pre-academization (1950s–1970s)

On the establishment of the State of Israel in 1948, teachers underwent training in teacher seminars, two-year post-secondary vocational schools that emphasized practical pedagogical aspects. American influences led to incorporating theoretical foundation studies in psychology, sociology, and philosophy into the curriculum (Yonnai, 1999). In the mid-1950s, following growing criticism of teachers' quality, the Ministry of Education (MoE) set up several public committees to look for ways to improve teacher preparation. At the recommendation of the Dushkin Committee (1962), teacher preparation programs were extended to three years in 1963. However, the committee's recommendation to raise the academic requirements was rejected. Thus, research literacy was not part of the teaching curriculum during that period. It remained absent until the late 1970s, when the Etzioni Committee (1979) succeeded in academizing teacher education.

Academization (1980s–2000)

The academization of teacher education has gradually introduced research literacy into teacher education programs. Two bodies governed the academization process: the MoE that had been in charge of overseeing all the schools, curricula, teacher-training colleges since the establishment of the State, and remains the chief employer of Israel's teachers; and the Council of Higher Education (CHE), established by legislation in 1958 as an independent and autonomous body responsible for higher education in Israel and determining its policy. Since the mid-1980s, several other national committees have been set up to promote the academization of teacher education. In time, the Israeli teachers' seminars, i.e., post high-school vocational institutions, were finally upgraded to academic colleges. Under the Council for Higher Education guidelines (Dan, 1981), an extended four-year teacher training program entitled graduates to a Bachelor of Education (B.Ed.) degree and a teaching certificate. As part of the academization and under the influence of other education systems worldwide, research literacy

became part of the core curriculum of pre-service teachers. Other than the foundations of education, the program now included courses in "statistics and methodology" (*Ibidem*, p. 1). The CHE guidelines further stated that "emphasis should also be placed on research methods that the teachers can use to determine the results of their work in the classroom, or to examine new teaching methods they are trying or to analyze curricula" (*Ibidem*, p. 2). Yet the guidelines did not specify the number of hours to be allocated to studying research methodology, leaving the decision to the colleges, which numbered over 50 at that time.

Analysis of the 1990s study program in one of the larger teacher education colleges revealed that out of 115 ECTS required to complete the three-year program (i.e., European Credit Transfer System; one ECTS is equal to 28 hours of study), only six courses (6 ECTS) were devoted to research literacy (Kibbutzim College of Education, 1995). They were all quantitative-oriented courses with a positivistic approach to research, such as descriptive and inferential statistics, measurement and evaluation, research methods, and a research workshop. The stated objectives of this course cluster included the following: "To provide students with tools for critical reading of scientific articles and reports on education and behavioral sciences; to provide learners with skills related to the diagnostic, formative, and summative assessment of their students; to train learners to conduct research independently as part of their classroom and school work; to develop in the learners an ability to ask research questions, select a suitable research methodology, conduct research, collect data, analyze data, present data, and draw conclusions from them" (KCE, 1995, p. 67). All these objectives indicate that the courses aimed to teach future teachers how to consume research, apply it in practice, and produce their own research.

The new B.Ed. guidelines of the Dan committee also required students to take two annual seminars (4 ECTS in total) that taught "searching for source materials on a subject, material analysis, critical examination, and conclusion drawing. Examples of work types: application of knowledge from the field of educational theories and basic sciences to solve a specific educational issue, critical analysis of educational theory, empirical work" (Dan, 1981, p. 2). The guidelines also specified that "Students of education classes and especially of seminar courses must be introduced to the research literature to prepare them for independently studying research methods, on which the theoretical knowledge that forms the basis of practical education

work is based. The goal is to prepare teachers to be critical consumers of research" (Dan, 1982, p. 3).

The MoE encouraged teachers who did not hold an academic degree to take a shortened two-year program. The program included courses in statistics and research methodology as well as two seminars. Although this option was available, it took over twenty years until almost all the teachers in the education system acquired an academic degree. In 2018, 7% of the teachers were not academics yet (CBS, 2019). Moreover, although the guidelines stated that "a bachelor's degree allows admitting graduates of teacher training colleges for postgraduate studies in university education if they meet the universities' standard admission requirements" (p. 1), few teachers have exercised this option. In 1999, only 13% of the teachers held a master's degree (CBS, 2019). Finally, the Dan guidelines also determined that teachers' educators must hold an M.Ed. or Ph.D. degree.

The literature we found dating from the first decade of the teacher training colleges' academization contained no reference to teachers' research literacy as consumers or producers. However, according to indirect indications, it appears that teachers did not conduct independent research despite being exposed to quantitative research. Education researchers began calling to prioritize qualitative research in teacher training. A study investigating teachers' attitudes towards research (Shkedi, 1998) revealed that teachers developed an antagonism towards positivistic quantitative research and said they preferred qualitative research. The teachers claimed that qualitative research depicted their professional world better. The study concluded that a deep gap divided the worlds of researchers and teachers and that research literature was not part of a typical teacher's library. Exposing teachers to qualitative research literature during their pre-service and in-service training could make such literature an essential part of their professional world and enhance their professionalization. Other writers (e.g., Zilberstein, 1998) similarly recommended increasing the volume of case literature, action research studies, and self-study in teacher education programs to allow teachers more voice. In those days, most teacher education institutions maintained that exposing teachers to the positivistic research approach was sufficient. Qualitative methodology courses first entered the curriculum at the turn of the millennium, about a decade after the launching of the academization process.

Professionalization (2000–onwards)

Over the first two decades of the 21st century, a call for professionalization spread worldwide. It urged to strengthen the formal academic preparation of teachers and has heavily influenced Israeli teacher education. Discontent with the performances of the Israeli educational system has continued. The public largely blamed the teachers and their education for the mediocre achievements of Israeli pupils in international comparative educational studies. Once again, the policy actions taken consisted of appointing several committees to examine teacher training frameworks and teachers' professional development to remedy the situation. Prominent among them was the Ariav committee appointed by the CHE, which formulated a new set of identical guidelines for all teacher education programs, focusing on the knowledge teachers must acquire during their initial training (Ariav, 2006). The guidelines laid out a template for initial and continuing teacher education programs, defining the required study components and the hours allocated to each.

The new Ariav committee guidelines included three significant changes in initial teacher education programs that affected the emphasis placed on teachers' research literacy. The first was cutting down the total number of study hours from 120–140 ECTS to a maximum of 90–96 ECTS, a decrease of about 30% (Lidor *et al.*, 2013). The second increased the emphasis on the number of hours allocated to disciplinary studies consisting of content knowledge (CK) and pedagogical content knowledge (PCK). The third regarded mandatory teaching of "at least two ECTS" of research literacy (Ariav, 2006, p. 7). The new guidelines defined research literacy as "Tools for teacher professional development, such as reading and understanding research and the ability of teachers to conduct research (e.g., action research, case research, evaluation research, survey)" (p. 8). The focus was on teachers as consumers and producers of knowledge, reflecting a clear preference for a qualitative research methodology.

The significant cut in the total number of initial teacher education hours and the priority given to allocating hours to content knowledge and pedagogical content knowledge put research second in line. An analysis of the 2010 curriculum in the previously mentioned teacher education college revealed that it only allocated two ECTS to research literacy, equally divided between descriptive statistics and research methodology and qualitative research (Kibbutzim College of Education, 2010).

The Ariav guidelines also called for improving the quality of teacher educators. Unlike the previous committees, the Ariav committee outlined detailed regulations regarding the academic degrees, academic experience, and teaching experience teacher educators should have. The new regulations obliged the colleges to increase the proportion of their postgraduate staff members. A further step taken in the 2000s was introducing academic criteria for the promotion of teacher educators. To meet those criteria, they had to engage in research and publish articles in scholarly journals (Dror, 2008).

While research literacy went down somewhat in the pre-service programs, an opportunity to strengthen teachers' literacy opened with the initiation of master's degree programs designed for practicing teachers, awarding them with an M.Ed. Degree. In 2004, the CHE authorized teacher education institutions to run only a non-research M.Ed. track, succumbing to the universities pressures to preserve their exclusive status as research institutions. It took eight years until a research track was finally approved in 2012, despite the universities' objection (CHE, 2012). The CHE and the MoE, governed and supervised both programs. Yet, while these two bodies were in consensus about the status of research in the research-track programs, they held different views representing conflicting ideologies about the desired nature of the non-research track.

The CHE saw the non-research M.Ed. track as an applied type of degree. Its policy guidelines determined that unlike a research M.Ed., whose purpose is to create new knowledge, the purpose of a non-research M.Ed. is to extend the learner's knowledge and allow specializing in areas that do not rely on research. Accordingly, non-research M.Ed. programs should comprise more study hours than research M.Ed. ones (CHE, 2006). Furthermore, the CHE thought that the final project of a non-research M.Ed. should not be based on empirical research but rather be a theoretical one.

The MoE, in contrast, interpreted the non-research M.Ed. programs of teacher colleges quite differently, perceiving them as an opportunity for teachers to inquire into their work through various research methodologies, especially qualitative ones such as action research and self-study. It expected such research to enable teachers to reveal and conceptualize their personal practical knowledge, enhance the profession's knowledge base, and take part in policymaking (Grinfeld & Khawaled, 2008). The MoE intended to allow teachers to learn and inquire into their domain of interest, to develop

awareness and a critical stance, and improve their argumentation and justification skills (MoE, 1998). These two ideologies coincide with two ways of viewing research literacy that stand at two ends of a continuum: teachers as consumers of research knowledge that fits the CHE ideology, and teachers as producers of research knowledge which resembles the MoE ideology. In the clash between these two polar views of teachers as consumers or producers of research knowledge, the CHE has had the upper hand. The number of hours in the non-research-track was set at 22 ECTS with no requirement for research courses. Of the 19 ECTS in the research track, 4–5 ECTS were devoted to research literacy.

Given the conflicting views about the desired nature of non-research M.Ed. programs in Israel, a national study was conducted a decade after their introduction, to evaluate their orientation (Zuzovsky *et al*., 2019). Respondents were 820 graduates of 12 teacher education colleges who had completed their M.Ed. studies between 2004 and 2015. The findings indicated that practicing teachers had little motivation to conduct research but were interested in acquiring additional knowledge. Conducting research was the least prominent among the motives for enrolling in M.Ed. studies. When asked about the perceived added value of M.Ed. studies, academic development and research ranked last and emerged as having less value. Only 15% of the graduates stated that the studies enhanced their ability to conduct research. The results also showed that although most of the graduates conducted empirical research as part of their final project, this did not boost the perceived added value of research in their studies, nor did it motivate them to pursue research later in their careers. The researchers concluded that M.Ed. studies did not change the a priori reluctance of practicing teachers to engage in research. These results primarily defined teachers as consumers of research and supported the orientation envisioned by the CHE.

