

Exploring Learning in Practice to support Construction Teachers' Professional Development

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Abstract

I am a teacher trainer. I work for an FE institution that specialises in construction education. In this study I report on an action research project carried out with the co-participation of the construction teachers (my students) with whom I work. I engage with my students as I set out to nurture a professional development community of practice, seeking to free them from conventional teacher development practices.

My informal approach to professional development, based on the principles of theories of situated cognition, suggests learning through abstraction can occur in formal and informal contexts and traverse contexts. At the start, I asked my students to volunteer to work with me. On recruitment, I explained the purpose of my research and discussed what I saw as the key ideas of communities of practice explicitly. This provided the initial abstraction. Activity developed co-participants' understanding of communities of practice, leading us to identify communities of practice that we saw as influencing their developing teacher identity. Co-participants then used this understanding in lesson-study activity. As we progressed, we agreed that we had become a professional development community of practice.

Membership encouraged a proactive positive teacher identity, equipping co-participants with new tools for teaching. Co-participation was empowering. It inspired the creation of innovative teaching resources (in-tune with their students' identity) for proactive learning. Our powerful teaching community of practice formed out of the initial abstract concept I provided, in collaborative negotiated activity.

Those co-participants who had recently completed formal teacher training became central to our professional development community of practice. The engagement of others was more peripheral. Co-participants who were more central had a greater understanding of learning and were better equipped to teach their own students. Legitimate peripheral participants learnt from these co-participants. At the same time as my approach develops individual mental processes, it enculturates teachers into our college. The project supported the development of critically reflective and reflexive practitioners, with what look to be sustainable effects. Data provides insight

into the bridges and barriers to establishing a professional development community of practice and teacher identity formation.

Chapter 1: Background knowledge

Introduction

In this chapter I consider my personal background in relation to my professional experiences as a teacher educator, establishing my circumstances in relation to my research. I go on to explore my role, relative to the culturally, socially and historically situated circumstances of my students and the developments that have occurred in the wider UK political and educational landscapes. This enables a greater understanding of the context in which my work and research is situated. The developments to these wider landscapes free me to consider a new kind of construction teacher professional development. Before concluding this chapter, and moving on to consider what this new professional development might look like in Chapter 2, I explore what I would like to achieve as a teacher educator. To support my understanding, I investigate different interpretations of what it means to be reflective and how this differs from being critically reflective and reflexive.

My story

The males in my family, going back two generations, worked (except during World War II) in construction. My father's father was a master builder, and my mother's father was a labourer and painter and decorator. My father was a draftsman and carpenter; he went on to become a contracts manager, overseeing large-scale construction work. During my upbringing, I met and became acquainted with a range of people who worked in the construction industry. I remember many with great affection and recollect their stories vividly.

I have worked for over ten years for a large UK work-based learning provider that offers vocational education and training in a range of specialist construction disciplines. As a teacher trainer and educator, it is my responsibility to develop the teaching skills of our instructors (teachers) who deliver construction-related education and training. I design, deliver and manage initial teacher training and a range of in-house workshops devoted to the continuing professional development of our teachers, who take great pride in their extensive construction industry experience. As I have never worked in construction, I have always felt like an 'outsider inside' (Gordon, 2010) in our college, yet I have always been completely at ease in the presence of most construction teachers; I believe my upbringing has helped me integrate well.

The vocational–academic divide

The construction industry is composed of many diverse crafts, trades and occupations and the work-based learning provider that I work for offers specialist education and training in a number of disciplines; this provision excludes the 'Biblical trades' such as carpentry, brick-laying and painting and decorating that have existed since Biblical times. The specialisms offered at our college include plant operations e.g. tower crane and 360° excavator operations, plant mechanics, demolition, access (which is a broad term incorporating scaffolding, lightening conductor engineering and steeple-jacking), roof, slate and tiling, and tunnelling. This training requires finances, resources and vast space unavailable to the majority of Further Education providers.

These vocations demand different skills, and therefore different levels of training and education but all currently depend on a 'front-loaded' model of education, where an initial training period is intended to provide competence in the practical skills and understanding necessary for life at work (Hager and Hyland, 2003; Winch and Clarke, 2003). Although some believe competence-based education and training

(CBET) ineffective (Hager and Beckett, 1995; Lum, 1999), it is still common practice today and still very much demanded by employers across UK construction. Many students, who engage in competence-based education and training, ordinarily accrue 'on-the-job' experience while in training and post-qualification; practical experience is intended to reinforce the formal curriculum. Many subsequently engage in formal and informal continuing professional development during the course of their career and this is either self- or employer-directed. Our teachers generally join our college, straight from industry (i.e. from 'the tools'), after many years of experience, and, although most have supervised apprentices and the work of others on site, they are completely new to teaching. As is the norm in Further Education, our vocational teachers "have already established themselves in professional or vocational areas; they hold relevant qualifications, and often have considerable industrial or commercial experience" (Viskovic and Robson, 2001, p.222). Effectively then, my role as a teacher educator is to develop the teaching skills and awareness of experienced construction workers, and this, given the requirements of contemporary initial teacher training, means I must cultivate their academic skills. As some construction workers receive more academic training than others during their initial construction-related training, the amount of academic development required can differ dramatically between teachers, but many require additional support in literacy before training starts.

