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‘Mapping backward’ and ‘looking forward’ by the ‘invisible educators’ – reimagining research seeking ‘common features of effective teacher preparation.’

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Abstract

Evidence is growing that the quality of teachers and teaching are significant factors in enhancing student learning, so research into teacher education could make a major contribution to preparing our future teachers. Post compulsory teacher education research lacks recognition almost to the point of invisibility. Post-Compulsory Education (PCE) encounters complicated contextual factors including political, sociological, pedagogical and financial challenges and continuous change. When the multiple components and characteristics of teacher education systems combine, a situation where synergies, models and typologies of teacher education are particularly difficult to identify arises. A project seeking common features of effective teacher preparation from published research is undertaking a ‘backward mapping exercise’, under the auspices of the World Education Research Association with the intention of starting to reimagine teacher education research. Academics from Bath Spa University in England contributed to this research. The work should refresh perspectives on teacher education research and inform global decision-making in the field. An initial exercise, which this paper reports on, identified common features, whilst simultaneously reinforcing some of the challenges recognised in research. The insights gained open some possibilities for reimagining PCE teacher education and establishing the value of backward mapping as an innovative approach to research.

Introduction

This paper is in four sections. The first summarises a number of contextual features and perspectives which emerge from reviews of teacher education research, and the particular contextual features of Post Compulsory teacher education in England. The second reports on a comparison of components of and influences on different teacher education systems and the arising challenges for the establishment of coherent models and typologies of teacher education. The third section summarises findings from a 'backward mapping review' of a small number of studies into how and where teachers learn effectively and the conclusions which can be drawn from that exercise. The concluding section discusses how these findings could provide a fresh perspective on common positive features of teacher education and how this could contribute to a reimagining of teacher education in PCE.

Contextual features and perspectives

There are a number of general issues relating to teacher education research which have been identified in research reviews. Menter et al. (2010a), outline a number these including the 'high volume of single studies and the paucity of large-scale, longitudinal studies' (ibid: 15), the limited theorisation present within the research and some methodological weaknesses. They also highlight how 'the professional education of teacher educators is an under-researched area' (ibid: 15). Eliahoo (2016: 52), when discussing research undertaken in a number of countries to more clearly define 'TEds and their dispositions' and to 'support the development of these dispositions', does offer some optimism that this type of research with TEds (teacher educators) is moving forward. BERA (2014) however recognises 'the need for further large-scale and in-depth research in this field, and in particular for more research that looks systematically at the effectiveness of different types of initial teacher education' (ibid: 37). Torrance (2008) found that larger scale studies funded, for example by the ESRC, were of excellent quality but the research was conducted by a relatively small number of scholars, concentrated in a small number of universities. Murray et al. (2008) also found a high volume of single studies and a lack of large-scale, longitudinal studies in their review of education research in Australia. Methodological weaknesses were found by Cameron & Baker (2004) to be a feature of teacher education research in New Zealand. Globally, there are few multiple methods studies including quasi-experimental designs or North American models of more 'scientific' research (Cochran Smith & Lytle, 2009). Menter et al. (2010: 16)

argue that there is 'very little research' linking teacher education to pupil outcomes and most of this is in the USA. Low et al. (2012) in Singapore and Nuttall et al. (2006) in Australia highlight further this lack of large scale findings relating to impact and outcomes. Allen (2003), in a summary of research findings on teacher preparation (one of the differences in terminology which are apparent in this field of research), also argues that the results about the impact of ITE on various outcomes were 'less than conclusive' (ibid: 22). Indications that the beliefs and attitudes of teachers had been affected by teacher education were found, but these could not then be directly related to improved teacher performance and outcomes for students.