With the opening of the M.Ed. track in 2004, a growing number of colleges joined in, giving rise to a massive proliferation in the number of programs offered. While in 2004 only one college offered M.Ed. studies, in 2014, 20 colleges (out of 24 existing ones) ran 67 non-research programs. In 2021, 21 colleges (all of the existing ones) run 75 programs, and only half of them include a research track. The number of students enrolled annually in master's degree studies has increased over the years with the encouragement of the MoE that financially aids practicing teachers who enter these programs. National statistics reveal that in 1996 only 11% of the teachers held a master's

degree, while in 2018, their percentage rose to 35% (CBS, 2019). A recent CHE committee recommended a two-cycle degree for all teachers in Israel, but their recommendation has not yet been approved. (Datal, 2021).

In addition to studying towards a master's degree, teachers also have a range of other options for professional development in the form of in-service courses and workshops provided by various institutes and organizations. The Ministry of Education operates designated pedagogical centers countrywide, but higher education institutions and public or private organizations also offer such options. In-service courses and workshops are also available to teachers in the schools where they teach, often organized collectively for the teaching staff by the school principal. Participation in such workshops guarantees a salary increase. Research studies reveal that over 90% of the practicing teachers in Israel are involved in informal professional development activities (OECD, 2014, 2019; Donitsa-Schmidt & Zuzovsky, 2020). According to the Teaching and Learning International Survey (TALIS) 2013, the percentage of Israeli teachers participating in continuing professional development (CPD) is higher than the average of the OECD countries. Yet, of the teachers engaged in nine types of CPD activities, only 26% are involved independently or collaboratively in research-related activities (OECD, 2014). This rate of involvement in research is lower than the international average of 31% (OECD, 2014, tables 4.6, 4.9). According to the TALIS research conducted in 2018 Israeli teachers commonly participated in face-to-face courses (82%), reading professional literature (71%), and education seminars (57%) as part of their professional development. Although similar to the OECD average (76%, 72%, 49%, respectively, OECD, 2019), these results highlight the prevalence of a consumer orientation in research literacy in Israel. A research report of the Israeli Parliament Research and Information Center written over a decade ago also noted the minor engagement of teachers in research – whether as consumers or producers, as part of in-service courses (Vorgan, 2008).

Consistent with the fact that research does not play a significant part in teachers' professional development, their promotion does not depend as a rule on engagement with research. Teachers have been regularly evaluated since 2008. They progress from novice to fully-fledged professionals along an established nine-level promotion ladder. Research is however mentioned as a criterion only in the eighth level of the promotion ladder, urging teachers to include research in their current work, enrich their theoretical and academic knowledge, and share their research results with their colleagues and the

entire professional community (MoE, 2008). Engagement in research is not one of the criteria for assessing school principals and other position holders.

While searching for substantiated evidence on teachers' research literacy, we came across a few studies that testified to research activity among teachers. In a study that investigated a CPD program involving action research through reflective writing, the researchers concluded that action research had a positive effect on experienced educators. It promoted their trust in research and reinforced their identity as practitioners inquiring about their own work (Harel & Sela, 2011). In another study, using action research methodology, a preschool teacher spent six years investigating a change she had initiated in her kindergarten under guidance of her academic supervisor. The researchers concluded that despite the limitations of action research as a subjective process, it offers an opportunity to improve practice (Shoval & Sharir, 2019). While some examples exist of teachers who actively include research in their ongoing learning and professional development, the situation is generally rather gloomy. At the end of their initial training, teachers discover that they are not perceived as sufficiently professional, and their continuing development, designed to enhance their expertise, is predominantly random and unstructured (Avdor *et al.*, 2010).

Discussion

The findings of the present study reveal low research literacy levels – as consumers and even more so as producers of research – among Israeli teachers at all stages of their career path. These low levels persist to this day despite the attempts made to improve the quality of teachers. The results show that during the pre-service stage, little time is devoted to studying research methodology while research-oriented learning and presentation of research products is rarely required. Most of the study time is devoted to content knowledge and pedagogical content knowledge. One might therefore expect Israeli teachers to be adequately equipped with these two types of knowledge. Yet, a recent meta-analytic study that examined the knowledge Israeli teachers possess refuted this assumption (Donitsa-Schmidt & Zuzovsky, 2019). Most of the reviewed studies pointed to the fact that pre-service teachers and beginning teachers did not possess sufficient CK or PCK. Even worse, teachers in more advanced stages of their careers lacked sufficient

disciplinary knowledge. Practicing teachers indicated that they lacked and needed other types of knowledge, some of which appear in Shulman's categories (1986), including curricular knowledge and knowledge of learners and their characteristics. These findings may explain why in-service teachers studying in postgraduate programs prefer to focus primarily on knowledge acquisition rather than on research (Zuzovsky *et al.*, 2019). A study of the predictors of teacher satisfaction with professional development courses showed that one of the leading factors affecting teachers' satisfaction with these courses was the degree to which they met their needs and expectations and focused on the knowledge they lack (Nir & Bogler, 2008). Borrowing from Maslow's theory of the hierarchy of needs, we conclude that when the basic needs of teachers for knowledge are not met, they are unlikely to be motivated to pursue more advanced types of knowledge such as research literacy.

Given this dismal state of affairs where Israeli teachers lack the essential basic knowledge they need for teaching, one may consider as sensible the decision not to focus on research literacy in undergraduate studies and replace it with other more needed types of knowledge. Focusing on CK and PCK and devoting time to school practicum means a very tight schedule that leaves a limited number of hours for research. As Boyd noted, teachers require a tremendous scope of knowledge, while there is no need for all the teachers to be actively engage in educational research (Boyd, 2021). Yet, since the research literacy of teachers must cover all Shulman's knowledge categories (Boyd, 2021), Israeli teachers should be critical consumers of knowledge to benefit from educational knowledge, be lifelong learners familiar with state-of-the-art research findings, and make informed judgments in their day-to-day professional practice.

The question is why pre-service teachers fail to acquire sufficient knowledge during their undergraduate studies and become research-informed practitioners. One answer is rooted in the still semi-academic nature of the colleges of education. Despite the academization process, the colleges remain second-tier academic institutions (Yogev, 2000). Teacher educators, in contrast to university researchers, do not engage enough with research. The teaching demands imposed on them are much too great. Their teaching hours are not cut down to allow for research time, research budgets are minimal, and engaging in research is mostly perceived as no more than a recommendation. The universities take advantage of this state of affairs, exerting pressure on the Council for Higher Education to preserve their hegemony as prestigious institutions.

A study conducted by Guberman (2009), the head of the research authority at the Mofet Institute that cultivates research activity of teacher educators, found that over a period of ten years, only ten percent of all teacher educators applied for research grants, and most of them did it only once. She concludes that although all the colleges hold research activity, only a small group of teacher educators engage in it. These findings reemerged in a study by Rubin and Tzadik (2015) who reported that research activity was scant and pedagogical supervisors were the least involved in it, viewing such activity mainly as a means to achieve promotion.

A second reason for this problem springs from the unattractiveness of the teaching profession in Israel. Low wages, unappealing working conditions, and little prestige hinder attracting quality candidates to the teaching profession. Relaxing the admission requirements has succeeded in attracting more students, at the cost of lowering the quality of soon-to-be-teachers (Ritov & Karil, 2017; CBS, 2020). One direct effect of the decline in student quality is their poor mastery of English, to the point that they evade reading English texts and restrict themselves to the limited sources available in Hebrew (Inbar-Lourie & Donitsa-Schmidt, 2013). Teachers' exposure to up-to-date content knowledge considerably decreases if they do not read theorical and empirical education research reports in English.

Significantly, the current research revealed that the M.Ed. programs designed for practicing teachers did not increase teachers' research literacy. Beyond the reluctance of practicing teachers to engage in research, many of them lack the advanced writing skills required in research, posing another obstacle in their way (Weinberger, 2016). Furthermore, the limited number of hours allocated to research courses in the non-research programs, and the fact that some teacher educators teaching in these programs are not engaged themselves in research, also appear to cause hindrances. Finally, the colleges implicitly convey that teaching is an applicative profession and not a research-oriented one. This message quenches the enthusiasm for research.

Even teachers who develop professionally through in-service courses prefer to adhere to the consumer mode of research rather than actively engage with research. Using Tack and Vanderlinde's (2014, 2016) construct of researcherly disposition, we may conclude that Israeli teachers have low levels of research dispositions. Most of them do not value research, do not consume it sufficiently, and avoid conducting research on their own. In other words, they display low levels of affective, cognitive, and behavioral dispositions.

Considering the heavy workload and demands imposed on Israeli schoolteachers, their low wages, and their modest capabilities, it would be unrealistic to expect them to be savvy consumers of research to guide their decisions and practice, let alone producers of knowledge. Moreover, blaming the teachers would do them an injustice. Teachers' insufficient knowledge, particularly their poor research literacy, has not happened in a vacuum but results from political, social, and economic forces affecting teacher education in Israel. The disagreement between the CHE and the MoE, the two policymakers, iterates and perpetuates the power struggle undercurrents between the universities and colleges of education, as the universities make every effort to preserve their hegemony as elite institutions. Many prestigious fields of study are only available in universities. Moreover, the universities' strict admission requirements leave colleges of education with far fewer quality candidates, many of whom choose the teaching profession by default. University lecturers are better paid than those of colleges of education. Coupled with reduced teaching loads and clear-cut publish-or-perish demands, this allows the universities to select the most accomplished lecturers meticulously. Allocating generous annual research funds to the universities and upgrading their research infrastructures (CHE, 2019) means strengthening them further at the expense of the weaker academic institutions.

Finally, maintaining a highly academic curriculum as against an applied one preserves the universities' reputation as top-quality establishments that benefit their graduates in the labor market. Within this political, social, and economic climate, using Bourdieu's theory of capital, research literacy can be defined as a cultural and symbolic capital. Inevitably, research knowledge, particularly knowledge production, is strongly linked with cultural assets (e.g., competencies and skills) and is a symbolic source of power associated with prestige and honor. Colleges of education strive to break their glass ceiling but remain weak and marginal in the Israeli higher education arena. Teachers' research literacy testifies to that.