The division between the vocational and the academic is socially and culturally entrenched (McNiff, 2010), and historically, either 'side' has attached little or no value to the other. Although communities at the very dawn of human history might have placed great value on the reproduction of vocational skills such as hunting and clothes making (Hager and Hyland, 2003), attitudes had polarised as far back as Plato (380BC), who argued a natural hierarchy exists between people, where only philosophers are fit to rule while all others, naturally subservient and of 'baser metal', are suited to more menial positions in society. While this lofty assertion depended upon the institution of slavery, it assumes that "theoretical knowledge is superior to both practical and productive knowledge" (Hager and Hyland, 2003, p.273). Authors such as Brockmann *et al* (2010) and Hyland (2002) claim this disunion is still

reflected within class divisions in contemporary UK society, where vocational education is considered a second-rate option for the elite (Hager and Hyland, 2003).

The construction industry has always attracted many who underachieved during their time in mainstream education, and I believe this central to the identity of many of my students who place little value on academic pursuits. It is therefore my job to help my students (who want or need to) bridge the vocational–academic divide, to support their endeavours and to help them develop their teacher identity. However, “the process by which they move from one occupation to another, and develop (or fail to develop) new identities as teachers is complex and not well understood” (Viskovic and Robson, 2001, p.221). In my literature review (see chapter 2), I explore the notion of ‘teacher identity’, which I believe is also not yet clearly understood and evidently compounds this gap in understanding.

From professionalisation to deregulation

Between the end of World War II and 2001, great strides were taken to create teacher training programmes and improve provision in UK post-compulsory education. The qualifications on offer were not a mandatory requirement of employment though, so teachers only completed them on a voluntary basis. Teachers who delivered vocational subjects were employed solely on their vocational skills, abilities, and experience (Bathmaker and Avis, 2005).

In 2001, the Department for Education and Employment (2001) introduced official legislation that made teacher training qualifications mandatory in UK Further Education, although this did not pertain to other areas of post-compulsory provision such as work-based learning and adult and community learning (Institute for Learning, 2013a). The new qualifications were intended to improve teaching, levels of learner support and the image of the Further Education sector. In 2003, however,

Ofsted (2003) reported these changes had had little effect as initial teacher training (and mentoring of new teachers to the sector) was still inadequate.

In 2004, the policy document entitled, 'Equipping our Teachers for the Future' (Department for Education and Skills, 2004) described wide-ranging reforms to initial teacher training throughout Further Education (including work-based learning) that were to be introduced in September 2007 (Department for Innovation, Universities and Skills, 2007). The 2006 White Paper entitled 'Further Education: Raising Skills, Improving Life Chances' (Department for Education and Skills, 2006) supplemented 'Equipping our Teachers for the Future' (Department for Education and Skills, 2004), and envisioned a teacher training system equipped to develop 'expert', 'qualified' and 'skilled' teachers prepared to support greater learner achievement.

The Further Education Teachers' Qualifications (England) Regulations 2007 (Department for Innovation, Universities and Skills, 2007a) provided insight into the new teacher training qualifications; this explained that all teachers had to attain qualifications, the level depending on role and degree of teaching responsibility. Once the required level was obtained the teacher had achieved 'Professional Recognition'. The 2007 Regulations (Department for Innovation, Universities and Skills, 2007a) also stipulated that all teachers working in the Further Education sector must be registered with the Institute for Learning and they must maintain a 'licence to practice' through evidence of continuing professional development. The amount of continuing professional development that a teacher needed to engage in (and reflect on) was dependent upon time spent teaching (Department for Innovation, Universities and Skills, 2007; 2007a) but teachers needed to display development in both vocational and teaching practice toward a 'dual-professionalism' (Institute for Learning, 2009). In essence, these changes might be construed as trying to close the vocational-academic divide to give parity of professional status.

After 'Professional Recognition' was obtained, and if the licence to practice had been maintained with the Institute for Learning, teachers then needed to gain Qualified Teacher Learning and Skills status (QTLS) or Associate Teacher Learning and Skill

status (ATLS) i.e. 'Professional Formation' (Institute for Learning, 2013), with the Institute for Learning, dependent upon level of initial teacher training qualification obtained and responsibility. The Department for Innovation, Universities and Skills (2007; 2007a) dictated that Professional Recognition plus Professional Formation must be achieved in five years of appointment or the teacher would be deemed unfit to practice.

In 2012, Department for Business, Innovation and Skills (2012) examined the effect of these changes. Although they express many positive impacts of regulation the present government, after consultation (Department for Business, Innovation and Skills, 2012a), decided to revoke The Further Education Teachers' Qualifications (England) Regulations 2007 (Department for Innovation, Universities and Skills, 2007) and deregulate the Further Education sector, abandoning mandatory initial teacher training qualifications and continuing professional development. The Institute for Learning is now closed. Although the recently established Education and Training Foundation (2015) continues much work the Institute for Learning started (e.g. Professional Formation), membership is not mandatory.

The government asked the Learning and Skills Improvement Service (LSIS) (2012) to develop new initial teacher training qualifications (e.g. Learning and Skills Improvement Service, 2013b; 2013c) but these are not obligatory; it is now left to the discretion of employers to decide whether their staff should undertake these qualifications, and if so, at which level (Learning and Skills Improvement Service, 2013; 2013a). If management in Further Education decide that this is not the most effective way to develop their teachers, what teachers should learn and how this might be accomplished will be left to employer discretion. The government's draft deregulation bill (TSO, 2013), revoking regulation (Department for Innovation, Universities and Skills, 2007a) came into effect in autumn 2013 (Institute for Learning, 2013a).

