Student teachers' views about the university's research contribution to professional knowledge development

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Abstract

Against an international policy backdrop that increasingly favours practicum over theoretical learning in initial teacher education (ITE), this paper reports on a mixed-methods study which investigated student teachers' views about the university's research contribution to professional knowledge development. In particular, it explored whether students following university-led and school-based ITE courses in England held divergent views, the relative influence of contextual and person-specific factors, and the curriculum's capacity to promote research relevance. The findings revealed the strong influence of personal epistemologies and epistemic emotions, highlighting the importance of consideration to social and educational psychology in ITE curriculum development.

Keywords: **professional knowledge development, theory-practice divide, theory-practice dynamic, personal epistemology, epistemic emotions**

Highlights

- Personal epistemologies strongly influence student teachers' views about the relevance of educational research.
- There is a likely relationship between personal epistemology and ITE course type chosen by students.
- When engaging with research, student teachers experience epistemic emotions that also impact views.

- Teacher educators should consider social and educational psychology in curriculum development.

Student teachers' views about the university's research contribution to professional knowledge development

This paper reports on a study that investigated student teachers' views about the university's research contribution to their professional knowledge development. The research took place in England against a policy backdrop, similar to that in other countries around the world, which has increasingly favoured experiential learning and the practicum in initial teacher education (ITE) at the expense of university-based learning (Murray and Mutton, 2015). In England, the direction of travel favouring the practicum gathered particular pace following the introduction of the employment-based 'School Direct' (SD) route, launched in 2012/13. This policy initiative transferred a significant degree of control over the recruitment and pre-service preparation of teachers on postgraduate routes from universities to schools. As a result, between 2011 and 2019, the percentage of training places provided by English universities dropped from 80% (Universities UK, 2014) to 45% (DfE: Department for Education, 2020).

More recent policies have led to the further undermining of university- based ITE. Since 2020, all ITE providers have been required to embed the Core Content Framework (CCF) into their curricula (DfE, 2019a), to be consolidated by the Early Career Framework (ECF) (DfE, 2019b) in the first two years of teachers' careers. Whilst the CCF represents a minimum requirement, and it is left to universities to decide how to embed it into their curricula, it will be used by Ofsted (the English

education inspectorate) as a basis for inspection. This prescription not only removes a significant degree of academic freedom from universities, it is also substantively controversial (Turvey et al., 2019). In January 2021, the DfE announced plans to establish an Institute of Teaching in September 2022, (the running of which has been opened to tender) and initiated the Initial Teacher Training (ITT) Market Review (DfE, 2021a; 2021b). The Market Review recommends the need for all ITT providers to be re-assessed for powers of accreditation according to new and demanding criteria (DfE, 2021c). This may render ITE provision highly complex or unviable for some universities (Noble-Rogers, 2021). Davies et al. (2016) have stressed how the policy shift to a school-led system away from universities impacts on teacher professionalism, and by default, what constitutes knowledge for teaching. Referring to Evetts (2009), they argue how school-led ITE erodes teachers' 'occupational professionalism', giving way to 'organisational professionalism'. The latter is concerned with short-term and context-specific preparation, whilst occupational professionalism, promoted by universities, takes more universal and long-term approaches.

In light of these policy developments, there is a strong rationale for investigating key stakeholders' perspectives about the value of 'rescuing the university project' (Furlong, 2013a) in ITE. This study focuses on student teachers' perspectives, since all ITE students continue to engage with a university as part of their professional curriculum to gain academic and, in most cases, qualified teacher status (QTS) accreditation, (albeit for slightly less time if they are on a school-led course). The extant literature highlights the positive reasons for the contribution of research to teacher education, the challenges and facilitators of connecting theory with practice, and how universities have adapted curricula to reconcile the theory-

practice divide. Studies of challenges and facilitators frequently emphasise the interplay of personal factors with structural and contextual factors. To our knowledge, there is an absence of research which has examined how different notions of professional learning manifest in divergent ITE routes may impact on student teachers' views and the influence of these in relation to more person-specific factors, such as demographics, epistemic beliefs and epistemic emotions.

Taking a mixed-methods 'triangulation design' (Creswell et al., 2003), the study surveyed (n= 78) and interviewed (n= 12) a sample of secondary ITE students on both university-led and school-based courses affiliated with the same university in the north of England. The research questions were informed by the literature review and are presented at the end of the related sections within. The survey findings reveal that there is not only a large statistically significant relationship between different ITE routes into the profession and student teachers' views, but also a large statistically significant relationship between views and gender. The interview data point to person-specific factors relating to individuals' epistemic beliefs and epistemic emotions. We conclude our paper with a discussion of the triangulated data sets relating to the implications for future ITE curriculum development.

Literature Review

Tensions between the policy context and research-rich ITE

The professional preparation of teachers, and by default the basis of their professional knowledge, has been politically contested for decades, in England and internationally (McNamara et al., 2014). Whilst policy makers in England claimed that the shifting governance of ITE outlined in the introduction is a means of creating

high-quality teacher supply to meet local needs, this strategy can also be interpreted as the state's response to teacher education provided by universities as a 'policy problem' (Cochran-Smith, 2005). When looking for reasons for teachers' inadequacies, policymakers have frequently blamed the gap between theoretical and practical knowledge brought about by university-models for ITE. Whilst distrust for universities in England arguably peaked in 2012, this scepticism is evident in a series of government policies on both the left and right spanning four decades (Furlong, 2013b; Whitty, 2014). As McNamara and Murray (2013, p.14) have pointed out, the ever-increasing favouritism of school-based ITE represents an ideologically driven understanding of teaching as a 'craft' that can be learnt entirely in the workplace.