Following the above analysis, policymakers must simultaneously take several steps to remedy the situation and potentially increase the teachers' passive or active involvement in research. These steps should include improving the employment conditions of teachers as well as those of teacher educators, raising the requirements for admission to the teaching profession, emphasizing research courses as part of undergraduate studies, pressuring teachers to continue studying towards advanced degrees, incorporating

criteria for research engagement at earlier stages of the promotion ladder, and offering more opportunities to engage in research in in-service professional courses, including via professional learning communities.

But the first and foremost change required regards the mindset of decision makers about the nature of the colleges of education, and the consequent educational policy. Are they institutions of higher education similar to the universities, placing greater emphasis on the academic, theoretical, and research aspects of education, or are they merely meant to equip future teachers with field-oriented, pedagogical, and practical knowledge? Resolving this dilemma is likely to affect the research knowledge of Israeli teachers in forthcoming years. The present hybrid status creates an ambiguity that does not help strengthen the research literacy of teachers. At the end of the day, research literacy is not just a symbol of cultural and social capital. It is an essential professional asset of practicing teachers and should be treated as a core element in their initial preparation and ongoing professional development. Research engagement should be a vital consideration in hiring and promoting teacher educators. Failing to regard it as such will continue to have implications for the state of the education system and society at large.

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CHAPTER THIRTEEN

Developing Teacher Expertise through Research-Informed Professional Development

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ABSTRACT

In this chapter I argue that senior leaders' research literacy is essential for designing and implementing research-informed professional development in schools that enables classroom teachers to engage with research and apply learning to practice. Current practices around use of research evidence are explored through survey data from 24 schools in England which suggests the pivotal role leaders play in schools' engagement with research. By comparing how novice and expert teachers perceive and represent classroom events, I present the case that inquiry approaches require an expert facilitator to ensure collective expertise is most effectively shared. Teachers should additionally have opportunities to apply new knowledge emerging from inquiry cycles for the professional learning to lead to changes in teacher habits. As factors that can enable or present barriers to effective teacher learning and engagement with research, working conditions and approaches to collaboration are explored in more detail.

I conclude by summarising key ideas on teacher professional development and considering what the implications for school leaders are.

Introduction

How can teachers make the best choices about their efforts? In this chapter I propose that research literacy needs to be at the heart of teachers' thinking; the ability to access, interpret and critically evaluate educational research and make evidence-informed choices about where to best direct our time and efforts in the classroom. Without it, we are reliant upon hunches, hearsay, folk wisdom and, worst of all, dogma. After interviewing and coaching hundreds of teachers and leaders, I've found that the research literate teacher is able to think more deeply and ask more challenging questions with regards to the type of conditions that most enable students to flourish. To maximise the potential impact of engaging with research, teachers need meaningful professional development opportunities to synthesise the literature, and critically reflect upon the implications for the students in their own context. To do this, they need the type of supportive environment that is conducive to them trialling insights in their classroom and learning from mistakes. School leaders and teacher educators in schools are able to create, or disrupt, supportive environments for teacher learning through effective continual professional development (CPD) structures and processes, and effective communication with their colleagues. School leaders and teacher educators need to make evidence informed decisions about the commissioning, design, facilitation and evaluation of effective professional development, alongside creating the enabling working conditions for effective professional development to thrive.

I will start by exploring data from recent surveys of practising teachers and leaders about their use of research and their confidence in judging its quality to understand current practices and inform later discussion. I will then summarise some key ideas about developing teacher expertise, effectiveness and the type of working conditions that lead to teacher growth. In contrast to this, I will reflect on the factors that enable and inhibit impactful professional inquiry. I conclude by outlining the implications for teacher professional development. Here, I will argue that the role of a teacher educator as a facilitator is necessary within an inquiry group to optimise learning from the process, and ensure new learning from professional development is implemented with fidelity. As the knowledge base for teaching and teacher education continues to develop, teacher educators need to regularly and critically engage with research to keep their knowledge and expertise of effective professional development fresh and up to date.

A note on terminology. I use the term teacher educator to describe all those who are involved in the education of teachers, both at the start of their career, and ongoing professional development. Teacher educators work in schools, often as either a senior leader who may have oversight of a professional development programme or be engaged in the facilitation of professional learning for their team – perhaps a subject leader, or individuals, for example an in-school mentor or coach. Teacher educators may also work closely with schools, for instance an external CPD provider, someone who is responsible for professional learning for a group of schools (e.g., a Multi Academy Trust or teaching school) or a professional researcher who might, for example, be supporting teachers in carrying out practitioner research.

Use of research in schools in England

As a starting point, it is helpful to understand current research usage in schools. I have collated survey results from a range of schools in England that took part in a Diagnostic Review of their professional development provision, carried out by the Teacher Development Trust (the national charity for professional development in England and Wales). The Diagnostic Review process triangulates anonymised survey results, a self-evaluation completed by the school leader(s) for professional development and interviews with a cross-section of staff. The Review supports schools to benchmark their current provision against seven domains of professional development, including; culture, processes and structures of CPD and use of research and evidence.

I have aggregated anonymised survey data from 24 school Diagnostic Reviews that took place between July 2020 and January 2021 in schools across England. Responses from teachers, middle leaders and senior leaders have been presented separately to allow for comparison. Information about the number of participating schools and survey respondents follow below.

Table 1. Participating school type

Primary School	11
Special Education Secondary School	1
Secondary School	12
Total	**24**

Table 2. Roles of survey respondents

Teachers	368
Middle Leaders	168
Senior Leaders	77
Total	**613**

It is worth laying out a few caveats and cautions. The survey collects staff self-reported perceptions. The survey is offered to all staff, anonymously, so the results may not cover all staff. It is also worth noting that the schools who opt to carry out a Diagnostic Review do so as they are interested in improving their professional development provision, so generalisations from this data set cannot be made, although it does provide a useful stimulus for discussion in this chapter.

Exploring the data

When asked whether they have access to and engage with (discuss, challenge, use) research summaries and evidence-based advice, survey respondents reported the following:

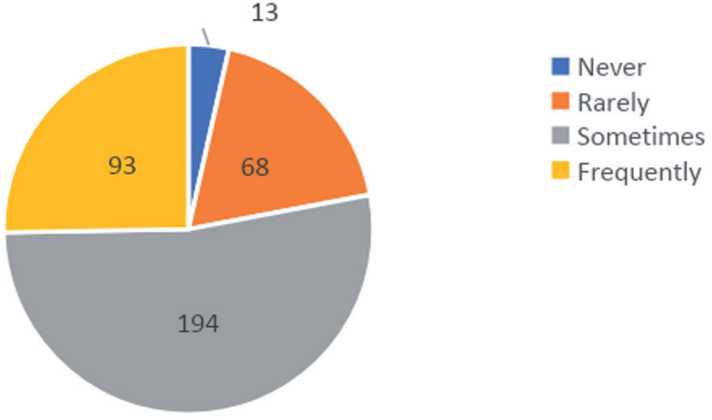

Figure 1. Teachers' responses to the statement: "I have access to and engage with (discuss, challenge, use) research summaries and evidence-based advice"

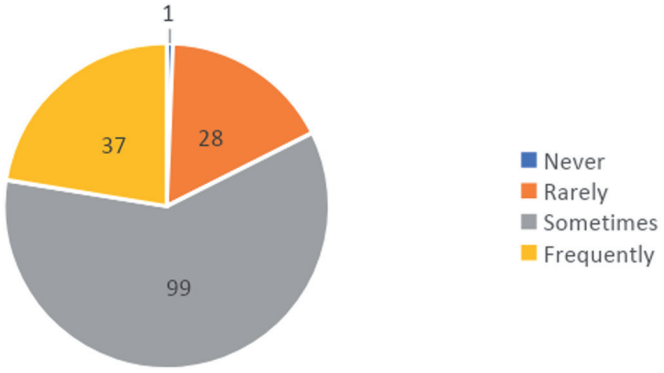

Figure 2. Middle leaders' responses to the statement: "I have access to and engage with (discuss, challenge, use) research summaries and evidence-based advice"

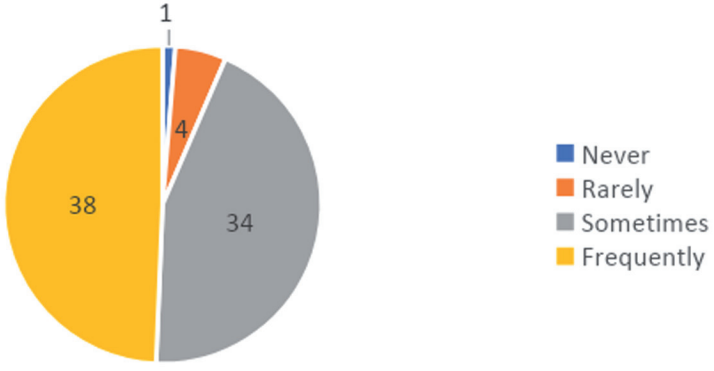

Figure 3. Senior leaders' responses to the statement: "I have access to and engage with (discuss, challenge, use) research summaries and evidence-based advice"

From this data sample, at least three-quarters of all respondents report that they have access to and engage with research summaries and evidence-based advice, and a very small proportion report they never do. The frequency appears to increase for senior leaders, although not middle leaders. The survey doesn't ask for detail regarding the sources of research evidence are, for example meta-reviews or professional guidance. During interviews with a cross section of staff for the Diagnostic Review process, we often ask

interviewees what research-evidence is being consulted, how this is used and where this has been sourced from. External sources vary, but include; The Chartered College of Teaching (CCT) impact journal, dissemination through professional networks such as local hubs, teaching school networks, Higher Education Institutions (HEIs) and Multi Academy Trusts (MATs, educational books and blogs, subject associations and external CPD providers. We frequently note in interviews that research is often sourced by middle (subject) or senior leaders and then shared more widely amongst staff, either at a whole school or team level. We regularly see middle and senior leaders acting as informal 'research-brokers' within their school communities. My argument here therefore is not that teacher research literacy is unimportant, rather that the research literacy of leaders and teacher educators in schools who are sharing and disseminating research is a more important determinant of which research is used and how it is used.

The same survey respondents were asked how far they agree with the following statement: "I am aware of research methodologies and feel able to judge the quality of research". The results are presented below.