The Director of our college has reiterated commitment to full initial teacher training post-deregulation; since deregulation however, very little formal continuing

professional development of teaching practice has actually been undertaken. Although commitment to full initial teacher training effectively helps me retain my job, my research nonetheless questions whether full initial teacher training is the most effective means of professional development going forward: some of the teachers who work in our college are resistant to initial teacher training and continuing professional development through workshop delivery at the best of times. My research develops a novel means of construction teacher professional development in my own place of work. Given the high levels of teacher engagement it has established, I believe my research builds a very sound case for a new means of construction teacher professional development. My research does not call for the end of regulated teacher training qualifications; instead, it provides evidence suggesting the usefulness of a coherent and planned approach to professional development, in terms of my own emerging criteria, based on the principles of theories of situated cognition.

The need to develop critically reflective and reflexive practice

The notion of “reflective teaching has become a slogan, disguising numerous practices and offering a variety of idealised models for the training of teachers” (Calderhead, 1989, p.46) and the situation is further muddled as the concepts of reflective and reflexive practice are often used synonymously, even though they differ (Beauchamp, 2006; Ingram, 2014; Thompson and Pascal, 2012). Given this ambiguity, I will now consider differing conceptions of reflectivity and reflexivity, as proposed by the most prominent theorists working in this area. This will enable me to examine the relationship between the concepts of reflectivity and reflexivity and what it means to be *critically* reflective and reflexive from a new perspective.

Reflective practice

The drive to develop 'reflective' teachers is not new; it has been an explicit goal of UK initial teacher training for over thirty years (Collin *et al*, 2013; Richardson, 1990), and Dewey (1991) argued this same position over eighty years ago. Dewey (1991, p.6) defined 'Reflection' as, "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends". Here, Dewey (1991) refers to logical or analytical reflection in relation to a real problem, a "conscious rational search for a solution" (Gilroy, 1993, p.125), which can be understood as a tangible step on from impulsive actions (Dewey, 1991) and every day (Bruster and Peterson, 2013; Gilroy, 1993), or uncritical (Dewey, 1991) thinking. From Dewey's (1991) perspective, authentic reflection cannot be mandated by authority but is instead self-motivated, self-conscious, rational and innovative; it is a process where new knowledge is incorporated into understanding, informing and often contesting practice (Thompson and Pascal, 2012).

In contrast to Dewey (1991), Schön (1983; 1987; 1992) emphasises the notion of the reflective practitioner, reflecting in and on action to develop self-understanding and professional practice. To Schön, reflection is an interactive and interpretative process, where analysis can be used to solve problems in a tailored approach involving professional 'artistry' rather than a 'one size fits all' procedure, his work being a critique of positivist technical rationality (Schön, 1983; 1987; 1992; Thompson and Pascal, 2012). Building on Dewey (1991), Schön believes professionals learn from experience actively, building knowledge, which is often tacit (Schön, 1983; 1987), in a dialectical process between knowing and doing, suggesting an alternative non-linear relationship between theory and practice (Bruster and Peterson, 2013; Thompson and Pascal, 2012). Schön's work has been criticised by a number of respected scholars, including Gilroy (1993), on epistemological grounds, for conflating reflection in action and on action (Eraut, 1995), for failing to account for reflection-for-action i.e. fore-thought/ planning (Killion and Todnem, 1991; Thompson and Pascal, 2012), and for ignoring how time affects

the reflective process (Eraut, 1994). Thompson and Pascal (2012) also criticise Schön (1983; 1987; 1992) for focusing too closely on individual experience and ignoring social and emotional contexts. This is noteworthy, as this reflects the distinction between cognitive and social models of learning, which I analyse, along with the role of emotion in learning, in Chapter 2.

Critical reflectivity and reflexivity, praxis and the introspective andragogue

Work associated with the Frankfurt School, such as Carr and Kemmis (1986), Kemmis (2007) and Kemmis and Wilkinson (1998), provides a different interpretation of what it means to be reflective. To Kemmis (2007), being 'critical' means to act against irrationality and not positively toward a predetermined view; and so critical reflection supports the evolution of practice, moving practice from routine habitual action toward "informed, committed action of praxis" (Carr and Kemmis, 1986, p.190). Kemmis (2007, p.130) defines praxis as "right conduct in response to a particular situation at a particular time, informed by the agent's knowledge and by recourse to relevant theory and traditions". This bespeaks the difference between simply owning and using a set of teaching skills across-the-board and using knowledge to adapt and shape strategies to work successfully in unique situations (Myers, 2012). This leads to a "prudent understanding of what should be done in practical situations" (Carr and Kemmis, 1986, p.132) or *phronesis*. Advocates of this perspective (e.g. Carr and Kemmis, 1986; Kemmis, 2007; Kemmis and Wilkinson, 1998) believe we do not always consider our own habitual practice, and so our actions, which we have not reflected upon, can conflict with our own established values and beliefs (Cunliffe, 2009). Chapter 3 (starting page 71), includes an examination of the work of prominent critical theorists such as Habermas (1971) and Kemmis (2007), who contend individuals cannot develop critical reflectivity and reflexivity alone, but only through communicative discourse with others. This supports the premise that teachers only develop through a communal process, not independently, as Schön (1983; 1987; 1992) maintains.