Teacher educators based in universities point to a more complex notion of professional learning, arguing that learning to teach is a multi-faceted and intellectual activity (Winch et al., 2015). Accordingly, ITE should also involve conceptual learning to underpin practice and professional judgment (Tang et al., 2019). Research-rich teacher education provides the tools to think critically, to explore new principles, and to develop attitudes that seek continual professional renewal (Hagger et al., 2008; Winch et al., 2015; Afdal and Spernes 2018). As Knight (2015) explains, the ability to draw on broader sources of knowledge available from different research sources also mitigates against reproducing the status quo, which is more likely to prevail if preparation is focused on a particular context. Developing 'research literacy' not only empowers teachers to become autonomous evaluators and improvers of their work, but can also enhance professional identity. In addition to benefitting teachers' professional identity and agency, research informed teaching makes a practical contribution to the lives of young people (BERA RSA, 2014).

Whilst ideas about the relative importance of experiential and theoretical knowledge, however, may be contested, they need not necessarily be dichotomous. Indeed, the authors stand by arguments made by Müller (2009), who claims that contextual and conceptual elements are both essential to professional learning. However, the authors also contend that these elements need reconciliation. Drawing on Bhabha's (1990, 1994) notion of 'third space', Zeichner (2010) and McNamara et al. (2014) stress the importance of re-engineering theoretical and practical knowledge into new epistemologies of professional knowledge. Author et al. (2019) have suggested that in order for this to be successful, more consideration is needed of ways to cohere and interconnect these types of knowledge, arguing that school-based mentors would be ideally suited to support this process. However, mentors' capacity to facilitate learning in a third space is arguably reliant on a particular mentoring pedagogy and their familiarity with research, which to date, has not been supported by policy structures. Instead, opportunities to connect and cohere different types of knowledge have been promoted by universities, which are discussed in relation to the ITE curriculum below.

The tensions between the policy context (favouring organisational professionalism and school-led training) and the rationale for research-rich ITE promoted by universities (favouring occupational professionalism) informed the study's first research question (RQ). We were interested in learning about the varying conceptualisations of professional knowledge manifest in student teachers' views in relation to the ITE route they followed:

RQ1: Do ITE students on different training routes have different views about the value of educational research for professional learning?

The theory-practice divide and dynamic

In spite of strong arguments for research-rich ITE, this can be challenging to operationalise. As Korthagen (2017, p. 387) candidly remarks, “an inconvenient truth is that during the whole of the twentieth century, the theory–practice divide has remained the central problem of preservice and in-service teacher education”. Citing studies of teacher education in various countries, (e.g., Hobson et al., 2008; Mayer et al., 2015; Tang et al., 2012), Tang et al. (2019) highlight how research can meet with negativity due to student teachers’ prioritisation of practice over theory and a tendency to judge the latter with respect to direct relevance to the classroom. As Hennissen et al. (2017) explain, student teachers seek directly applicable knowledge for quick and particular workplace solutions. This accounts for their preferences for school-based mentors’ contextual and transmissive knowledge over wide-ranging knowledge from various sources (Rozelle and Wilson, 2012; Murray et al. 2019). The need for contextual solutions has also been associated with practising teachers, who are unlikely to look to research unless it helps them to address pressing concerns (Behrstock et al., 2009; Dagenais et al., 2012).

In the attempt to make their curricula more relevant and to address the practicum turn (Mattsson et al., 2012), most ITE courses in England focus on applied forms of knowledge for teaching (Furlong, 2013a), concentrating, for example, on evidence-based pedagogical content knowledge (PCK) i.e., the knowledge base of teaching that rests at the intersection of subject content and pedagogy (Shulman, 1986). Curricula have also been designed to integrate experiential learning and research-based knowledge, where school and university knowledge are interrogated in the light of each other (Burn and Mutton, 2013; Cochran-Smith and Lytle, 2009). Importantly, the successful intertwining of campus and practicum is underpinned by

strong university-school partnerships (Darling-Hammond, 2017), where both university tutors and mentors guide student teachers to adapt theoretical knowledge into practice or promote cyclical knowledge flows (Tang et al., 2019). However, this assumes mentors' familiarity with educational research, which would also fulfil the expectation in the DfE's Mentoring Standards (2016) of "enable[ing] the trainee to access, utilise and interpret robust educational research to inform their teaching" (p.12). This can be challenging since most mentors in English schools lack not only research training, but also time and access to academic resources, in spite of the shift of ITE governance from universities to schools (author et al., 2019; Knight, 2015; White, 2014).

Lack of enthusiasm for research can also occur due to emotional reasons since rational theories in teacher education can be at odds with emotive dilemmas in the workplace. As Korthagen (2017) explains, teacher behaviour is influenced by a mix of cognitive, affective and motivational factors in addition to the cultural influence of the school and messages from pupils. Korhagen (ibid) recommends, therefore, that ITE should build on the concerns and gestalts of teachers, rather than pre-conceived ideas of what teachers should learn, interlinking personal and professional aspects. This approach is evident in ITE courses that promote typologies of reflective practice, whereby student teachers are prompted to consider how their values and biographies may guide their practice and to engage with the critical exploration of the perspectives of other stakeholders.

Personal epistemologies and epistemic emotions

In order to further understand the theory-practice divide and dynamic, it is also useful to turn to research in social and educational psychology, in particular

concerning personal epistemologies and epistemic emotions. Taking a social psychological perspective, we can relate divergent views about the relative credence of formalised knowledge or experiential knowledge to socialisation (Bråten and Ferguson, 2015). This is evident in studies carried out by Galotti et al. (1999), Schommer-Aikins and Easter (2006) and Marrs and Benton (2009) (in the United States with students in tertiary education with sample sizes of 383, 107 and 241 respectively), which all established relationships between gender and beliefs about knowledge. In all studies, men were likely to favour ‘separate knowing’, with a preference for objective certainties, whereas women were more likely to favour ‘connected knowing’, placing emphasis on multiple perspectives. Preferences for separate or connected knowing can be related to viewpoints about teaching as an intellectual endeavour. Those who prefer connected knowing are more likely to endorse deliberative practice underpinned by a range of knowledge sources (Winch et al., 2015).

