

DEVELOPING TEACHERS' RESEARCH LITERACY

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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.

Prologue

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.

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 its 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

iPadology¹ 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.

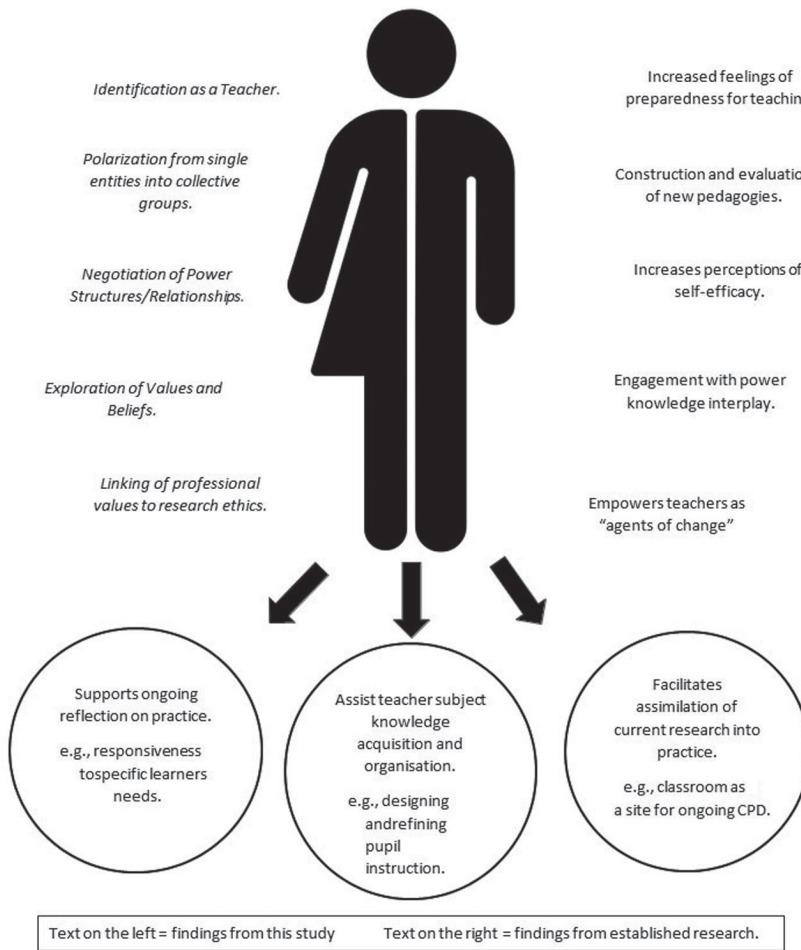


Figure 1. Affordances of Close to Practice (CtP) Research for Student Teachers during Initial Teacher Education.

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