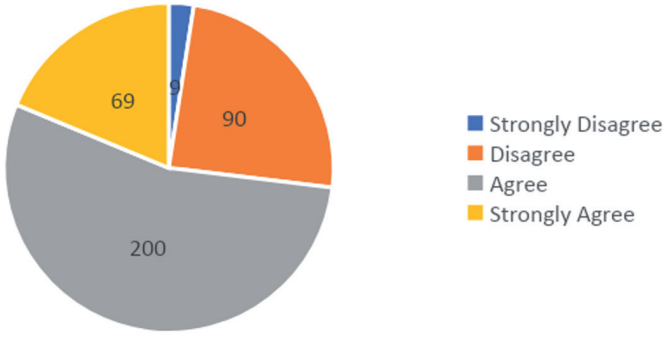

Figure 4. Teachers' responses to the statement: "I am aware of research methodologies and feel able to judge the quality of research"

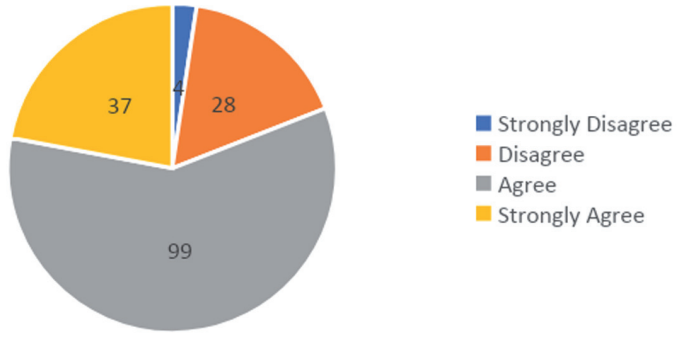

Figure 5. Middle leaders' responses to the statement: "I am aware of research methodologies and feel able to judge the quality of research"

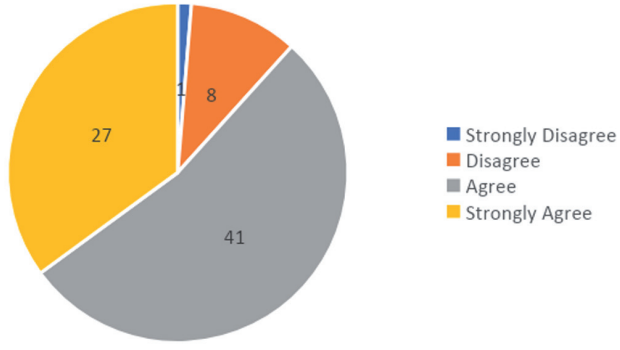

Figure 6. Senior leaders' responses to the statement: "I am aware of research methodologies and feel able to judge the quality of research"

Encouragingly, we see that, proportionally, there is greater confidence amongst senior leaders with awareness of research methodologies and their ability to judge the quality of research. Of course, this is self-reported confidence, and we can't necessarily say if this truly correlates with increased competence. Interestingly, even though 38 senior leaders reported frequently engaging with research summaries and evidence-based advice, only 27 strongly agreed that they feel able to judge the quality, suggesting there is perhaps a need for increased skill in this area.

From the network of schools that the Teacher Development Trust works with across England and Wales, we know that middle leaders are increasingly more involved in designing and facilitating professional development for the subject and phase teams. As already stated, it is important that colleagues in this position who will perhaps be sharing and facilitating debates around the research evidence used, are able themselves to critically evaluate research methodologies and judge the quality of the research evidence.

Self-reported confidence in the ability to judge the quality of research is high in this group of survey respondents. Just over 2% of participants strongly disagreed that they are aware of research methodologies and feel able to judge the quality of research and 21% disagreed. Given the range of complex knowledge required to effectively evaluate research methods, it could be that respondents perhaps used a heuristic to judge their response to this question (Kahneman, 2011), for example "I am able to judge if research is relevant to my context and practice". Or even "I am able to judge if research agrees with my beliefs and values about education", if we consider the impact of confirmation bias on someone seeking to objectively evaluate research findings. It is vital that opportunities to critically reflect on research findings are provided and conversations carefully facilitated to draw out a range of perspectives. I will explore the role of an expert facilitator later in this chapter.

Finally, survey respondents were asked how regularly evidence behind a CPD approach is shared, discussed and debated with staff.

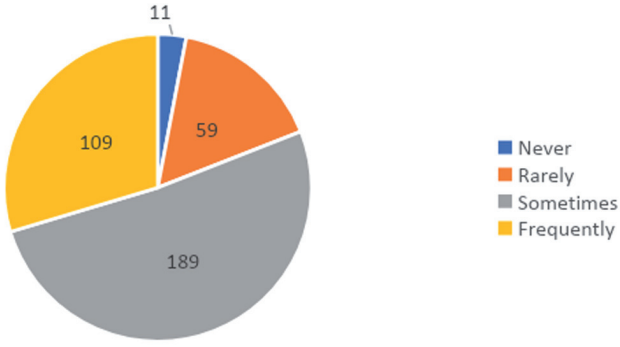

Figure 7. Teachers' responses to the statement: "Any research evidence behind a CPD approach is shared, discussed and debated with staff"

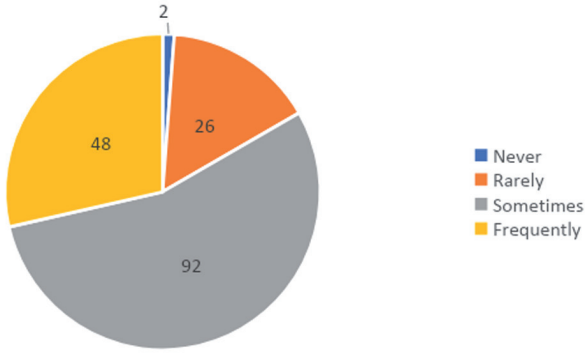

Figure 8. Middle leaders' responses to the statement: "Any research evidence behind a CPD approach is shared, discussed and debated with staff"

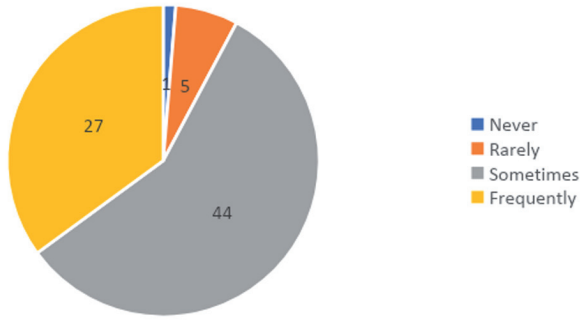

Figure 9. Senior leaders' responses to the statement: "Any research evidence behind a CPD approach is shared, discussed and debated with staff"

Three quarters of all respondents report that they are sometimes and frequently sharing, discussing and debating research evidence behind a CPD approach. It is through these interactions, and with guidance from facilitators and teacher educators, that we hear teachers describe opportunities they have had to develop their understanding of how to interpret, critically evaluate and apply research evidence to their practice.

Conclusions from the data

From exploring the survey responses from a range of teachers and school leaders across 24 schools in England, we can see that accessing and using research evidence is regular practice for many teachers and leaders in these schools. In addition, we see greater levels of confidence and regularity in accessing research in senior leaders than at other seniority levels. This provides evidence that supports the notion that senior leaders' research literacy is more pivotal for schools' engagement with evidence than that of the classroom teacher.

Developing Teacher Expertise and Effectiveness

Exploring the literature in teacher expertise

The most effective school professional development programmes consider and meet the needs of all their staff. Teachers have varying levels of expertise and diverse schemas and mental models that inform the way they approach their professional responsibilities. For teacher educators to support the professional development of colleagues at all stages of their careers, it is important to understand how teacher expertise varies and the implications this has for teacher professional development.

Using the five stage Dreyfus model of skill acquisition (Dreyfus & Dreyfus, 1986), Berliner (1988) set out a theory for the development of expertise in pedagogy from novice to expert level. Whilst it is not agreed that all teachers learn and develop in a linear manner through the five stages set out by Berliner, it is interesting to compare the different approaches more novice and more expert teachers may take to solve a given pedagogical issue due to the differences in the expansiveness and interconnectedness of their existing mental models.

Below I have summarised and paraphrased from Hogan *et al.* (2003) and Berliner (1988, 1994) some key ideas on how mental representations vary for novice and expert teachers, and the ways in which this impacts how pedagogical issues are perceived, represented and the approaches taken to solve them.

Table 3. Summary of differing mental representations of novice and expert teachers paraphrased from Hogan *et al.* (2003) and Berliner (1988, 1994)

	Novice teachers	**Expert teachers**
Problem representation	Identify superficial features and causes	Identify deep structural features and principles
Perception of the classes	Plan thinking about the class as a whole	Plan thinking about a collection of individuals
Approach to planning	Focus on short-term planning, for example detailed written lesson plans and strategies to use within lessons	• Engage in a range of curriculum development work, including short term and long-term planning * • Minimal written planning
Approach to teaching	• Teaching strategies focus on class as a whole • Use general rules that have been taught without a context, e.g., 'use cold calling'	• Teaching strategies adjust according to individual students * • Rich and complex schema with a range of strategies and uses *
Perception of classroom events	• Descriptive in nature • Focus on teacher effectiveness • Events perceived through teacher actions, or single area of classroom • Less likely to perceive patterns and make inferences	• Analytical and evaluative • Focus on student learning and achievement • Monitor multiple classroom events simultaneously • Quickly perceive patterns and make inferences
Presentation of new content	• Less emphasis on assessing and drawing connections with prior knowledge	• Use multiple approaches and strategies to assess and draw connections with prior knowledge
Response to classroom events	Seek to quickly solve the problem	Seek to define problem
Recalling classroom events	• Recall often in relation to teaching behaviours and adherence to lesson plan • Not all events noticed or recalled	Greater detail and accuracy in recall that focuses both on teacher behaviours and specific student behaviours
Approach to completing repeating tasks (e.g., taking register, homework review)	• Lacking in habits • Routines take longer	• Automaticity • Swift to complete repeating tasks

	Novice teachers	Expert teachers
Approach to problem solving	• Quick to solve problems	• Take more time to solve problems • Multiple solutions due to rich case knowledge • Greater detail in solutions

* Hogan *et al.* (2003) noted that when asked to teach in areas outside of their expertise, for example less familiar subject matter, experts approached planning and teaching similarly to more novice teachers, suggesting that some areas of teacher expertise are domain specific and not transferable.