In a study relating to teacher education students’ epistemological beliefs in Hong Kong, Chan (2003) established that student teachers tended to be deep and achieving-oriented in their learning approaches across the board, without any statistically significant differences relating to gender. The so-called ‘deep’ learning approach involves the ‘intention to understand’ and contrasts with a surface approach with the intention to ‘reproduce’ (p.34). This deep approach can be equated with connected knowing outlined above and is also likely to be conducive to positive views about research in professional learning. Interestingly, these results run contradictory to Western perceptions that Asian students rely on rote learning and a surface study approach. Chan (ibid) attributed this to Chinese culture which favours “effort and diligent work, accompanied by the competitive nature of local context”

(p.48). This reveals how social psychological factors may impact beliefs about knowledge.

The frameworks of Schommer (1990; 1994), Hofer and Pintrich (1997) and Hofer (2000) from educational psychology have been utilised by other teacher education researchers (e.g., Bondy et al., 2007; Muis, 2004; Therriault and Harvey, 2013; Guilfoyle et al., 2020) to investigate student teachers' epistemic beliefs. These models emphasise how individuals hold different beliefs about various dimensions of knowledge: its stability (fixed or fluid), its structure (separate or connected), their personal relationship to the knowledge (the extent to which they are involved in its creation or justification) and beliefs about the speed of learning and ability to learn. Collectively, these studies in teacher education reveal that student teachers' beliefs are hugely variable and that views about knowledge for teaching are likely to be filtered by students' entering perspectives, personal priorities and philosophical preparation. In all of the studies, however, the authors argue that the most 'availing' personal epistemologies for learning to teach (Muis, 2004) view knowledge as fluid and connected. They also recognise the importance of effortful and personal involvement in knowledge creation. Student teachers with such availing perspectives are more likely to recognise the contribution of 'educational knowledge as frameworks for understanding and thinking' (Guilfoyle et al. 2020, p.9).

Muis et al.'s (2018) study on the role of epistemic emotions in self-regulated learning (SRL) provides further insights relating to views on research. Based on their review of over 200 empirical studies about the relationship between beliefs and SRL, Muis et al. (ibid) derived a framework illustrating the impact of epistemic emotions, with influential antecedents and consequences. This framework implies that attitudes

to research are not only influenced by beliefs about knowledge, but also by emotions experienced by students whilst engaging with research. Muis et al. (ibid) define epistemic emotions as those which “result from information-oriented appraisals (i.e., the cognitive component of an emotion) about the alignment or misalignment between new information and existing beliefs, existing knowledge structures, or recently processed information” (p.169).

The antecedents of epistemic emotions are:

(1) *control* – perceptions that something can be managed and is likely to be achieved

(2) *value* – related to intrinsic or extrinsic motivation

(3) *novelty* – the extent to which there is a fit with existing knowledge or schema and the related likelihood of cognitive congruity or disequilibrium

(4) *complexity* - related to the extent of intellectual challenge

(5) *achievement / impasse in epistemic aim* – whether the achieved understanding can be applied in future situations or whether the impasse leads to frustration or confusion.

The consequences are:

(1) *planning and goal-setting* – goals may be considered as more or less achievable and are likely to be revised by emotions

(2) *motivation* – students may be driven by need for cognition or wish closure as thinking may be considered too effortful

(3) *cognitive/ metacognitive strategies* – students may adopt new strategies as a response to emotions or alternatively give up

(4) *learning outcomes* – emotions may focus task in hand or learner may lose sight of these

(5) *revisions to antecedents* – feelings about control and value are likely to change.

In making connections between epistemic emotions and student teachers' attitudes to research, it is first useful to consider antecedents. We highlight the significance of these in italic font henceforth. For example, preferences for practical over theoretical knowledge may be related to *complexity*. In the pressurised and fast-paced environment of the school, digesting and applying research is an intellectual effort that in many circumstances may be perceived as too challenging. Furthermore, if the espoused pedagogies in the literature are unfamiliar to or rejected by mentors, student teachers may not see their *value*. Epistemic emotions related to *value* and *novelty* could also overlap with what Hennissen et al. (2017) termed a 'feed-forward problem' (p.315). Engaging with theoretical learning presents challenges for pre-service teachers since they lack practical experience on which to hook theories. With limited experience, they may not yet be able to see the value of theory or how formalised knowledge fits with what they know so far. Knight (2015), nevertheless, established a change in view of beginning teachers when they progressed into their first year as newly qualified teachers. With more experience under their belts, the university was "recognised as a much richer source of learning" (p.151).

Antecedents, however, can also result in more positive emotions which subsequently lead to more favourable views of research. For example, Woore et al.'s (2020) study found that teachers who enjoyed academic work and had a strong personal orientation to learning were deeply enthusiastic about the contribution of research to their professional development. Enjoyment of academic work is likely to be connected with previous academic success, promoting feelings of *control* and ability to manage intellectual *complexity*. Those who enjoy academic work and have been successful with this in the past are also likely to be intrinsically motivated by the learning content, thus attributing *value*. Like Hagger et al. (2008), Woore et al. (2020)

found that students who considered engagement with research to be meaningful were those who were keen to engage with a variety of knowledge sources beyond the immediate context. This suggests that they felt equipped to manage not only the complexity of the research itself, but also to apply knowledge from the research to their practice, resulting in the achievement of their *epistemic aim*.