Crawley (2016) and Noel (2006) argue that research about teacher education in Post Compulsory Education faces a particularly challenging situation due to the difficult professional working context of TEds. Azumah-Dennis (2016: 11) describes this as 'terms and conditions of service' which 'do not allow working space for scholarship'. There is also a history of a lack of inclusion of this part of UK teacher education in major national developmental activity such as the Carter Review of Initial Teacher Training (2015). The situation has developed to the point where PCE TEds have been characterised as 'invisible educators' (Crawley, 2016: 1) and the state of research activity in PCE as a 'scholarly silence' (Azumah-Dennis, 2016: 9).

Teacher education research and policy making

Cochran-Smith (2004) found research in teacher education to be 'marginalised and underfunded', with strong interest for practitioners but little interest from policy makers, as studies do not provide 'solid, measurable connections to student achievement' (NRDC, 2006: 20). Given the contextual features and perspectives outlined in the previous section, it is possible to see why teacher education research in particular has not historically featured strongly in education policy making. Since the start of the 21st century however, interest from policy makers has been increasing, as more potentially robust evidence about the impacts of teacher education has begun to emerge, and as politicians seek to more directly influence education systems throughout the world. Other developments in research have laid foundations for more direct government engagement with teacher education. Musset (2010) cites a Eurydice review of 'the teaching profession in Europe' which argues that teacher education, followed by professional development, ensures that teachers are competent, that they remain competent, and maintain their motivation over a period of

time (Eurydice, 2004). McKinsey (2007) and OECD (2005, 2012) have argued that there is good evidence from research that teachers are the school variable that most influence student achievement and this is cited in a recent UK policy paper (DfE, 2010). BERA (2014) is however unequivocal in emphasising that 'a causal connection between specific features of the training programme (including the research components) and the success of the education system can only be inferred rather than directly proven' (ibid: 11). As Menter et al. (2010: 7) conclude, much has been and can be learned from teacher education research about impact on teaching and student outcomes, but 'the evidence base on teacher education is somewhat inconclusive as a guide for policy'. As governments move towards a more direct engagement with teacher education research, BERA (2014) recommends that providers and researchers will need to develop new more coherent 'custom built self-improving systems' (ibid: p1) which include ways of identifying and evidencing the values, approaches and impact of teacher education. In English PCE, as Crawley (2016) and Eliahoo (2016) argue, TEds also need to more assertively claim their professional status, work together in new ways, and engage in more research about their field, if they are to make their own future.

Teacher education systems

This section firstly summarises key aspects of teacher education systems which emerge from research, then conceptualises those characteristics and influences as a 'continuum of contrasts'. The evidence from research indicates a far from stable global picture, with BERA (2014a), Crawley (2012), EPPI-Centre (2008), Misra (2011), Mussett (2010), Papier (2010) and Parsons et al. (2009) all indicating ongoing development activity in teacher education systems across the world. Alongside this development activity, and partly because of it, wide variability in the structure, content and character of teacher education exists. The evidence for this variation, complexity and variety is very strong (Abele et al., 2009; BERA, 2014a; Chazema and O'Meara, 2011; EC, 2010, 2012 - Europe; Eurydice, 2004; Gambir et al., 2008; Imig, et al., 2011; Lapostelle and Chevallier, 2011; MacBeath, 2011; Menter et al., 2010a; Mussett, 2010; O'Meara, 2011; Ostinelli, 2009; Reid and Tanner, 2012 in Wales; UNESCO, 2008 across Asia Pacific and van Nulén, 2011 in Canada). Many local, national, organisational and cultural factors contribute to this considerable range and diversity. This has led to research which tends to highlight that complexity rather than decipher it, and this is not helpful to the image and credibility of teacher education research (EPPI, 2008).