When we compare the different representations of pedagogical issues, there are some clear implications for the way in which professional inquiry is organised and facilitated to ensure that knowledge is most effectively mobilised and shared amongst a group of professionals with a range of expertise. Put simply, the mental models of more novice teachers are less rich and interconnected than more expert teachers due to having less knowledge and fewer experiences to draw on – "we understand things in the context of things we already know" (Willingham, 2009, p. 88).

Novice and Expert teachers in inquiry groups

Consider the data collection process that takes place within a professional inquiry cycle. This often requires reflections from observations of classroom practice, collecting evidence of student learning (e.g., student work or student voice) and collection of wider school data (e.g., assessment, behaviour, attendance etc.). Some of this data collection requires what Shulman (1986) terms 'case knowledge'; rich practice-detailed descriptions of classroom events, with consideration given to contextual factors. Given that novice teachers were found to focus more heavily on teaching behaviours when recalling classroom events and did not always notice all events taking place (Hogan *et al.*, 2003), it is likely their case knowledge will be different to more expert teachers who are able to perceive multiple classroom events and recall these in terms of student learning (*Ibidem*). This situation presents an excellent learning opportunity for the more novice teacher, if the more expert teacher's case knowledge is shared. Here is where challenges may arise in inquiry groups. Teacher expertise is often comprised of tacit knowledge, that they sometimes struggle to make explicit and share with more novice

teachers (Berliner, 2004). Here, the role of a teacher educator to carefully facilitate conversations around data analysis is vital. Additional support for more novice teachers to develop their "professional vision or disciplined perception of a complex practice" (Grossman *et al.*, 2009, p. 2069) so that they are able to describe complex practices and notice key aspects of classroom events from the perspective of student learning is also recommended.

Supporting teacher improvement and inquiry with expert practitioners

At the Teacher Development Trust, we have supported many schools who use an inquiry approach to professional development. We commonly find schools initially setting up inquiry groups formed according to a more generic pedagogical aspect, for example assessment for learning, and contain teachers who work across a range of subjects or phases. This approach has benefits, for example, for teachers to be able to offer new perspectives and share different approaches to solving pedagogical problems. However, given that when asked to prepare and teach lessons outside of their area of expertise, expert teachers were observed to approach the task in a similar manner to more novice teachers, there may be a limit to the expertise that can be transferred from an expert teacher outside of their area of expertise.

One solution may be to create a structured role for the more expert practitioner within the inquiry cycles. There is evidence to suggest that intentional allocation of teachers to teams has been associated with improved student attainment, so the allocation of teachers to inquiry teams is salient. When paired with more effective colleagues to work together on activities including co-planning, observation and feedback, teacher effectiveness increases. In some instances, this effect is found to be considerable and enduring;

> ...for both math[s] and reading, the quality of a teacher's peers the year before, and even two years before, affect her current students' achievement. For both subjects, the importance of a teacher's previous peers is as great as, or greater than, that of her current peers. (Jackson & Bruegmann, 2009, p. 13)

This suggests that inquiry teams would be more effective with the support of a more expert practitioner within the domain of the inquiry. Schools may

helpfully be able to draw upon findings made by Kini and Podolsky (2016) that teacher effectiveness increases at a greater rate when teachers work in a similar context for multiple years, teaching similar year groups and subjects. This implies that school leaders can support inquiry effectiveness by providing the support of a colleague who had has amassed significant experience working in the specific domain that is the focus of the inquiry, and the specific year groups and pupil types that are the focus.

The role of the facilitator or teacher educator in professional inquiry is key in supporting teachers to make their tacit knowledge explicit to be able to share it with other inquiry group members. Reviewing successful Lesson Studies carried out in a Primary school in England, Mynott (2018) writes about necessary expertise for this role, suggesting that an inquiry facilitator needs expertise in both the inquiry process and the subject matter of the inquiry, to be able to generate effective professional dissonance and enable the construction of new collective knowledge and expertise. Importantly, the facilitator should not be positioned as the sole expert within an inquiry group. Equity in professional inquiry groups is fundamental, with all members possessing expertise to contribute, whether it is rooted in the literature or practical wisdom. The facilitator should use their expertise in the inquiry process to guide high quality professional conversations in which all group members participate and reflect critically on a range of knowledge and perspectives to co-construct new knowledge. The facilitator's expertise is additionally important to ensure that findings from research are implemented with fidelity to classroom practice.

Teacher educators supporting professional inquiry need skills and expertise in a range of areas including, but not limited to; the professional inquiry process, fostering a team culture of mutual trust and respect, facilitating conversations that generate professional dissonance, teacher knowledge and high levels of research literacy to ensure the inquiry process is rigorous and informed by high-quality research evidence and analysis.

Teacher expertise and teacher effectiveness

Teacher effectiveness, measured by the teacher's ability to raise student test scores, has been shown on average to increase rapidly in the early years of their career (three to five years), however the gains in teacher effectiveness start to slow and even plateau after this (Kraft & Papay, 2014). Hobbiss

et al. (2020) have recently suggested that this growth and plateau in teacher performance corresponds to teacher habit formation and automation of habits, with the authors stating, "that this converging evidence provides strong reason to believe that habit formation is an important factor limiting teacher effectiveness" (*Ibidem*, p. 1).

Expert teachers approach teaching with automaticity as repeated tasks become habitual and take less time to complete. Despite this, automaticity and habitual behaviours in teaching do not necessarily lead to expertise in teaching as automation of habits can lock in sub-optimal behaviour practices as well as effective practices (*Ibidem*). In order, therefore, to develop expert teachers with highly effective teaching behaviours and habits, we must either a) ensure sub-optimal habits are not formed in the first place, or b) have mechanisms and processes through which new, and more effective, habits can be formed using the most up to date research evidence. In practice, we know that option a) is neither practical, nor a plausible solution given that our knowledge about teaching and learning continues to develop and change. That means we must ensure the professional development mechanisms and processes that support teachers to change and develop new habits in schools are well established. I will explore the implications for teacher professional development later in this chapter, but first will discuss teacher working conditions which can enable, or disrupt, effective teacher learning.

Working conditions

High quality professional development is a factor of high-quality working conditions (Kraft & Papay, 2014), whilst also being dependent to an extent on the quality of working conditions within a school. Supportive working conditions also lead to a greater rate of growth in teacher effectiveness (Kini & Podolsky, 2016). A recent Teacher Development Trust working paper (Weston *et al.*, 2021) explores this area in more detail, however some of the findings are important for this chapter. Teacher learning is complex and is not limited to formal, planned training events. When thinking about teacher learning, we must consider the wider school environment in which the learning is situated, in particular when exploring professional development forms that are socially situated, such as professional inquiry.

In the papers reviewed, school leaders who actively sought to foster high quality working conditions led school improvement in terms of improved teachers' working conditions and student assessment scores (Liebowitz & Porter, 2019). Helal and Coelli (2016) studied working conditions and principal leadership across 1500 schools in Australia, finding that:

> Leaders who create a stimulating and collaborative professional environment, with a shared school vision and goals, are those who can best raise student achievement. (Helal & Coelli, 2016, p. 28)

It was also found that activities associated with professional development were perceived differently in various schools and this had implications for their effectiveness as a means for professional development. For instance, Grissom, Loeb and Master (2011) discussed the perception of 'walkthroughs' (also known as learning walks, where a teacher or leader observes a short segment of a lesson, often without prior notice being given to the teacher) and found that:

> In schools where walkthroughs are not viewed as professional development, walkthroughs are particularly negative; while in schools where they are viewed as professional development, coaching is particularly positive. In other words, different use of walkthroughs seems to be associated with different results. (Grissom, Loeb & Master, 2011, p. 18)

Professional development forms such as professional inquiry involve observation of practice (this could be live or through use of video) with careful analysis of classroom events and student learning after the events have happened. The working conditions are clearly important for people involved in practitioner research so that observation of classroom practice is perceived as supporting professional growth. School leaders have a direct responsibility here to ensure there is a culture of mutual trust and respect, with open communication to ensure that teachers feel confident to invite other colleagues into their classrooms.

Timperley (2015) reviewed conversations that support professional growth, identifying common themes as well as enablers and barriers to effective professional conversations. School contexts that enabled effective professional conversations have high expectations of teachers and leaders to engage in school improvement and solve issues, whilst also providing any necessary

support to do so. When considering the implications of this in the context of professional inquiry, school leaders should ensure that the necessary support for teachers is provided. This could include allocation of time and removing workload barriers, but also ensuring there is high quality facilitation of inquiry group conversations with clearly stated goals and outcomes, as well as access to expertise, or guidance on where this can be sought out.

The review (*Ibidem*) also found that relationships that integrated trust, openness and mutual respect were a key enabler to professional conversations. Conversely, where there was little challenge, rather teachers supported each other and maintaining current practices, little evidence of developments in classroom practice was found. This again highlights the need for a highly skilled teacher educator to facilitate the professional inquiry process, to create and nurture a team culture of trust and mutual respect, but also to ensure there is professional dissonance and appropriate challenge as well as opportunities to practice new approaches.

Accountability was found to be a barrier to effective professional conversations in two ways; high stakes accountability without appropriate support, or low accountability and low expectations of improving practice. To add to this, Hobbiss *et al.* (2020) find that stress resulting from accountability pressures (or other areas) increase the likelihood of teachers behaving and performing in automatic habitual ways as a result of stress reducing the capacity for deliberate thought. If teachers are to intentionally practise new skills and develop new habits, they can only do so in a supportive environment that is conducive to them taking risks without fear of failure or consequence and enables them to learn from their mistakes.

Collaboration

Collaboration with peers is a component of teacher working conditions that has been found to correlate with improved student outcomes (Kraft & Papay, 2014). The impact of collaboration as feature in CPD programmes has, however, been questioned (Sims & Fletcher-Wood, 2021). With collaboration such a prevalent feature of many CPD programmes, as well as being loosely defined (therefore meaning teacher survey questions relating to this matter vary greatly), are reviews correct to state collaboration was one of the features in successful programmes that led to successful outcomes.