Positive epistemic emotions experienced in the research process also have positive consequences for re-engagement. Leat et al. (2014; 2015) highlighted how professional understanding and new perspectives gained *motivated* teachers, which, in turn, helped them to develop strong professional identities with clear *goal-setting*. However, there are also studies that point to the interplay of personal and contextual factors. For example, Opfer et al. (2011) illustrate how individuals' enthusiasm may be further facilitated or constrained by organisational conditions which may undermine research *value*. Similarly, Hodkinson and Hodkinson (2003, p.4) argue that that "it is not just that each person learns in a context; rather, each person is a reciprocal part of the context, and vice versa". Citing Biesta and Tedder (2007), Leat et al. (2015, p.277) present the notion of 'ecological agency' to represent the understanding that "'contexts-for-action' shape individual agency". Teacher research engagement is greatly facilitated by collegial learning communities and support from school leadership (Leat et al., 2015; Marsden, 2020). When trust and collaboration in the workplace are lacking, continued engagement is likely to rely on strong teacher resilience (Gu and Day, 2007) or personal beliefs about the value of such professional learning.

To summarise, the literature on the theory-practice divide and dynamic, personal epistemology and epistemic emotions highlights structural, contextual and person-specific factors and some of the ways in which ITE curricula have tried to

accommodate these issues. This gives rise to our second research question which is in two parts:

RQ2a: How do contextual and person-specific factors influence student teachers' views about the university's contribution to their professional knowledge development?

RQ2b: Does the structure and nature of the ITE curriculum created by the university help to promote research relevance?

Methodology and methods

In order to discover the views of student teachers as key stakeholders in ITE about the contribution of the university in their professional preparation, the enquiry followed a mixed methods 'triangulation design' (Creswell et al., 2003). Quantitative data were collected in an online survey (n=78) in Semester 2 in 2019, and qualitative data were collected in interviews (n=14) in Semester 2 in 2019 and 2020. All participants were postgraduate students on secondary ITE courses (both university-led (U-L) and School Direct (SD)) associated with a university in the north of England. Students on both courses study at Master's level for a postgraduate diploma or certificate in addition to the professional qualification of Qualified Teacher Status (QTS). Students on the U-L route study for 120 Master's credits (and a diploma) and spend 13 more days in university than SD students who study for 60 Master's credits (and a certificate).

Choices of training routes tend be influenced by two factors: a wish to know the school(s) in which they will complete their teaching practice (only possible at the outset for SD students as they apply to specific consortia of schools rather than handing responsibility to the university for organising teaching placements) and a

perceived preference for more or less academic or experiential learning. The university offers subject specialisms from across the English secondary school curriculum and students generally focus on one discipline. In the UK, teaching is seen as a middle-ranking profession in terms of status, comparing to social work (Varkey Foundation, 2018). According to the Global Teacher Status Index (ibid), the UK ranks 13th out of the 35 countries surveyed although no rankings are provided for England in particular.

In 2019, the number of U-L and SD and male and female students were more or less evenly distributed across a total of 280 students. There were highest student numbers in English, history, physical education and biology (30+ students), middling numbers in mathematics, foreign languages, chemistry, geography, art and design, design and technology, and the performing arts, and lowest numbers in religious education, music, some specialist social sciences and computing (7 or less students).

The survey respondents were recruited by email invitation to the full secondary cohort with information about the purpose and nature of research. Participant information was provided on the first webpage of the survey. Respondents were informed that completion of the survey would indicate consent to participate. These steps facilitated informed and voluntary consent. Interviewees received a separate information sheet and consent form. The study was granted full approval by the university ethics committee before commencement of data collection. The survey yielded a response rate of 27% from the following subject specialisms: art and design (n=6), English (n=7), computer science (n=2), dance (n=3), geography (n=12), history (n=4), mathematics (n=3), foreign languages (n =12), music (n= 1), physical education (n=6), religious education (n=3), science

(n=18). 67% of the survey respondents were female and 33% were male. Of these, 61% were on U-L courses and 39% were on SD courses. 50% were 25 years old or younger and thus recent graduates.10 of the interviewees were on U-L courses and 4 were on SD courses. 9 were female and 5 were male. The ITE routes, gender and subject specialisms of the interview participants are provided in Table 1. In the findings below, students are referred to with their participant numbers from this table.

The survey contained 5-point Likert scale items, enquiring about relevance of models and tools for reflective practice, value of research-informed pedagogy, opportunities for application of university-led learning and educational research literature to professional practice, value of constructivist nature of university seminars, and motivations to engage with educational research in the future. It aimed to collect data relating to all the research questions, although focussed on establishing trends rather than reasons for views. The interviews sought to gain deeper understandings of the survey data to gain insights into context and person-specific factors. Interviewees were asked about reasons for views about different university sessions and academic assignments, perceived value of research for professional learning, and opportunities and constraints for relating research to practice relating with a specific focus on contextual and more-specific factors.

Whilst triangulation designs typically involve concurrent data collection (Creswell et al., 2003), the interviews were carried out at a later stage for two logistical reasons. The interview participants were initially recruited through an expression of interest in the survey and, at the time of its launch, were on an intensive teaching placement away from campus. The small number of initial volunteers who expressed an interest were both female and on U-L courses. To recruit interviewees of both genders, students on both SD and U-L courses, and

generally to provide a more comprehensive body of data to answer the research questions, the authors set out to recruit a more purposive sample by inviting some of the students they taught as subject tutors, or directly supervised on placement, in both 2019 and 2020 to participate. Whilst the sample of interview participants became more representative of the wider student cohort in terms of gender and ITE route, the authors acknowledge that they were less representative of the wider cohort in terms of subject specialisms. Furthermore, the authors were conscious of ethical issues related to more personalised recruitment. By consequence of their 'double agency' roles as both researchers and tutors, there was the possibility of social desirability bias (Ferguson et al. 2014, p. 61). Interviewees may not only have felt compelled to participate in the research, but also to appease their tutors with desirable rather than truthful responses. As Knight (2015, p. 150) points out, students may feel uncomfortable critiquing a curriculum constructed by their interviewers, or even view tutors as guardians of the theory they are being asked to critique. To manage this dilemma as best they could, the researchers did not interview students with whom they had direct teaching or supervision relationships. They also stressed to the student teachers that the purpose of the research was to improve the ITE experience for future students, their responses would be entirely confidential, and that both positive and negative views would be helpful.