Patterns, themes and similarities across a range of countries can nevertheless be found. Mussett's (2010) comparison of 'Initial Teacher Education and Continuing Training Policies' postulates a typology of models of teacher education, arguing that the purposes of teacher education are reasonably harmonised and that initial teacher education can be defined as 'all professional preparation before individuals take full responsibility for teaching one or more classes of pupils' (ibid: 15). The 'traditional' model 'tends to include the acquisition of basic skills through practice' which supports the achievement of agreed levels of capability with teaching practices for participants. It can also include the development of teachers' knowledge of particular academic disciplines and those of problem solving and knowledge acquisition. The 'new' model focusses on developing the teaching professional to a level of minimum competency and confidence. Mussett (2010) suggests that 'the main difference between both types of model is the way in which teaching is perceived: the traditional conception of teaching as a craft is replaced by a much more dynamic conception that focuses on professional autonomy. Teachers are perceived as 'proactive agents of change' (ibid: 17). Thirdly Musset (2010) identifies 'alternative models' (ibid: 18) in the United Kingdom and the United States, which concentrate on developing alternative entry into the teaching profession.

Despite Musset's typology of models (2010), which detects international synergy across programmes, the multitude of components of, and influences on, teacher education systems mitigates strongly against the capacity to consistently apply any typology, and this represents a major barrier to development of international cohesion. This was reinforced by Crawley (2014) when comparing teacher education systems. A number of components of and influences on teacher education systems were compared, and conceptualised as a continuum of contrasts, where the components were placed in contrasting pairs and organised visually into a table to illustrate this continuum. Table 1 represents this conceptualisation.

Components of, and influences on Teacher Education Systems		
From		To
Centralised	<<<<<< >>>>>>	Decentralised
Integrated across phases of education	<<<<<< >>>>>>	Separate ITE for different phases
Mandatory ITE	<<<<<< >>>>>>	Non mandatory ITE
High practitioner engagement in policy and design	<<<<<< >>>>>>	Low practitioner engagement in policy and design
Funded by the government	<<<<<< >>>>>>	Funded by others
National quality assurance / inspection systems	<<<<<< >>>>>>	Local quality assurance / inspection systems
Postgraduate level	<<<<<< >>>>>>	Undergraduate or lower level
Based in HEIs and educational workplaces	<<<<<< >>>>>>	Based in workplaces
Pre service	<<<<<< >>>>>>	In service
Full time attendance	<<<<<< >>>>>>	Part time attendance
Taught face to face	<<<<<< >>>>>>	Online learning
Long period of training	<<<<<< >>>>>>	Short period of training
Taught by teacher educators	<<<<<< >>>>>>	Taught by others
National content and delivery	<<<<<< >>>>>>	Local content and delivery
High levels of support for trainees and TEDs	<<<<<< >>>>>>	Low levels of support for trainees and TEDs

Table 1 - components of and influences on teacher education systems

When locating individual teacher education systems on this continuum, the resulting points plotted would include synergies as well as differences, but the resulting grid would be complex and challenging. It could however offer some ways forward if the synergies were focussed on as the basis of further investigation. BERA (2014) strongly argues for efforts to move towards a more unified set of systems and philosophies should be intensified as an urgent priority for global teacher education research.

WERA backward mapping exercise

This section explores a piece of research which could establish some starting points towards building such a unifying philosophy. The World Education Research Association instigated an International Research Network (IRN) in February 2014, specifically to establish a process with the direct aim of ‘building global research capacity for evidence-based decision making’ Tatto (2014: p1). As stated in its aims, this IRN

Brings together education colleagues across different world-settings to pursue collaborative:

- context-driven research reviews
- empirical work

Answers the question about:

- conditions that best support teacher learning throughout the life-cycle and

Develops capacity to produce in-country research to back such conclusions (ibid: p1)

In addition to seeking to address these key themes, and some of the challenges outlined in earlier sections of this article, the IRN aims to ‘work with participants to develop evidence-based knowledge for decision making’. The WERA ‘backward mapping’ trial exercise was carried out by academics from Bath Spa University and others in summer 2014. This was an important stage in establishing parameters for data capture, testing some of the ideas in the research, and engaging participants in the overall network. ‘Backward mapping’ is understood as