To be critical then, means to reflect on practice, in relation to existing personal aims and values (Carr and Kemmis, 1986; Thompson and Pascal, 2012) but these are often distorted by ideology (Carr and Kemmis, 1986). Thompson and Pascal (2012) argue that critical reflexive practice is a dialectical process of self-analysis, looking back to reflect over whether our actions are consistent with our own aims, values and knowledge base; and from this deconstructionist perspective (Cunliffe, 2009), “reflexivity is a key part of making sure that reflective practice is *critically* reflective practice” (Thompson and Pascal, 2012, p.319).

Carr and Kemmis (1986) and Kemmis and Wilkinson (1998) believe critical reflective and reflexive practice can emancipate us from unsatisfactory and/ or unproductive working practices, making way for a more critical praxis (Carr and Kemmis, 1986). Thompson and Pascal (2012) believe there are two interacting dimensions of criticality: depth and breadth. Depth refers to looking under the surface of the situation, at values and feelings, while breadth pertains to reflecting on the wider social context such as power relations, discrimination and oppression. “For professional practice to be emancipatory”, Thompson and Pascal tell us, “it needs to be genuinely critical in both senses of the term – in depth and breadth” (2012, p.322).

Ingram (2014) provides a strong argument, developing my understanding of the concepts of reflexivity and reflectivity. He maintains they belong to the same taxonomy; however, while reflection is epistemic, as it is used to construct and apply knowledge toward praxis, reflexivity is ontological, providing capacity for abstraction. To be ‘reflexible’ (Ingram, 2014) means to respond intuitively to an event because it feels like the right thing to do: in line with ‘gut-feeling’; identity. The ‘true’ teacher (the ‘Reflexible Practitioner’/ the ‘Introspective Pedagogue’, or, given the context of my research, the ‘introspective andragogue’) can not only critically reflect on practice but also react instinctively and (re-)flexibly to “the ambiguities and contradictions of the teaching context and the sheer complexity of the teaching-learning act” (ibid. p.103). Ingram argues that ‘critical introspection’ is a meta-reflective activity which

incorporates reflection and reflexion, enabling tacit awareness that is not necessarily possible to recover, or to articulate, through reflection alone.

Regardless of what the political landscape might look like, I believe my overriding responsibility as a teacher educator is to develop my students into instinctive and flexible introspective (Ingram, 2014) teachers who can critically reflect on practice. I hope this will promote critical praxis (Carr and Kemmis, 1986), supporting new teachers learning how to teach (Collin *et al*, 2013; Myers, 2012; Thompson and Pascal, 2012).

From this position, I question whether the approach of the current British government, inaugurated by the former Education Secretary, the Right Honourable Michael Gove MP (Gove, 2012), will support (or, indeed, aims to support) the development of critically reflective and reflexive teachers, in free schools, nationally. Gove (2012) calls for more teachers to be trained 'on-the-job', rather than through regulated qualification, and while my research is all about 'on-the-job' training, it calls for critical reflectivity and reflexivity, suggesting this can only be developed and planned for through a coherent and consistent approach, in this case an approach based on the principles and theories of situated cognition. Gove's (2012) is an atheoretical approach, insisting partnerships between strong and weaker schools will (somehow) inevitably improve weaker practice; my work is more in line with the work of Štech (2008), analysed in chapter 2, than Gove's (2012) agenda.

Conclusion

In this introductory chapter, I have explored my role as a teacher educator, in relation to my own personal background and experiences, and the culturally, socially and historically situated circumstances of construction teachers in the college where we work. I have considered the vocational-academic divide, which provides food for thought on how this rift may still impact upon construction teachers' sense of self, in

relation to their own role, and others of more 'academic' standing, both in the college where we work and in general. It is difficult to comment, from my own professed position of 'outsider inside' (Gordon, 2010), on the value construction teachers place on my role and hence, on my own usefulness. From my own experiences, I believe some construction teachers value my role (and me) more than others. The developments (and inconsistencies) that have taken place and shaped the wider UK political and educational landscapes over the past decade or so have probably not helped bolster construction teachers' opinions of 'academia', yet moving forward my research may help bridge the vocational-academic divide, in my particular sphere of operations. My research offers teacher educators and construction teachers, in my place of work, a possible means to work together for the common good of learners striving to advance in the UK construction industry.

Taking a broader perspective, my research is of practical interest to readers with different backgrounds and experiences, not associated with the college where I work. It allows others to consider how they can transfer the conceptual tools I have used in my research, to their own contexts, and in this way provides a valuable contribution to knowledge. I have demonstrated that theories of situated cognition can be successfully applied in a coherent and consistent approach to plan for learning in a vocational teaching and learning context. My work is generalisable in the sense that others can learn from what I have achieved here.

In this chapter, I explored what it means to be reflective and how this differs to being critically reflective and reflexive. Although the influence of the seminal works of Dewey (1991) and Schön (1983; 1987; 1992) should not be underestimated, my own personal experiences have led me to support the conception of critical reflective and reflexive practice, as offered (cf. Štech (2008) and Gove (2012)) by Ingram (2014), moving toward critical praxis (Carr and Kemmis, 1986; Kemmis, 2007; Kemmis and Wilkinson, 1998). A major reason why I engage in my research is because it provides a vehicle to develop my learner's (and my own) abilities to critically reflect on practice, and to work 'reflexibly' toward critical praxis.