Although data collection was not concurrent, both data sets were given equal weighting to answer the research questions from different perspectives and were triangulated to provide an overall interpretation. The process of triangulation involved scrutiny of the qualitative findings to expand and explain the key trends relating to demographics and views apparent in the quantitative data. The interview data implicated why certain elements of university learning were more or less appealing to

different students, and how school context or more personalised factors, relating to socialisation, epistemic beliefs and epistemic emotions, influenced their views. The overall interpretations of the data following triangulation are presented in the Discussion and conclusions section at the end of the paper.

The survey data was analysed using Statistics Package for the Social Sciences (SPSS) software. Firstly, descriptive statistics were run to establish mean scores and standard deviations. For the relevance questions, 1 = *very important* and 5 = *not at all important* and for the frequency questions, 1 was = *very often* and 5 = *never*. The descriptive statistics provided some data in response to RQ2b.To investigate relationships between views of students on different ITE courses (see RQ1) and different demographic groups that were associated with 'person-specific' factors (see RQ2a), independent sample *t*-tests and Cohen's *d* effect sizes were conducted with all Likert scaled items. This enabled the comparison of views of U-L and SD students, males and females, students in different age categories and career-changers and non-career changers. Whilst the survey also collected data about the subject specialisms of the respondents, there was a notable imbalance of responses from different areas. For this reason, relationships with subject specialism were not investigated.

The interview transcripts were coded manually and compared by the authors using the research questions and related *a priori* themes from the literature. On examination of relationships between the codes, it became clear that the research questions served as broad umbrella codes. It also became apparent that much of the data relating to RQ2a could be interpreted in light of Muis's et al.'s (2018) epistemic emotions framework, in particular the antecedents. This framework was therefore an influential, although not exclusive, analytical lens for the qualitative element of the

study. The survey and interview data were interpreted separately before their integration in an overall analysis which is documented in the Discussion and conclusion section below.

Results and Analysis

Survey

The items with the lowest and highest mean scores are presented here since they represent the most noteworthy results. As can be seen in Table 2, three of the lowest mean scores (relating to importance) for the Likert scale items were attributed to learning in subject pedagogy workshops. This indicates that the student teachers rated the subject specialist (e.g., mathematics, history etc.) aspects of the course provided by the university as the most valuable and relevant, and appreciated the time dedicated to these.

Items pertaining to frequency of discussion about university learning with mentors received the highest mean scores overall, indicating low occurrence. Therefore, although student teachers found certain aspects of the course to be valuable and relevant, the survey suggested an absence of connection between campus and workplace learning. As far as RQ2b is concerned, the survey indicates that student teachers favour the university's focus on pedagogical content knowledge (Shulman, 1986) but that the ITE curriculum has not been entirely successful in cohering some elements of campus and workplace learning.

The results of the independent sample *t*-tests and Cohen's *d* effect sizes (presented in Table 3) indicated statistically significant differences in views between students on different ITE training routes and females and males in relation to some

items. Since there were no significantly different views between various age groups or career-changers and non career-changers, the data for these groups are not presented. Table 3 reveals that these differences were large (*d*s = 1.032 to 1.209) and statistically significant (with all *p* values < 0.05) for items pertaining to the assessment of the core academic module (that required engagement with academic literature and models of reflection for critical incident analysis) and wishes to pursue future Master's level study. Results from the *d* tests from .2. to .5 are considered to have a small effect, .5 to .8 a moderate effect, and >.8 to have a large effect (Cohen, 1992).

The student teachers who opted for school-led training routes clearly have different views about what they consider to be important in learning to teach compared to those who opted for university-led courses. The former are less likely to value research elements of teacher preparation, which undermines the occupational professionalism promoted by universities and potentially favours occupational professionalism (Evetts, 2009) (see RQ1). What is not possible to deduce from the survey findings, however, is whether these views relate to personal epistemologies that exist independently of the practicum experience and, or, whether the socialising factors in the school play a role. The finding relating to gender suggests the strong influence of person-specific factors on student teachers' views and resonates with results from studies indicating male preferences for separate knowledge and female preferences for connected knowing (Galotti et al., 1999; Schommer-Aikins and Easter, 2006; Marrs and Benton, 2009) (see RQ2a).

Interviews

We present the interview data using the research questions and the underpinning literature as a structuring device. When considering RQ2a, we implement aspects of Muis et al.'s (2018) framework on epistemic emotions as an analytical tool to draw awareness to the strong influence of person-specific psychological factors.

RQ1: Do ITE students on Different Training Routes have Different Views about the Value of Educational Research for Professional Learning?

The majority of students who talked positively about the contribution of research to professional learning were enrolled on U-L courses. Their comments illustrated the view that learning to teach is an intellectual activity, underpinned by a body of knowledge (Winch et al., 2015; Tang et al., 2019). Student 7 explained how engaging with research has made her "a more rounded teacher", helping her to become aware "why you were doing certain activities throughout your lesson". Similarly, student 3 felt that he needed "to have background knowledge because you do have to have a method behind the reason you're doing it". Student 8 recognised the limitations of learning only from her mentor, underlining the importance of learning from other knowledge sources: "I do think you need theory […] I do think that if you just go in and you learn on the spot, you're just gonna teach exactly how your mentor teaches. You're not going to learn anything else, are you?"

The students who took a positive view also recognised the contribution of research to continuous professional development and a deliberative approach to their development (Hagger et al., 2008). Student 3 felt that "whilst I am teaching, I feel I should be learning as well". Student 8 believed that "we need to be updated as

professionals [about] new methods and new pedagogies […] so we can take it into the lessons and maybe improve as professionals". In line with arguments made by BERA RSA (2014), Student 13 also recognised the benefits of wider learning to have a positive impact on the children: "You're doing it to become a better teacher in the end. That's the reason why you are doing all of this". These student teachers clearly valued connected knowledge from different sources and the need for their personal involvement in cohering these (Hofer, 2000).