Mary Kennedy (2016) compared the success of a range of Professional Learning Communities (PLCs). Those that were most successful included teachers exploring research findings with conversations carefully facilitated. Comparatively, PLCs that used only factual information about their classroom practices (including videos) and student achievement did not achieve the same depth of thinking or learning. As Kennedy asserts, it is important that we examine the nature of the intellectual work teachers engage in (*Ibidem*). Again, the role of a facilitator with expertise in professional inquiry and developing teacher knowledge and expertise appears to be vital. It follows, that the nature of teacher collaboration, and expertise used to inform discussions require further exploration.

Teacher collaboration that provides opportunities to discuss and review student assessment data (formative and summative) as well as reviewing and developing teaching resources and strategies has been found to have the greatest impact on student outcomes (Ronfeldt *et al.*, 2015). Using a professional inquiry approach, teachers should have access to robust and high-quality diagnostic assessments, as well as research and expertise to ensure that the collaboration is effective. Expertly facilitated conversations will ensure that conversations involve an appropriate level of challenge and that they develop and conclude appropriately.

The role of the facilitator is important, but it is also important to consider the experience and expertise that exist within an inquiry group. An experimental study carried out by Papay *et al.* (2020) in Tennessee, USA, explored how teachers learn skills from other colleagues. Teachers were paired, with one teacher in the pair more skilled than the other. Teacher effectiveness and skills were measured using evaluation scores from a state-wide evaluation rubric of specific teaching skills combined with student achievement data. The study found that lower-skilled teacher's performance increased substantially in the first year of the study, and continued to increase in the following year – perhaps as the new skills became habitual. The effects were greater where teachers were matched according to skills in a specific area and held for both inexperienced and experienced teachers. When organising teacher inquiry groups, level of teacher expertise is something to consider. I am not, by any means, suggesting that teachers should be rated and matched accordingly. Not least, because untrained observers have been found to be inaccurate in their ability to identity effective and ineffective teachers (Strong *et al.*, 2011). Perhaps most important to be aware of is groups

of colleagues where all colleagues are new or beginner teachers. With an expert facilitator, these colleagues can be supported to unpick classroom events with greater focus on student learning. However, without a facilitator there is a risk that classroom events will be considered through the lens of teacher actions and effectiveness, rather than evaluating and discussing the impact of teacher practices on individual students.

There are some environments where collaboration has been found to have greater affect on teacher practice and student outcomes. Timperley's (2015) review of professional conversations explored factors that enabled effective conversations that led to changes in teacher practice and student outcomes. Perhaps unsurprisingly, relationships that enable high quality professional conversations "integrate trust, openness, challenge and mutual respect" (Timperley, 2015, p. 52). Engaging alternative perspectives and challenging norms to seek new solutions to pedagogical problems is fundamental. Little evidence of change to teachers' practice was found when "teachers prioritised supporting each other over challenging the status quo" (*Ibidem*, p. 52). A shared sense of working together to solve pedagogical problems to improve student outcomes is fundamental for effective inquiry teams.

As has been outlined in this section, collaboration in itself will not necessarily lead to successful teacher learning or development of expertise. The working conditions that inquiry groups are working within will enable, or create a barrier to, effective collaboration. Depending on the experience and expertise that exists within the group, as well as how conversations are facilitated, collaboration can be more or less effective. How collaboration happens within teacher CPD is important.

Professional development

The importance of professional development has been highlighted in recent research for improving student outcomes (Fletcher-Wood & Zuccollo, 2020), in particular for disadvantaged students (Coe *et al.*, 2020) as well as other factors such as improving teacher retention (Worth & Brande, 2020). School leaders play a key role, not only in designing, resourcing and perhaps facilitating professional development, but also in promoting and participating in professional development. This leadership practice has been found to have a significant effect on student outcomes (Robinson *et al.*, 2009).

A form of professional development that contains the features highlighted in the research on effective professional development (Cordingley *et al.*, 2015) is professional inquiry. It is, however, important to note that the success of professional development that includes professional inquiry can vary. Some factors that may enable or limit the success of a professional inquiry approach include the school environment and working conditions, the approach taken to the inquiry process; including the quality of content and expertise used in the inquiry, quality of facilitation and mobilisation of collective expertise, and the opportunities for practitioners to apply new learning to practise and develop new teaching habits. These factors will be explored in more detail later in this chapter.

As an example of a programme using professional inquiry without impact, an EEF study (Murphy *et al.*, 2017) explored the impact of an inquiry model, Lesson Study, and concluded it had no effect on student outcomes. Whilst this study sought to evaluate the impact of Lesson Study as a form of effective professional development, the content of the professional learning that was used in the study had not been evaluated and confirmed to be effective, making it difficult to conclude whether it was the form of professional development or the content and materials that were indeed ineffective in this case. Sims and Fletcher-Wood (2019) suggest that forms of professional development can be evaluated by looking at evidence from multiple programmes (rather than individual studies) to see if the form works on average and under what conditions the form has greater success. Forms of professional development, such as professional inquiry, or peer and instructional coaching are easily replicable, however it must be recognised that:

> Forms can also be adapted more easily to suit the needs of a particular school. However, knowing that a form of professional development is effective on average does not guarantee that a particular instance will work. (*Ibidem*, p. 81)

CPD systems and processes must support and enable teacher learning as well as the development of teacher practice, otherwise the impact of the professional learning will not be realised (Wiliam, 2007). Guskey (2002) stresses the importance of professional developers and teacher educators planning in terms of what they want colleagues to be able to know and do, rather than planning "in terms of what they will do (workshops, seminars, institutes) or how they will do it (study groups, action research, peer coaching)"

(Guskey, 2002, p. 51). Furthermore, Hobbiss *et al.* (2020) recent synthesis of evidence from neuroscience, psychology, economics and education has suggested that due to the habitual nature and automaticity of teaching, professional development must be designed intentionally to develop new and improve existing habitual teaching behaviours. Improved teacher knowledge will not necessarily be sufficient for improved teacher practice. The authors suggest that opportunities for deliberate and repeated practice are most conducive to habit formation and professional development forms such as instructional coaching that build in opportunities for deliberate practice in context are examples of this. A professional inquiry approach provides opportunities for the development of teacher knowledge; however, it could be argued that this alone does not allow for development and changes to teachers' practice through developing new or adapting existing habits. The actions that are taken as a result of the outcomes from a professional inquiry will lead to change in teacher practice and allow for potential changes to teacher effectiveness. It is necessary that inquiry cycles are followed by an opportunity for teachers to apply learning from the inquiry outcomes to their practice. This should include opportunities for repeated practice and feedback to ensure fidelity to the new approach to practice being used in the inquiry.

The content and materials that are used in professional development are essential to the quality of the new approach and how this is implemented. Research literacy is important here to discern the quality of the research that has informed the professional guidance and any contextual factors that may need to be taken into consideration. Equally as important is professional judgement regarding how research evidence or guidance is then applied to practice. Wiliam (2007) emphasises the importance of understanding the theory of action of a (and what is not included in this theory of action) to best support professional judgement with what must be implemented with fidelity and where flexibility is possible. This "tight but loose" framework is a helpful way to approach applying educational research to practice, although a theory of action might not always be clearly specified to enable this. This will ensure a "lethal mutation" does not occur and there is appropriate fidelity to the new approach being applied to practice (Leahy & Wiliam, 2012). To consider alongside the theory of action of a new approach to practice are the teachers' theories of actions who are participating in the professional development. Teachers should be supported to understand and interrogate

what their existing theories of actions are to integrate new learning with these (Robinson *et al.*, 2009).

So, what then are the implications for school leaders and teacher educators? School and organisational leaders should ensure that the conditions conducive for teacher learning are created. This could include through protecting time and space for teacher learning and engineering the most effective working conditions. Leaders should also promote alignment of professional development activities with wider school and community goals to foster wide buy in to the approach amongst staff (Weston & Hindley, 2019). If professional inquiry is a form of professional development to be used, "then leaders need to promote these activities as core business" (Timperley *et al.*, 2007, p. 196). The professional inquiry process is complex. It will be best supported by a teacher educator facilitator who can support teachers in identifying their starting points (engaging theories of action) and applying the "tight but loose" framework to the theories of action of the new approach to practice taken and research used in the inquiry process. Through this process, the teacher educator can also explicitly develop the research literacy of practitioners in the inquiry group. Importantly, if professional inquiry is the form of professional development being used, there must be opportunities for teachers to deliberately apply learning and outcomes from the inquiry cycle to their practice to develop new teaching habits. This should include repetition to support habit formation and focused feedback to ensure fidelity to the teaching approach.

Conclusions

Teacher research literacy is vital, but redundant if teachers do not have opportunities to apply their learning and findings from research to practice. I have therefore argued that it is most important for school leaders and teacher educators to be well equipped to make research-informed decisions about the way in which teachers learn and develop their expertise and practice in schools. This includes creating time and space for teachers to engage in professional learning, but also ensuring there are structures and mechanisms that support teachers to put new learning into practice. School leaders should also seek to create high quality working conditions to maximise the impact of professional development opportunities and ensure

that teachers have meaningful opportunities to share and discuss solutions to pedagogical issues using high quality research and evidence from practice. Teacher research literacy is important here.

In contexts where school leaders are acting as 'research-brokers' and disseminating research amongst staff, the research literacy of these leaders becomes even more important and high stakes if there is not an established practice of engaging critically with disseminated research. Engaging a wider staff base in the practice of professional inquiry will ensure more colleagues are critically evaluating research in the process of applying research to practice, reducing the likelihood of "lethal mutations" occurring.

I have set out the different ways in which more novice and expert teachers perceive and represent classroom events and the challenges this poses for professional inquiry groups. I propose a facilitator as a solution, to ensure that expert teachers are able to effectively share tacit knowledge and support novice teachers to perceive classroom events through individual student learning. The facilitator should hwave expertise in how teachers with different levels of expertise perceive and represent classroom events to be able to skilfully facilitate the conversation and maximise group learning opportunities. Expertise in the topic or subject matter of the inquiry is also important to ensure evidence from research is applied to practice with fidelity.

I have argued that professional inquiry be followed with intentional opportunities for teachers to practise new skills and apply knowledge that has resulted from an inquiry cycle. Through this process, teachers are able to develop new, or build on existing, habits that could increase their impact on students. Without the opportunities to practise new skills and apply learning to practice, it is possible that new knowledge will not be used and teacher learning from the inquiry process will not lead to increased teacher effectiveness.