Throughout this chapter, I have felt compelled to discuss many culturally, socially and historically bound contexts and practices. Not only did this include my own, but also those of the construction teachers working in our college and those relating to the vocational-academic divide and UK professionalization and deregulation. Quite simply, culture, society and history could not be ignored. It is interesting to note, though, that when discussion is focused on conceptions of reflection and reflexivity (e.g. Dewey, 1991; Schön, 1983; 1987; 1992), it remains at the level of individual experience, leaving unexamined the social worlds and emotional worlds that contain and accompany it (Thompson and Pascal, 2012). In Chapter 2, this is the central theme.

In this introductory chapter, I have considered the developments that have occurred in the wider UK political and educational landscapes and what I would like to achieve as a teacher educator. Deregulation has freed me to consider a new means of construction teacher professional development; an approach that promotes critical reflexivity and reflectivity. In the following introduction, I sketch the discussions that constitute Chapter 2, enabling me to develop my new approach.

Chapter 2: Literature review

Introduction

In this chapter I explain why I believe those responsible for the development of Further Education teachers accept new teachers can become great teachers autonomously, through intellect alone. I move on to review literature of theories of situated cognition which provides me with the foundation to promote a more effective means of construction teacher development practice, stimulating critical reflexivity and reflectivity. I show how my understanding is augmented by my developing appreciation of socio-cultural theory (e.g. Vygotsky, 1978; 1994), cultural-historical activity theory (e.g. Engeström, 1999a; 1999b; Lektorsky, 1999), the role of emotion in learning (e.g. Mahn and John-Steiner, 2002) and identity development (e.g. Gee, 2000; McDermott, 1993; Winbourne and Watson, 1998).

Work and study practices of UK Further Education teachers

Teachers within UK Further Education are fundamentally concerned with 'andragogy', a term defined by Knowles (1980, p.43) as "the art and science of helping adults learn". While the social character of teaching is reflected in the etymology of this term, as it accurately translates as "to lead the man" (Knowles, 1980; Zmeyov, 1998), contemporary Further Education teachers do interact on an actual, digital and an increasingly virtual basis with learners; despite differences in approach, space and time, context, quantity and quality of interface teaching inevitably necessitates a degree of interaction between a teacher and student(s). Paradoxically, much actual modern-day Further Education teacher activity is undertaken in relative or outright isolation (Beck and Kosnik, 2001; Thiessen, 2001; Wubbels, 2007). Although Further Education teachers will interact with each other and a wide array of stakeholders who might be well positioned to support the

teachers' practice, teachers often work and study autonomously (Viskovic and Robson, 2001).

The following examples are not intended to constitute an exhaustive catalogue but are indicative of the degree to which solitary working arrangements permeate Further Education teaching today:

1. It is quite normal for qualified and unqualified Further Education teachers to teach independently, away from collegial support, as team teaching is either financially non-viable (Clow and Dawn, 2007) or management consider it unnecessary (Steward, 2006; Thiessen, 2001).

2. It is customary for Further Education teachers to design and produce their own artifacts for teaching (e.g. schemes of work, lesson plans and teaching resources) (Clow and Dawn, 2007; Steward, 2006) and initial teacher training will necessitate it to assert authenticity in assessment.

3. Those undertaking initial teacher training qualifications are currently required to demonstrate learning through the successful completion of written and practically-based assignments:
 - a) Although experience garnered in association will indubitably affect thinking (Vygotsky, 1994; Winbourne and Watson, 1998), teacher trainers, for purposes of authenticity, will demand students complete written tasks independently.

 - b) While a very limited amount of peer support is obtained during practical tasks, such as Microteach sessions, they are normally completed alone (Clow and Dawn, 2007; Wubbels, 2007).

4. Further Education initial teacher training provides tutor support during observation of the teaching and learning process but the amount received is constrained by time. The majority of tutors' time will be spent assessing with only a modicum devoted to mutual reflection with the student (Daines *et al*, 2006).

Although Further Education organisations may develop coaching, mentoring and peer-networking programmes to support and develop teachers, as part of the induction or continuing professional development process these are often found wanting in scope and utility (Bubb and Earley, 2007; Institute for Learning, 2010; 2011; Literacy Study Group, 2010; Rhodes *et al*, 2004; Thomas *et al*, 1998).

Formal continuing professional development (e.g. teacher-led workshops) of teaching practice offers the chance for collaborative development but often does not and is rarely effective (Institute for Learning, 2010; 2011; O'Sullivan, 2007; Rock and Wilson, 2005), while informal continuing professional development, for instance merely talking with colleagues, is often considered more useful (Institute for Learning, 2010; 2011; Putnam and Borko, 2000). Although formal workshops might involve instances of teacher collaboration, these are often held outside the working environment so teachers would rarely, if ever, attend with all colleagues. Such workshops inevitably focus on the development of the individual teacher and not the collective abilities of teachers in the organisation, as a group (Knight, 2002; Thomas *et al*, 1998).