In contrast, some comments from students (4 and 12) on SD courses indicated that that organisational knowledge (Evetts, 2009) and organisational culture had greater influence than the research promoted by the university on their practice. In fact, the latter was sometimes undermined by schools. Student 4 remarked how "I've not been able to adapt my own style that I have. It's been like, you follow our policy and nothing else." She told how teachers questioned the relevance and usefulness of material covered by the university: "And teachers were like no, no, no, don't try that! We've trialled that already, it's not really useful […] it doesn't work, don't do it, it's not the sort of school to do it in." Student 4 did not consider there to be a link between teacher professionalism and research, expressing the view that "a professional teacher is basically someone who has a really great relationship with staff and students and makes very well-informed decisions whether those are based on research or not."

Student 12 was uncertain about how pedagogical approaches promoted by others or how research may fulfil the school's priorities: "I think that the school is so driven by results, that they might think, that's nice that you're doing, but you're not going to help us." He also suggested that university had little credibility in the eyes of school colleagues: "I could imagine certain teachers who already in the profession to

think well no, why should I be influenced by people who aren't currently teaching?" It is not clear from his comments, however, whether these views are his own or those of his school colleagues.

However, two of the students who followed U-L courses and expressed positive views about research also highlighted school colleagues' scepticism: "[My mentor] said it's a shame you're in uni and not in school for 5 days" (Student 9). "It seems to be like a lot, I've done that in university but I'm not doing it now as a teacher" (Student 5). It would therefore appear that students may face cynical views about the university's contribution to professional learning whilst on practicum, and that their agency may be constrained by consequence of their ecology (Biesta and Tedder, 2007), irrespective of the ITE route they opt for.

It is difficult to deduce from the interview data the extent of the influence of schools' attitudes to research in relation to student teachers' epistemic beliefs. However, the triangulation of the survey and interview data would suggest that students on U-L courses are less likely to take an organisational view of professionalism, even if they encounter more cynical views from school colleagues. It is possible, therefore, that pre-existing positive epistemic beliefs about educational research are more resilient (Gu and Day, 2007) in the face of scepticism.

RQ2a: How do Contextual and Person-specific Factors Influence Student Teachers' Views about the University's Contribution to their Professional Knowledge Development?

Contextual Issues. Further data indicated that schools had variable views about the contribution of research to teacher professionalism, irrespective of the ITE course they supported. For example, student 4 who followed an SD course, claimed

that there was no engagement with research in one of her placement schools but great enthusiasm for research, with a designated research lead teacher, in another. In the research engaged school, she was even invited to deliver some of her research-informed learning in a training session to other colleagues.

Student 10, following a U-L course, explained that she did not ever discuss research or assignments with her mentor because the mentor “doesn’t do anything like that”, whilst student 2 (also on a U-L course) was “in a school that loves to do research. So they helped me with what to do.” In fact, they supported her in carrying out research to support a child with special needs. “They were like, why don’t you shadow him because we’re looking for ways to help him. So we can help you to do that and also you can find ways to figure out what’s going on with him.” This would resonate with the findings of Behrstock et al. (2009) and Dagenais et al. (2012), whose studies established that schools look to specific research when it assists them in finding solutions to particular problems. Student 3 (U-L) was based in a school where all staff were in research triads. There was a culture of trialling new strategies informed by research and they were happy for him to also experiment with strategies based on research studies presented at university.

Opportunities to translate ideas from research into practice may have been facilitated or constrained not only by general views about research, but also by the demographics of the school or advocated teaching and learning styles. For example, a couple of students reported that the school may not have many children with complex special needs, or the school expected their students to work independently work rather than with their peers in group work. In these cases, they were not able to experiment with related pedagogies studied at university.

Whilst the student teachers did not express how all these contextual circumstances directly impacted their own views, it would be reasonable to deduce that those who experienced a more positive attitude to research in the practicum are more likely to be convinced of its value and motivated to further engage with it (Muis et al., 2018), as ‘contexts-for-action’ shape individual agency” (Leat et al., 2015). An exploration of data relating to how individuals respond directly to elements of professional learning led by the university help us to further understand student teachers’ views. Here we see the influence of antecedents and consequences of epistemic emotions (Muis et al., 2018) on attitudes to research.

Person-specific Factors: The Influence of Epistemic Emotions and Beliefs. The interview data echoed the survey data in that much enthusiasm was expressed for the subject specialist elements of the course. Here we notice positive epistemic emotions due to the antecedent of value as students were both intrinsically and extrinsically motivated by subject specific content. Student 10 expressed how she enjoyed “the subject ones, I loved it. I absolutely loved it.” Student 1 considered these sessions “just brilliant, exactly what I needed,” implying that engagement with research also fulfilled an epistemic aim. This was also apparent in comments made by student 13: “It was just relevant, completely relevant as opposed to the morning session, which I guess felt less relevant at the time, sometimes.” Similarly, student 3 remarked how “the subject specific I think that was major for me, in terms of taking things to my placement”.

The antecedents of complexity and novelty also seemed to play a role in influencing responses to research. It seemed that that due to existing schemata related to subject knowledge, the student teachers were able to grasp the content of

the subject specific sessions and therefore had positive epistemic emotions. In contrast, when the material covered outside of the subject was more abstract, for example, relating to learning theories, student 2 found some of it “a little bit overwhelming”. Student 4 remarked how things would become more understandable when her subject tutor “broke it down” and provided subject specific practical examples. Student 14 explained how he needed quiet time at home away from school to apply some of the complex material discussed in university to his practice.