“beginning with the latest research and working ‘backwards’ to past research to chart the evolution of the research that has supported current and past innovations in teacher preparation” (WERA 2014, p1)

The purpose of this exercise was to answer the general question:

Does the research literature point to common features of effective teacher preparation (broadly understood such as pre-service, alternative routes, in-service, professional development, etc.) across countries and contexts?' (ibid: p1)

The initial activity was a straightforward task of locating

'at least five pieces of high quality research (refereed articles, reviews of research, research reports, but generally no books unless they constitute research reports or are key to defining the main questions we have) that you think help answer the question of: "how and where teachers learn to teach effectively" (ibid: p2).

This was not a systematic literature review, but a more light touch means of highlighting synergies, similarities and indeed differences across pieces of research. Participation was offered to a range of members of the IRN, and in the example discussed in this article, was undertaken by two academics at Bath Spa University, of which the author is one. Both have experience of working in PCE. Six articles were reviewed by the team of two. The six studies were (listed in the order undertaken):

O'Leary, M. (2013) Expansive and restrictive approaches to professionalism in FE colleges: the observation of teaching and learning as a case in point, *Research in Post Compulsory Education*, 18:4, 348-364,

Slater, H., Davies, N. M., & Burgess, S. (2012). Do Teachers Matter? Measuring the Variation in Teacher Effectiveness in England*. *Oxford Bulletin of Economics and Statistics*, 74(5), 629-645

Daw, P., & Robinson, C. (2013). To the next level: improving secondary school teaching to outstanding. London: CfBT education trust.

Morais, A., Neves, I., & Afonso, M. (2005). Teacher training processes and teachers' competence—a sociological study in the primary school. *Teaching and Teacher Education*, 21 (4), 415-437.

Ensor, P. (2004). Modalities of teacher education discourse and the education of effective practitioners. *Pedagogy, Culture & Society*, 12 (2), 217-232

Hodkinson, H. & Hodkinson, P. (2005) Improving schoolteachers' workplace learning. *Research Papers in Education*, 20 (2), 109-131.

The education location and context of the studies were UK Primary Education (x1), UK Secondary Education (x3) UK Further Education (x1) and South Africa Secondary Education (x1). All six met the selection criteria and contained evidence which related to aspects of 'effective teacher preparation'. The approach and methodology of the studies was varied, and included small, interview based research; analysis of an extensive dataset relating to thousands of UK secondary pupils and hundreds of UK teachers; a mixed method study across a wide range of schools and a small case study within a larger study in Further Education. The themes emerging within the research, and the frameworks identified or conceptualised by the researchers included aspects of pedagogy and theories of knowledge; the linkage between teacher performance and pupil outcomes; processes, practices and systems within school; models of professionalism and professional identity in further education; the value of observation of teaching and workplace learning by teachers and the progress of teachers from training to the workplace. All studies used more than one method, and there was one study which was noticeably more at the quantitative end of the methodology spectrum. This featured a sophisticated analysis of pupil data contained in UK datasets, and then related that to the performance of the teachers who taught them over a period of time. A more qualitative study tracked seven teacher trainees in training and then in schools with data collection through field notes, interviews and video recording of teachers teaching. There was no obvious consistency of overall method or approach across the selected studies with each identifying and justifying their own choices of methodology. In applying a 'light touch' brief consideration of the studies using Lincoln and Guba's (1985)

'trustworthiness' criteria of credibility, transferability, dependability, and confirmability, all studies do meet those criteria at least reasonably well. Overall the backward mapping exercise was both straightforward to carry out, and successful in selecting and synthesising six pieces of research using the criteria set by WERA.

Discussion

The concluding section of this article discusses what emerges from the backward mapping when seeking linkages between the studies, and how that may be relevant to a reimagining of aspects of PCE teacher education research, and a consequent reimagination of PCE teacher education itself.