Like Nelson and Slavit (2008), I conclude that if Further Education teachers do spend the majority of their time working in relative isolation and studying alone, any reflection in and on action (Schön, 1983) is likely to be solitary, and critical reflective and reflexive practice will regularly reduce to instances of insular aptitude. Although many (Banks and Shelton Mayes, 2001; Bubb, 2005; Rhodes *et al*, 2004; Wallace, 2007) assert the value of collaboration in teacher development practice, and have done since at least the nineteen seventies (Lortie, 1975), many UK-based Further Education teachers, in reality, still have little or no opportunity to reflect

collaboratively with their peers, solely relying on their own intellect to propel their own practice and development forward (Enfield and Stasz, 2011; Little, 1992; Thiessen, 2001; Wubbels, 2007). In a system characterised by solitary working arrangements, it is difficult to fathom how values become ingrained (Lave and Wenger, 1991; Viskovic and Robson, 2001) or how a teacher's sense of self can become isomorphic with a teacher identity (Woods and Jeffrey, 2002): essentially; it is difficult to assert how great teachers are made in process (Lave and Wenger, 1991; Lave, 1996; Wenger, 1998). This section will now consider theory enlightening understanding further.

My interpretation of the role of theory in teacher education, influencing my work

In light of the solitary nature of many aspects of teaching and initial teacher training and development in Further Education, considered in the introduction to this chapter, I assume many educators (in the field of adult education specifically) have consciously accepted the Western (Lave, 1988) orthodox intellectualist position that posits learning and problem solving occur as a direct result of independent cognition. This cognitive theory of learning (or functionalist theory (Lave, 1997)) is supported by findings drawn through rigorous scientific control and enquiry; however, it is contended this approach is over reliant on observable phenomena. This casts doubt on the ecological validity of this theory and inferences which stem from this approach (Lave, 1988; Lave *et al*, 1984; Morrow and Brown, 1994).

Despite these doubts, the radical constructivist position (Boaler, 2000a; Lerman, 1996), which seems to underpin much teacher development practice, embraces the reductionist conclusions of cognitive psychology. Radical constructivism proposes abstract propositional knowledge can be internalised (Adler, 1998) through independent cognition; this develops the individual's conceptual mental structures, scaffolding knowledge in a constructed fashion (Lave and Wenger, 1991). Proponents of this perspective believe the world is subjectively constructed (Lerman,

1996), which affords learning transfer i.e. the ability to use this information in alternative contexts. This perspective suggests that learning in the teacher training classroom can be transferred to the learners' workplace – and in the context of this research, this specifically relates to my students' own classroom and vocational workshops – in order to promote learning themselves.

In contrast to cognitive theories, theories of situated cognition (e.g. Lave, 1988; 1996; Lave and Wenger, 1991), propose society and culture possess a central and fundamental role in learning. The fundamental premise of all theories of situated cognition is learning has a quintessentially social character; it cannot occur autonomously (Lave, 1996; Wenger, 1998; Winbourne and Watson, 1998; Winbourne, 2008). From this 'situative perspective' (Putnam and Borko, 2000), knowledge is not constructed in the heads of individuals and then related to the outside world but is instead found in social relations and so knowledge and the physical world and the context in which it is produced are inseparable (Brown *et al*, 1989; Lave, 1988).

Lave (1996, p.149) rejects cognitive theories on a personal level, as they “reduce learning to individual mental capacity/ activity and in the last instance blame marginalized people for being marginal... Such theories are deeply concerned with individual differences, with notions of better or worse, more and less learning, and with comparison of these things across groups-of-individuals”. She goes on to say, “The logic that makes success exceptional but nonetheless characterizes lack of success as not normal won't do. It reflects and contributes to a politics by which disinherited and disenfranchised individuals, whether taken one at a time or in masses, are identified as *dis*-abled, and thereby made responsible for their “plight”” (Lave, 1996, p.149).

Peter Winbourne (2014, p.23) certainly shares this same perspective, calling the individualism of constructivism, “starchy” and “bourgeois”. Peter is my teacher and supervisor, and the explicit sharing of such perspectives has underpinned my EdD programme (Winbourne, 2014). During the course of my EdD, I have adopted such

a perspective myself; I have found and interpreted this body of work through my own work. Like Winbourne (2014) and Lave (1996), I now take a situated perspective, as I believe it is the right thing to do. It is in tune with who I am; my own identity.

Consequently, I do not blame my students if they place little value on the academic pursuits they are expected to engage in with me; given my new understanding of the vocational–academic divide (page 9), this should be expected. Nor do I blame them if they fail to apply, or make connections between, the theory and understanding I relate in my class to their own teaching. The situative perspective makes me question my own understanding of learning and how I can support my learners most effectively.

This section will now analyse theories of situated cognition in the order they were originally proposed, critically evaluating them with literature that bolsters and opposes positions. While this will afford a thorough examination of how theories of situated cognition have developed over time it will simultaneously support my own understanding of how this literature can inform my teacher development practice.

Theories of situated cognition and teacher development

Although the inspiration for theories of situated cognition is most easily traced back to the early twentieth century Soviet psychology of Luria (1976) and Vygotsky (1978), as this work most famously accentuates the social and historical origins of mental processes (Yasnitsky, 2010), the anthropological studies of Lave *et al* (1984), Lave (1988; 1991) and Lave and Wenger (1991) have had a huge impact on subsequent theories of situated cognition, while other early work (e.g. Carraher *et al*, 1985; Scribner and Cole, 1973) provided the foundations and supported the findings of this research. Others, such as Boaler (1993a; 1993b; 1998), Lerman (1998a; 1998b) and Winbourne (2008) have developed understanding further.