When non-subject specialist elements of the course were considered salient to practice, e.g., behaviour management, however, and students recognised direct links between theory and practice, they considered this both intellectually accessible and valuable. Student 13 remarked how “we did a lot on behaviour management […] I remember thinking that this is so relevant for my placement now and what I am doing […] There’s so much valuable research. And I really did find when researching for that assignment in particular, very useful things that I still use now”. Student 10 liked the applied nature of the research she was required to do through critical incident analysis “because it is about a thing that happens that you witnessed.” She seemed also to recognise that the research had helped her to achieve an epistemic aim: “I can see it brought practically. In science and medicine, I have known [the value of research], but I didn’t realise how in education it beneficial it could be.”

For some students, research, both in and beyond the subject specialism, was considered valuable due to be a pre-existing intrinsic interest in intellectual knowledge. Student 1 remarked that she was “the eternal student. I’ve already done a masters and I’ve got a real thirst for it.” Similarly, student 4 said that research was “something [she is] quite passionate about. So I have actually quite enjoyed it.”

Student 12, on the other hand, was very cynical, claiming that it was only for “one or two people who go on and do educational research and things like that.” For others and himself, he thought “it’s like just let’s get the paper done and out the way […] that’s the least of my concerns.” He remarked that “a lot of the pedagogy [promoted by research], […] I personally don’t like that so I’m not going to do it.” Notably, Students 1, 4 and 12 all followed SD courses, suggesting that variation of views are likely to be due to person-specific factors, manifest in epistemic emotions or beliefs.

Muis et al.’s (2018) model is also helpful in demonstrating how students can become motivated by consequence of positive epistemic emotions when carrying out research. This is exemplified in the comments of Student 5: “And at first, I was putting more emphasis on teaching and being in the school. I really wasn’t putting the effort into theory and reading. And now, I enjoy it. I understand it a lot more.”

In summary, the data in this section draw our attention to the impact of psychological experiences of individuals in the learning process when engaging with research.

RQ2b: Does the Structure and Nature of the ITE Curriculum Created by the University Help to Promote Research Relevance?

Several positive comments were made about constructivist learning activities based on reflective activities related to practicum experiences. Whilst so far we have applied Muis et al.’s (2018) model on epistemic emotions and self-regulated learning to analyse students’ views about research, its application is also useful in relation to opinions about workshop learning that takes a student-centred and self-regulated approach. All but one of the interviewees expressed positive epistemic emotions

about such workshops. They valued the opportunity to share experiences and queries in order to learn from one another and to engage in collaborative problem-solving, thereby fulfilling epistemic aims.

Student 6 emphasised how she appreciated the less didactic approach on the ITE course which strongly contrasted with learning on her undergraduate degree. She enjoyed all the “different methods of delivery that go in different ways […] whereas in my degree, it was all very lecture based, and I struggled to access the material in that way. And here, I thrived a lot better.” These comments illustrate the value of ITE course design which is based on the interaction between personal theories and schemata about teaching and learning with research-based, substantive theories (Korthagen, 2017). This argument is also bolstered by the remarks of Student 5, who made more sense of research-informed learning when this could be ‘hooked’ onto experiences in school: “Coming in on the Fridays at first didn’t seem that helpful, because I personally wanted to be in school and then after two or three weeks, I’m actually enjoying coming in and regaining a bit of knowledge, and a bit of thought of what and why the process is.” Similarly, Student 10 explained that “at the beginning, because I wasn’t teaching fully, I felt that it wasn’t going hand in hand. But as time was going on, yeah [it did].” This illustrates the importance of careful sequencing of different types of learning in the ITE curriculum.

There was, however, one interviewee (12) who disliked the student-centred workshops, remarking that after the tutor had provided the initial input “we’re just here to have a mothers’ meeting”. This illustrates how individual preferences can influence attitudes to different types of knowledge and styles of learning.

It was also clear that students appreciated the links made between research/ theory and practice in the assignment tasks. Student 1 remarked how she had

“looked at praise as a behaviour management strategy, so that’s had a huge influence on me. Having a focus for that first paper and then yes, I can build that into my teaching strategies, that was fantastic.” After researching about formative assessment, student 2 asked herself “Why I am always taking marking home all the time? After doing all this research, I’ve realised that it’s more helpful for students to mark each other so it makes you realise that certain things that you are doing just out of routine are not as beneficial as you think.” Student 6 commented how “It was quite nice to do research but at the same time look at your own personal work and your own lessons and put them both together.” A modern languages student (7) commented: “I focussed on target language as the pedagogical approach, so now I’m more aware of the importance of target language in a language learning classroom. And I’m using it as much as possible, depending on the abilities of the class, but I know that I understand the importance.” Whilst most data indicated that self-regulated learning through the assessed assignments helped to promote research relevance, student 8 recognised the knowledge flows in the curriculum as a whole: “It’s a cycle. You study something that at the beginning you don’t understand. Then you go to school, and you put it into practice. And then you go back to the uni and reflect about it. Everything makes sense because it’s like a cycle.”

To summarise, the interviewees, by and large, appreciated a constructivist approach to the curriculum, whereby reflective discussions served as hooks for research connections. However, the most explicit theory-practice dynamic seemed to occur through the process of assignment writing. Whilst the nature of interview research does not lend itself to drawing firm conclusions about demographics and views, it is interesting to note that most positive comments about research relevance through the curriculum were made by women.

Discussion and conclusions

The triangulation of the data sets firstly implies that student teachers' views about the value of the university's research contribution to professional learning are strongly influenced by personal epistemologies. Whilst the survey indicated a relationship between personal epistemologies regarding research knowledge and the ITE route that students follow, the qualitative data does not point to a connection between the schools' views about research and the ITE routes which they support. This would suggest that schools are not necessarily influencing students' views. Rather, student teachers opt for the training pathway that best complements their personal epistemology. To answer our first research question, therefore, it would appear that student teachers on different training routes do indeed have different views about the value of educational research for professional learning but these are likely to be most strongly influenced by entering perspectives rather than contextual factors later on. Those who give credence to research knowledge and the advantages of connected knowledge structures in professional learning are more likely to opt for U-L courses. The data indicating relationships between gender and prior educational experiences on views also suggest that personal epistemologies are influenced by socialisation.