Reinforcing the challenges

The first observation from this backward mapping exercise would be to reinforce the notion already discussed in this paper, which is that the diversity, range and complexity of settings, contextual factors and also of the methodologies of the studies makes it difficult to draw out typologies or more evidence-based conclusions across different studies. The studies are not intended to contribute to a wider theme as such, or to evidence broader understandings across global teaching practice, but are created in, and applied to their own particular objectives and field of study. Within these boundaries, each study does that effectively and with conviction.

Making connections

There is a good degree of agreement from research that teacher education can bridge gaps; cross bridges; surface learning; cross borders and connect diverse and different elements of practice. This common theme of connection and developing connectivity in teachers is described in different terms, but the importance of making connections is consistently apparent (Davey, 2013; Guyton, 2000; Kitchen, 2005; Korthagen et al., 2006; Korthagen, 2011; Kosnik and Beck, 2009; Laws et al., 2009; Lunenberg, 2002; McKeon and Harrison 2010; Murray and Male, 2005 and Tryggvason, 2012). Crawley (2016: 1) also argues that a key aspect of being a PCE TEd involves 'making connections' for their trainees between and across what may appear to be different aspects of their work, and indeed characterises TEds as 'connecting professionals'. This backward mapping exercise takes a similar approach by placing connections between and across studies as the central feature of activity, and this

makes a profound difference. When the question 'does this research point to common features of effective teacher preparation' is asked of every study, synergies and recurring themes can be readily identified, and connections made between the studies where they would not otherwise necessarily be. This does not mean the differences and purpose of each piece of research loses value but rather that the connections between the pieces of research add value by extending the possible reach of all the research. By making connections within these studies the aspects of effective teacher preparation which were identified include:

- The ongoing contribution to student learning made by 'mature' process oriented systems and processes in educational institutions
- Expansive and learning cultures create effective conditions for teaching and learning
- High quality teachers do improve attainment
- Students and teacher succeed when actively involved in their learning
- Institutional leadership is a crucial influence on teacher education
- Teachers' pedagogical practice evolves more fully with the support of ongoing professional development.
- Teacher learning is best improved through regular access to learning opportunities.

There is no suggestion that each of these features is present in every study. If however we are looking for connections within teacher education research, this appears to be, on the basis of a small exercise, a helpful contribution to how it could be possible to build a group or network of contributors, and identify connections between research into 'effective teacher preparation' which could form the basis of a coherent system. It also suggests that the work could be scaled up, involving a wider network of contributors who would extend the range and number of pieces of research included whilst keeping the reviewing load for each contributor small. It could also be possible to use the approach to specialise more within a given type of teacher education.

Conclusion

This article has highlighted some of the complexities of drawing together evidence from existing teacher education research, analysed some of the challenges involved, and provided examples from research of the varieties of teacher education systems across the

world. A significant body of research, knowledge, evidence and understanding of the field of teacher education does exist, but drawing coherent, evidence based and generally accepted key principles of effective teacher education from that research has not as yet been entirely successful. The field of PCE teacher education is also currently something of a poor relation in the field. Although at this stage on a very small scale, the use of the backward mapping approach used for the WERA IRN appears to offer significant promise towards providing a means of making connections across research, reimagining the synergies across different research and offering a fresh and potentially transformed perspective on teacher education research.

PCE teacher education has a real opportunity with this approach to reduce its invisibility, and to claim a rightful place as an influencer of policy and practice. If a PCE-focussed backward mapping exercise and a network of credible practitioners prepared to undertake that exercise could be established the evidence suggests it could be transformative. Such groups of practitioners already exist in organisations such as the Association for Research in Post Compulsory Education (ARPCE), the Learning and Skills Research Network (LSRN), and the Teacher Education in Lifelong Learning (TELL) research network. If they could be mobilised, backward mapping could be a step towards reimagining PCE teacher education as a genuinely 'self-improving system' (BERA, 2014).

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