Learning in formal and informal contexts

Jean Lave started to formulate her ideas during ethnographic research among Vai and Gola apprentice tailors in Liberia (1973-78) (Lave, 1977; 1988) and subsequent work on the Adult Math Skills Project (AMP), USA (Lave *et al*, 1984). Lave *et al* (1984) thought it essential to study cognition in everyday contexts, outside of the laboratory, as the experimental positivistic approach was prefabricated and could not account for the complexity of mental processes, located in society, culture and history. This work built on Scribner and Cole's (1973) earlier dualistic theory, which suggested learning in school (i.e. 'formal' and effectively bereft-of-context learning), differed from learning in other 'informal' contexts such as the family unit. Scribner and Cole (1973) propose learning in formal contexts provides a greater understanding and the ability to produce knowledge, which affords learning transfer between differing contexts, while in contrast, learning in context-bound arenas, can only reproduce existing practice. In support of Scribner and Cole (1973; 1981) and Cole (1996), Štech (2008) believes learning transfer is only possible from formal context as formal learning promotes reflection and consequent abstract thought. This not only propels the development of higher psychological processes but acts as a bridge across contexts, "open[ing] new horizons in other domains of knowledge" (Štech, 2008, p.21). Štech (2008) believes informal settings provide context and so abstraction does not need to occur; learning is only useful in the informal setting and therefore bridges to other contexts are not necessary. Although Štech (2008) acknowledges that transfer is most evident in mathematics education, as mathematics, above all other subjects relies most heavily on abstract symbol use, he believes this accurate to varying degree in all formal learning.

Although Štech (2008) suggests the withdrawal of teacher training qualifications post-deregulation misguided, other evidence contradicts this position. Lave (1977; 1988) and Lave *et al* (1984) conclude a noticeable difference exists between the ways 'dilemma-driven' (Lave, 1997) arithmetic is learnt and used by JPFs (just plain folks) in every-day informal settings, such as the grocery store (Lave, 1988) or weight watchers (Lave, 1997), as compared to students in traditional formal setting.

She found that although prescribed, more rules-based modes of arithmetic had been learnt and used in school (bereft of 'authentic' (Brown *et al*, 1989) context (Lerman, 1998a)), individuals were using alternative, more expedient, idiosyncratic and inventive techniques in everyday practice, in context; learning had not transferred from formal context (Lave, 1997). The anthropological work of Carraher *et al* (1985) supports these conclusions from studying market vendor children's use of mathematics (in informal setting) and formal school system in Brazil. Lave (1997) and Carraher *et al* (1985) both provide evidence inconsistent with cognitivist accounts of learning and commend professional development in context.

The work of Lave (1988) and Carraher *et al* (1985) is heavily criticised by Anderson *et al* (1996). Anderson *et al* (1996) believe the situations in Lave (1988) and Carraher *et al* (1985) are too specific, their findings are not generalisable and the evidence offers no palpable substance. In contrast, Anderson *et al* (1996) argue learning is only sometimes context dependent; they believe the more context-bound the material studied, the less likely transfer is to occur and vice versa. From the cognitive perspective of Anderson *et al* (1996) practice, attention, engagement and motivation are key determinants in whether transfer will follow. They seem to agree with Štech (2008) that abstraction in formal setting can promote transfer between contexts but believe abstract thought is only effective when supported with concrete illustrative examples. In this chapter, and in contrast to this argument proposed by Anderson *et al* (1996), I will go on to discuss communities of practice, where it is possible to imagine that abstraction in formal context can become the constitutive activity of a community of practice. As this chapter unfolds, the reader will appreciate that abstraction has a very strong potential to become a recognised, visible and practical part of the teacher trainer's armoury.

Greeno (1996) disagrees with Anderson *et al* (1996), suggesting their critique is detrimentally rooted to the presuppositions of the cognitive tradition: their blinkered approach only narrowly attends to the level of the individual and individual mental process, rather than the wider situative conception, which views the individual as only one conceptual unit within the overarching social system – the primary unit of

analysis. This mismatch of “different levels of analytical focus” (Greeno, 1996, p.9) causes a problem for Anderson *et al* (1996), as they fail to consider how the environment and individual interact, and their ensuing lines of questioning effectively debunk their critique.

In their 1984 paper, Lave *et al* (1984) describe ‘setting’ as the subjective experience of the ‘arena’ (which itself can be understood as the objective and obdurate physical, social, economic and political characteristics of the setting, outside of the individuals’ influence); context is seen as the relationship between arena and setting. Results from the AMP, led Lave *et al* (1984) and Lave (1988) to conclude that problem solving involves a dialectical relationship between individual activity and the specific setting for the activity. Lave (1988) stated certain properties of a setting have a higher propensity than others to influence problem solving activity, and so we use them as calculating devices in the dialectically driven decision making process. According to Lave *et al* (1984) and Lave (1988), this helps explain why problem solving activity varies between settings and why learning transfer is so problematic: when an individual learns within an educational arena, it occurs in dialectic relation to the settings of that specific arena.

The fundamental epistemological assumption of this position is affirmed by Vygotsky’s (1994) concept of ‘perezhivanie’, which hypothesizes environments vary in terms of how conducive to development they are, where the environment is considered the source and not context of development. However, Lave (1988) goes on to state that when the individual moves outside of the arena, the setting and its given properties are no longer present and so learning becomes fragile (Miller and Gildea, 1987). In essence, Lave (1988) suggests, that if student teachers cannot transfer learning from the formal teacher training classroom to their own informal authentic arenas, they must be learning *whatever they are learning* about teaching and how to teach outside of the teacher training classroom, in their own specific settings. The results from my research suggest learning will occur regardless of formality of context; they propose that when people engage with abstraction in collaborative activity, in any context, the process can lead to learning, in and

between any contexts. In one sense, my results support Štech (2008) as they suggest abstraction associated with formal context can promote great levels of learning. However, I now believe communities of practice can originate in any context and persist to traverse contexts (Winbourne, 2008) but this solely depends on how conducive to learning the social environment is (Vygotsky, 1994).