These findings also address RQ2a, in that person-specific factors seem more influential than contextual ones. We recognise, however, that this is likely to vary from one individual to another depending on individuals' confidence, the strength of their views, and the extent of the position schools hold on research.

In light of these results, it seems incumbent on university ITE to provide opportunities for student teachers to explore influences on their beliefs about knowledge, which have been found to be malleable (Muis, 2004), and to consider why they consider some knowledge sources to be more authoritative than others. If, as suggested by Chan (2003), there is a link between students' prior experiences of learning approaches with personal epistemologies, it would also be apt to focus on learning approaches that promote expansive learning and critical thinking. This would involve the dedication of more curriculum time to practise the skills of critical reasoning and reflection, drawing on both research and practical knowledge. As suggested by Guilfoyle et al. (2020) and Bondy et al. (2007), teacher education should make it a more explicit goal to explore and develop epistemic beliefs through carefully structured activities so that they become more 'availing' for learning to teach (Muis, 2004).

The second key finding of our study also relates to person-specific factors: the impact of students' epistemic emotions when engaging with research. To our knowledge, the teacher education literature has hitherto paid little attention to insights from educational psychology with regard to engaging with research *per se*. On the one hand, this underlines the cruciality of thoughtful curriculum planning and scaffolding in order to make research as accessible as possible, especially to students who come from subject disciplines that are very different to the field of education. This is not to suggest any 'dumbing down', but that thought should be given to positively influence the antecedents of control, complexity, and novelty (Muis et al., 2018). In order for students to also appreciate the value of research and achieve epistemic aims (Muis et al., ibid), they should be guided, as often as possible, with activities to apply or consider research in relation to practice. On the

other hand, however, it would be naïve to think that negative epistemic emotions can be entirely avoided. Indeed, it could be fruitful to provide student teachers with the opportunity to explore these. This process could not only be important for developing teachers' research literacy, but also beneficial for guiding their future students in overcoming similar emotions and developing resilient responses. As Bondy et al. (2007, p.67) remark, exploring "beliefs about the nature of knowledge and how one comes to know are especially relevant in the context of teacher education as preservice teachers will become responsible for the knowledge and knowing of others".

In responding to RQ2b, the interview data has illustrated that a constructivist ITE curriculum, linking personal theories and reflective practice with substantive research is valued by students. Assignment tasks that promote a theory-practice dynamic are also beneficial. However, the survey data pointed to infrequent discussion of content covered at university with school-based mentors. Thus, the ITE curriculum as a whole, experienced by the participants in this study, has been only partly successful in promoting research relevance. To develop better connectedness, there is a need for focussing on knowledge flows between campus and practicum (author, 2021). The co-construction of curricula by both university tutors and school mentors, however, is reliant on close and time-intensive collaboration with significant resource implications for both universities and schools and research-training and access to academic resources for mentors. Without these resources, this challenging responsibility continues to rest with universities.

In summary, therefore, whilst many student teachers recognise the positive contribution of the university to their professional knowledge development, this is

clearly not applicable to all. If student teachers' views about educational research are related to views about knowledge and epistemic emotions, there are new implications for ITE curriculum development. Whilst we recognise the limitations of this study and the need for further research, as data was collected from students associated with only one university and students preparing to teach particular subjects in secondary schools, our current findings lead us to the following conclusion: A research-rich ITE curriculum is likely to be more widely appreciated if teacher educators attend to the person when presenting research, in particular the social psychological and educational psychological factors which impact student teachers' views about knowledge.

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Table 1

Profile of Interview Participants

Feb 20 Participant	ITE Route	Gender	Subject specialism	March 19 Participant	ITE Route	Gender	Subject specialism
1	SD	F	Design and technology	**9**	U-L	F	Art and design
2	U-L	F	History	**10**	U-L	F	Art and design
3	U-L	M	Foreign languages	**11**	SD	M	Music
4	U-L	F	History	**12**	SD	M	History
5	U-L	M	Art and design	**13**	U-L	F	English
6	SD	F	Religious Education	**14**	U-L	M	Computer Science
7	U-L	F	Foreign languages				
8	U-L	F	Foreign languages				

Table 2

Perceived Relevance of University Sessions and Opportunities to Discuss Campus Learning with School Colleagues

Survey Item	*M*	*SD*
I think it is important to learn about subject pedagogy research	1.75	0.78
I valued discussion with peers in subject pedagogy sessions.	1.83	0.97
The content of the signature pedagogy sessions were relevant to my practice	1.99	1.02
How often do you discuss campus learning with your mentor?	2.99	1.14
Does / do your mentor / school based colleagues talk to you about campus based learning?	3.26	1.27

Table 3

Views of Students of Different Genders and Following Different ITE Courses about Research Elements of the Course

Survey Item	University-Led Students		School Direct Students			
	M	*SD*	*M*	*SD*	*p*	*d*
I have found Critical Incident Analysis a useful tool for developing my practice	2.04	.94	3.04	1.28	.<001	1.032
I have found other models for reflective practice, e.g. Brookfield's lenses or Jay and Johnson's typology, helpful for my professional development.	2.11	1.04	3.07	1.35	.001	1.100
I am keen to complete a full Master's degree in Educational Practice at the university as an NQT/RQT.	2.08	1.15	3.36	1.43	.<001	1.209
	Females		**Males**			
	M	*SD*	*M*	*SD*	*p*	*d*
I have found Critical Incident Analysis a useful tool for developing my practice	2.14	.98	3.00	1.25	.005	1.073
I have found other models for reflective practice, e.g. Brookfield's lenses or Jay and Johnson's typology, helpful for my professional development.	2.16	1.08	3.07	1.21	.003	1.121
I am keen to complete a full Master's degree in Educational Practice at the university as an NQT/RQT.	2.27	1.19	3.36	1.53	.028	1.303