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CHAPTER FOURTEEN

Professionalization of University-Based Teacher Educators' Pedagogical Approach in Developing the Research Literacy of their Student Teachers

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ABSTRACT

A recent reform of higher education in Poland has entrusted academic teachers with responsibility to prepare students to conduct research in a more comprehensive way. This has had implications for university-based teacher educators. This chapter discusses research-based learning of student teachers, taking into account their involvement in individual phases of the research process. What is more, the article discusses the professionalization of pedagogical activities of academic teachers while preparing students to conduct research, understood as a dynamic process of reflecting on professional activity regarding the usefulness of the actions performed in real life situations.

KEY WORDS: research-teaching relation, professionalization, academic teacher

Introduction

Recent reform of higher education and science implemented in Poland in 2018 introduced an obligation for academic teachers to prepare students to conduct research to a much larger extent than previously. A program of general academic studies must, inter alia, include classes related to research conducted at the university within the discipline or disciplines to which a given course or field of study is assigned and prepare students to conduct research independently or in a team (Paragraph 3, clause 2 of the Regulation of the Minister of Science and Higher Education on studies; Journal of Laws, 2018, item 1861). This new requirement applies equally to academic teachers in the field of teacher education, university-based teacher educators, who are preparing student teachers for the teaching profession.

Although research activity has always been included in master's programs, for example in graduate seminars as well as through participation in scientific circles or scientific conferences, there are still no systemic solutions for the cooperation of educational entities at universities in building the "research-teaching" relation. Polish scientific publications on this issue are limited to historical and theoretical analyses, written for other purposes (e.g. Sajdak, 2013; Kwiek, 2015). They discuss the value of Humboldt's concept of the university as a research institution, in which the unity of research and teaching was considered the foundation of university education, or the vision of Sergius Hessen, emphasizing the importance of the joint participation of academic teachers and students in the research process and the search for truth as inseparable elements of acquiring knowledge (Sajdak, 2013).

At universities operating in Western Europe, the USA and Australia, the systemic linking of research with teaching was implemented in the 1970s and the 1980s. Thus, in these countries, some theoretical foundations were developed, and numerous projects were carried out, which were subject to evaluation in terms of the effectiveness of constructing knowledge together with students while conducting joint research. Therefore, we can be inspired by selected results of empirical analyses as this area provides new experiences and challenges for Polish academic teachers. These challenges are faced by universities during socio-economic transformations but also in connection with the Covid-19 pandemic, placing unprecedented demands on all participants in the professionalization process of future teachers. The nature of the relation between research and teaching activities may

be influenced by new factors because the massification and constrained resources of higher education in the era of online education instead of strengthening such a relationship might work towards a greater separation of these basic elements of university education.

The issues of preparing students to conduct research are manifold, therefore it is necessary to limit the field of interest. The present article discusses the types of research activity/activities that can be undertaken at the university together with student teachers not only to develop their research skills but above all to broaden the perspective of looking at the discipline of pedagogy and their preparation for professional school teaching in the future. A basic requirement for further analysis is therefore to clarify the concept of professionalization and to discuss the key forms of research-teaching relation that may arise in an academic setting.

Professional teacher activities and professionalization

The theoretical categories of "professional teacher activities" and "professionalization" are not clearly defined in theory and research literature on pedagogy. However, in the present article the definition of professional teacher activities provided by Danuta Urbaniak-Zając (2016, p. 13) will be used. The author describes such activities as: "the necessity to act in a situation of tension between the obligation accepted towards a student and the need to act in a situation of uncertainty and indeterminacy".

In the literature on the subject, professionalization is considered in relation to professionalism. Marco Snoek, on the basis of an extensive inquiry, describes professionalization from several perspectives. On the one hand, it means "development of the knowledge base of a profession, on the improvement of standards for professional performance, on restricting the unlicensed entrance into the profession, the development of mechanisms for self-control and self-accountability and on defining ethical codes to emphasize explicit professional virtues" (Snoek, 2010, p. 4). The author emphasises the importance of professional culture "in which the principles of professionalization expose teachers to greater responsibility for defining the nature and content of their work (as a reflection of accepted roles and responsibilities, key functions and duties) and for reaching agreement as

to the values and points of view (*Ibidem*, p. 10). Therefore, we understand professionalization as acquiring the skills necessary to perform the job reliably (professionally)[1]. In a narrow sense, it can be explained as a transition from being a non-professional to becoming a professional. More broadly, we see it as a dynamic process of continuous development of (professional) skills, related to reflections on professional activity, including the usefulness of action taken in a real situation. We believe that 'confronting a real situation', which requires dealing with specific (difficult, undefined) circumstances, leads to reflection and the generation of new ideas. The pursuit of professionalization in the area of preparing student teachers to conduct research will therefore be expressed in self-reflection and professional activity inspired by identified, real situations as well as cases and proposals. The student teachers need to pursue research inquiry within their own schools, classrooms and practice as schoolteachers.

Early professionalization combining research and teaching

The complex "research-teaching" relation is most often considered as (1) "combining research and teaching, in which case research is regarded as one of the strategies for student learning, (2) a tool in the learning environment, or as (3) "learning through research", which is usually understood as integrating research results into student education program, engaging students in research carried out by university researchers or sharing their results with students (Malcolm, 2014; Elken & Wollscheid, 2016; Tight, 2016; Kowalczuk-Walędziak, 2017). The relation between research and teaching is most often analysed with reference to two dimensions:

1) Theoretical dimension – it concerns familiarizing students with the research results conducted in a given area and paying attention to what goals, problems and research methods were identified in the analysed research and how the research procedure was organized.

1 Referring to Joanna Madalińska-Michalak, I would like to point out that we can talk about the professionalization of the teaching profession, the professionalization of teaching or the professionalization of the teaching practice of teachers (Michalak, 2010). However, talking about the professionalization of a teacher or lecturer is debatable.

2) Research dimension – it concerns the role of students as research learners (conducting research individually or in a group) or research participants who contribute to the development of new results in a given discipline.

Professionalization of educational activities of academic teachers in the discussed area can only take place when both spheres, i.e. teaching and research, are combined (Ping *et al.*, 2018). We can speak of the dual nature of the academic teacher profession, where each of the categories that make up its professionalism should be described under the two dimensions: teaching and research.

On the basis of the experience of Western European universities one might be tempted to conclude that the ideal academic teacher-educator, who combines research and teaching with great commitment, strives to teach students to look at the research discipline (pedagogy) and the research conducted within it from the perspective of a scientist. The aim of academic education in the context of the analysed phenomenon lies in encouraging and inspiring future teachers to look at problems as scientists, not novices. An appropriate term that should be used here is the intention of "developing expertise" from the very beginning of research learning[2].

Agnieszka Szplit in her monograph entitled *Od nowicjusza do eksperta* [From a novice to an expert] describes in detail the mechanisms and regulations regarding the process of developing expertise. The first mechanism is "accumulation of experiences through professional practice and learning through experience. The second is a conscious effort leading to understanding and coding previous experiences as a result of reflection and conscious learning" (Szplit, 2019, p. 16).

We believe that thinking about developing expertise should start in the first year of studies as part of the early professionalization of educational activities. Students can be involved in conducting research in various ways, e.g.:

- taking part in carrying out selected research tasks or finding out how scientists generate research in pedagogy;
- developing the methodology of conducting research, learning about current research conducted in the field of pedagogy;

2 The term "expertise" is defined as "the ability to do something better, and thus reaching a high level of competence in the field of skills and mental abilities related to the performed profession, wisdom in solving problems related to everyday life" (Szplit, 2019, p. 48).

- constructing new knowledge related to unforeseen and open problems through cooperation with other students and academic staff;
- writing essays that require conducting research and therefore are considered as a form of learning.

Undoubtedly, attention should be paid to "opportunity culture" which we understand as creating opportunities for students to learn theoretical and methodological reliability in the dialogue based on tutoring, critical discussions, independent problem solving while taking advantage of the benefits of self-steering and self-reflection, in short – early professionalization.

"Opportunity Culture" in the process of professionalization

Decades of experience in Western European universities show that if a university decides to strengthen the research-teaching relation in study programs for a particular field of study, it is important to involve students as research participants and provide them with research experiences (Jenkins & Healey, 2005; Boyd & Szplit, 2016; Ping *et al.*, 2018).

It is important for university staff to have a broad understanding of what teaching is. If academics interpret teaching in its narrow sense as "classroom teaching" the link between teaching and research becomes superficial. On the other hand, understanding teaching as being inextricably linked with research means that certain activities are undertaken during which research ideas can be implemented together with students. For example, organizing groups of students carrying out projects related to the research interest of the lecturer or developing reports, review or scientific papers in cooperation with other students. The synergy that appears then in the teaching and research process increases the motivation, commitment and sense of satisfaction with learning among both students and their academic teachers.

The benefits of joint participation in research have been analysed in more detail (for example: Homewood *et al.*, 2011, p. 9). Generally, they include:

- positive perception of the teaching and learning process by students;
- greater involvement of students: the activities are more simulating and interesting for them;
- the opportunity to learn in collaborative groups;

Within the personal dimension, the benefits relate to:

— development of analytical and communication skills, critical thinking, self-confidence, life-long learning, gaining teamwork experience, better understanding of how knowledge is constructed, transferred and questioned.

Within the professional dimension, the benefits include:

— the possibility to cooperate with scientists;
— the development of research skills, such as bibliographic search, formulating research questions, data organization, data interpretation and analysis, the use and understanding of primary and secondary sources;
— contribution to building knowledge in relation to the chosen profession;
— preparation to conduct research in the course of professional work.

Showing students what it means to become a researcher and helping them plan and carry out research requires the conscious presence of sensitive academics. Students need time to reflect on the observed or experienced research/educational situations and to learn to interpret them with the use of scientific theories.

It is therefore clear that a good university-based teacher educator must also be a good researcher (Shagrir, 2020). Such a relation imposes the requirement to conduct research and to teach (implementing the outcome of research), which directly relates to the discussed phenomenon of professionalization, conditioned by reflection on one's professional activity in a real situation. Without seeking professionalization there may be situations where the planned research-teaching relationship will not take place (e.g. due to the lack of knowledge pf teachers) or its nature will be negative (e.g. it will not generate the expected results). English research proves that the majority of teacher educators who do not conduct research themselves question the function and purpose of simulating research attitude and conducting research by students (Murray, 2014).

The research-teaching nexus model

In Polish universities, discussions on the relationship between research and teaching and learning take place on a general level. English-speaking researchers most often apply the model developed by Mick Healey (2005),

which covers a conglomerate of four basic types of network connections between research and teaching activities. Healey (2005, p. 70) illustrated his concept graphically along two axes. The horizontal dimension presents a continuum moving from research content to research process, from students learning about research findings towards students learning about research methodologies and problems. The vertical dimension expresses the approach to student activity, moving from students as participants to students as audience for research. The Healey theoretical model provides a possible starting point to consider how to engage students in learning by participating in research.

Each teacher of future schoolteachers, as a university-based teacher educator, can therefore – as part of self-reflection and professionalization of their educational activities – consider the following questions (Jenkins & Healey, 2005; Homewood *et al.*, 2011; Rubin & Zadik, 2015).

1) What is teaching for me?
2) What is the focus of my research?
3) To what extent is the combination of research and teaching in my subject appropriate for my students?
4) Do the learning materials and tasks that I propose place students in the role of research recipients or as people actively involved in research, or both?
5) During teaching, do I emphasize the content of the research, the research process, or both?
6) How do students know about research and publications at my faculty? How are they available to them? Are students invited to seminars, scientific meetings, or are they encouraged to critically evaluate scientific works?

As Polish academic teachers who conduct their own research, we usually learn through the process of engaging in collaborative research groups (e.g. doctoral and post-doctoral seminars) and through discussions, scientific consultations and exchange of experiences. Involving students in such processes and communities can improve their learning outcomes.

Basic types of students' research activity

Despite the development of numerous network models presenting possible interactions between teaching and research, research is still needed, especially in the Polish environment, to answer the basic question of how to link research with teaching so that students can benefit more from the research activities of academic teachers. Research by Stephen Rowland (2000) proves that in some cases there could be both positive and negative influence of research on teaching. There are too many variables that impact the final result of integration, despite the use of the same forms of research activity in different institutions and within different scientific disciplines. Therefore, in order to effectively carry out tasks taking into account the research-teaching relationship every teacher of future teachers, as part of the professionalization of his/her own educational practice, can focus on self-reflection, during which he/she will answer the previously asked questions. Table 1 may be helpful, as it systematically allows one to think about the possibilities of modifying one's routine. A general drive to strengthen the links between teaching and research does not lead to success. It is important to think about current practices, existing alternatives, and desired outcomes.

Table 1. Examples of basic forms of activity of pedagogy students within the research-teaching relation

Involvement of students in particular phases of the research process	Types of research activities that a student may engage in; presumed activity results (evaluable)
Defining the subject of research and research questions	• Selection of the research subject and justification of one's decision (e.g. key ideas identified on the basis of a critical analysis of selected articles) • Generating a list of research questions on a given topic (they can be developed by the group) • Writing an essay highlighting key unresolved problems within a selected topic. • Defining hypotheses • Selection of literature (bibliographies with annotations) • Online discussions • Research planning / proposals

Involvement of students in particular phases of the research process	Types of research activities that a student may engage in; presumed activity results (evaluable)
Finding / generating the necessary information / data, applying an appropriate methodology	• Comparisons of different methodologies • Analysis of one chosen methodology • Drafting questionnaire surveys • Interview scenarios • Checking the feasibility of carrying out the research taking into account ethical requirements • Obtaining possible permits from the management of educational institutions, consents from respondents, their parents, etc. • Collection of various types of quantitative and qualitative data • Research logs
Evaluation of information / data and the process of finding / generating them	• (Previous) data synthesis and analysis • Database designs • Statistical analyzes • Coding of qualitative data • Various types of qualitative data analysis • Reflection on the data collection process • Data discussions (also: online) • Summaries of debates
Organizing collected / generated information (individually or in groups)	• Structuring information / data / Presentation of basic results: • Written summaries • Wiki, blogs • Videos • Pie charts • Field notes • Diagrams, networks linking ideas / data
Synthesis, analysis and application of new knowledge	• Discussions about ideas in the light of subject literature (also online) • Contribution to public inquiry, participation in juries and debates • Writing reports (e.g. a public inquiry report from a specific point of view – e.g. a group of teachers, an NGO helping children) • Articles in the media (e.g. student newsletter) • Results Implication Lists • Directions for further research

Disseminating the acquired knowledge, including the knowledge related to understanding of the learning process during research work, taking into account ethical, social and cultural issues	• Journal articles • Seminar / class / conference presentations • Posters • Self-reflection / self-assessment report on the results of research and learning activities • Portfolio • Discussions on social media • Creation of a website

Source: Author's own elaboration based on Homewood *et al*., pp. 11–12; Visser-Wijnveen *et al*., Ping *et al*.

Organizing classes where students learn to conduct research puts the teacher in real situations requiring attention and consideration. We believe that this is the essence of professionalization of the undertaken pedagogical activities.

Conclusions

Due to the social structure of professionalization, the professional activity of academic teachers in the area of preparing students to conduct research activities is a subject often discussed in the subject literature. Students who participate in research gain more in the process of learning than those who are only recipients of research results (for example: Homewood *et al*., 2011; Visser-Wijnveen *et al*., 2016; Ping *et al*., 2018). However, the process of preparing for research implementation also requires acquainting future teachers with the results of research and methods of conducting research, which must also be included in the study program.

Therefore, it is necessary for program teaching teams in Polish Universities to take a closer look at the forms of relations between research and teaching activities before a given study program is approved for implementation. The process of strengthening the research-teaching model requires a change in understanding of the teaching process and the modification of teaching practices, which entails organizational efforts to be made by universities, departments and academic staff. It is particularly important to select academic teachers who carry out research projects themselves and who are convinced of the necessity to prepare students to conduct research.

The issues discussed in the article may be an inspiration to plan Polish empirical research in the area of research-teaching relations, because we

do not have a broader view of this phenomenon in the context of Polish higher education.

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Epilogue

PETE BOYD, AGNIESZKA SZPLIT & ZUZANNA ZBRÓG

In a time of change in teacher education internationally, the crumbling of the Neoliberal 'age of measurement' but working to shape and make positive the 'age of evidence' (Helgetun & Menter, 2020), there seems to be a turmoil of different perspectives. This is exacerbated by the false debates and dichotomies that arise in our post-truth world through the current combination of populist politics and social media and their influences on professional guidance for teachers. One way forward is to seek some common ground. In relation to teachers' research literacy can we find some areas of agreement?

Part One of the book positions teachers' research literacy as a key element of professional judgment in the development of research-informed practice through professional inquiry. To what extent is this a middle ground shared assumption? Can we agree that we do not want teachers as evidence-based technicians delivering an agreed curriculum using prescribed pedagogical strategies? Equally that we do not want teachers to be constantly re-inventing the wheel through excessive action research projects that are not positioned within the existing evidence base?

In Part Two of this book, we see some general agreement that student teachers will engage with research when it is strongly connected to their classroom practice. It seems important however that in the process of conducting small-scale professional inquiry the student teachers critically engage with experimental research findings and meta-reviews related to their focus of study, as well as with individual relevant research studies. If the student teachers are to develop a good initial level of research literacy, then it is important that they position their small-scale inquiry within the bigger picture of current research evidence. This will require the close support of a teacher educator with strong levels of research literacy. It is also important that the student teachers can critically engage with the situated practical wisdom and

classroom practice of teachers within their school placement setting. This will require support from a teacher educator who is school-based but with a confident and reflective approach to their own practice and to the professional culture of the school, as well as having a reasonable level of research literacy. Can we agree that student teachers can be motivated and learn through action research style projects but do also need to develop critical understanding of large-scale research, including experimental studies, and research reviews?

In Part Three of this book, we see some general agreement that experienced teachers are often motivated to develop their research literacy but generally meet considerable constraints in their workplace settings. Similar approaches to professional inquiry as found in initial teacher education are proposed, through programmes or projects that support classroom experimentation and evaluation, or alternatively through collaboration in larger scale collaborative research projects, but appear to have only limited impact and seem difficult to scale up to national level. The same caveat applies to experienced teachers as was noted for beginning teachers, that research capacity building activity requires them to position their inquiry within wider critical engagement with current research evidence. Can we at least agree that experienced teachers need to be supported to continue to develop their research literacy and that collective leadership in schools and high quality scholarly and balanced professional guidance publications need to support this?

Overall, the emphasis on teachers' professional inquiry into classroom practice seems to be widely and internationally valued, but the development of high levels of research literacy is not always explicit. In addition, the contested nature of educational research evidence and the challenges of a post-truth world, including selecting and critically evaluating supposedly scholarly professional guidance materials, should perhaps be more explicit in collaborative work by university-based teacher educators with both beginning and experienced teachers. Can we agree that both beginning and experienced teachers need support to develop their research literacy but also to gain the big picture of educational research and position it within politics and democracy?

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Editors' Bios

PETE BOYD

Pete Boyd is emeritus professor in professional learning at the University of Cumbria and focused on supporting the development of research-informed practice. He works as an education consultant, research mentor and doctoral research supervisor with academics, lecturers and teachers in universities, colleges, and schools. Pete taught in high schools and in outdoor education for 15 years before moving to a teacher educator role in higher education. He is part of the research and development project 'becoming a teacher educator' and has also published research on the work and identity of professional educators in nursing and applied health professions. He is chair of the assessment in higher education network conference and as an associate of Advance HE is part of the 'degree standards' project which is focused on developing shared academic standards. Pete is currently collaborating in research with schoolteachers focused on material-dialogic teaching in mathematics and with academics on authentic assessment in professional fields.

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Schoolteachers need to use professional judgments to decide what and how to teach. This is essential due to the values-based nature of education in combination with the complexity of the classroom and a contested research evidence base. This professional judgment of teachers requires a level of research literacy if teachers are to contribute to collective leadership in schools and develop research-informed practice. However, professional judgment and research literacy are under threat in the post-truth world.

Drawing together the expertise of teacher educators from a range of international contexts, the editors, Pete Boyd, Agnieszka Szplit and Zuzanna Zbróg, propose and refine a definition of teachers' research literacy. They show how it is currently understood and addressed by teacher educators working with student teachers and more experienced expert teachers. Overall, the book reveals how teacher development through professional inquiry is widely valued and used, but not always with an explicit emphasis on research literacy. An argument emerges, that developing an increased emphasis on research literacy within teacher education and professional development must help teachers to develop technical understanding of educational research, but also a critical and philosophical perspective on the purposes of education and the field of education within a post-truth world. They need to be able to position their professional inquiries within a bigger picture of research evidence, politics and democracy.

Pete Boyd, Agnieszka Szplit, Zuzanna Zbróg

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