The argument proposed directly above by Lave (1988), seriously questions the usefulness of current teacher education and development practice, as it suggests teacher education has only ever produced students of teacher education; and therefore trainee teachers do not become teachers through the formal education process alone (Lave, 1996; Lerman, 1998a). Combining this understanding with the conclusions of Štech (2008), my research supports an adaptable approach to teacher training, which exploits the possible benefits of both formal and informal setting (Carlock undated cited Lave, 1996) on the condition that content specifically (and therefore flexibly) supports learner need, where need has been democratically negotiated and decided upon by the learners themselves and relates directly to developing their own authentic practice. Such a process brings theory to life, as it makes it directly useful to learners; it is the teacher trainers' role to make it accessible (or visible (Lave and Wenger, 1991)).

Brown *et al* (1989) state that “when authentic activities are transferred to the classroom, their context is inevitably transmuted; they become classroom tasks and part of the school culture” (Brown *et al*, 1989, p.34), in essence they become ersatz or hybrid activities (Adler, 1998; Putnam and Borko, 2000). Brown *et al* (1989) and Lave (1997) propose teachers should therefore engage students in “new cognitive apprenticeships”, which acculturate students into the real world practice (including language use (Lave and Wenger, 1991)) of the target community, rather than the abstract world of classroom practice; and Putnam and Borko (2000) agree.

In my research, I attempt to reap the benefits associated with formal (Štech, 2008) and informal (Lave, 1988) educational contexts. While co-participants are given the freedom to work together and acculturate into the real world practice and language

of the authentic target community, I introduce into their activity theory and understanding from the formal world of teacher training. I do not engage my co-participants in the formal physical setting of the teacher training classroom per se, as Štech (2008) would suggest, but I instead engage them in formal learning associated with the formal context, in this informal setting. The data from my research (see chapter 4, page 101 onward) suggest that my approach, in the process, encourages development of a professional teacher identity and much improved teaching practice. This suggests the process of engaging directly with abstraction and abstract symbol use, in this informal context, can develop reflection and consequently abstract thought (supporting Štech (2008)), rendering the physical act of working in a formal setting of less importance (challenging Štech (2008)). Findings from my research suggest learning can occur from abstracting. However, my results suggest that abstracting in an informal context can provide just as good a bridge across contexts as does abstracting in formal context. It is how students engage with abstracting, led by the teacher, that really matters, not where the process is physically located or the degree of formality of the educational context.

While Anderson *et al* (1996) would most definitely disagree with this approach I wonder whether Štech (2008) would too. Although Anderson *et al* (1996) do not explicitly talk about teachers, their work could be taken to imply that teachers should develop teaching skills and understanding in formal teacher education settings only, away from their own classroom, and then use these skills in their own classrooms at later date; thus enabling the trainee to cognitively attend to teaching outside of the practical teaching environment, simplifying the learning process as “fewer cognitive resources will then be required for performance” (Anderson *et al*, 1996, p.9). Greeno (1996) argues that Anderson *et al* (1996) are far too preoccupied with skills acquisition on this point, and again, that the core arguments of their critique are constrained by their cognitivist epistemologies. Instead, Greeno (1996) recommends students engage in authentic activities in context, rather than during ersatz activity, further suggesting I consider “what kinds of complex, social activities to arrange, for which aspects of participation, and in which sequence to use them” (Greeno, 1996, p.10).

Although the arguments of Anderson *et al* (1996) may well be unsound (Greeno, 1996) the argument presented by Štech (2008) reaches a greater level of sophistication. Štech (2008) believes effectively mediated learning in formal contexts promotes the (citing Vygotsky (1978)) ‘intellectualisation’ of mental functions, with an increased awareness of how the subject knowledge can be pragmatically applied across different contexts. Štech (2008) argues that reflection and abstract deliberation, on subject matter, in piecemeal fashion, can lead to greater learning and higher order generalisation; a great appreciation of the whole subject matter, where we move from thinking about the subject matter toward higher order representations of subject matter. As we learn our mental functions and structures develop, which develops our whole personality, our identity. Many others, including Lave (1996), Watson and Winbourne (1998) and Winbourne (2008) agree learning in formally mediated practice can be understood as a process of becoming.

- *Motivation-demotivation and learning transfer*

In harmony with Lave (1988), Boaler (1993a; 1993b) agrees learning is dependent upon activity and setting but argues learning can be transferred between different contexts, as long as students engage with the material to be learnt from a personally relevant and meaningful perspective, in tune with their own real life demands. According to Boaler (1993a; 1993b), learning only attains personal relevance when students are allowed the opportunity to interact with the object of learning in activity directed by the learners themselves. Supporters of such an ‘open, process-based’ pedagogy believe teachers must design classroom activities so learners can make their “own decisions, plan their own routes through tasks, choose methods, and apply their [mathematical] knowledge” (Boaler, 1998, p.42). This then provides impetus and motivation for learning (Boaler, 1993a; 1993b) and a conceptual understanding, enabling transfer between contexts (Boaler, 1998).

The effect of motivation on learning, albeit from a slightly different perspective, is reflected in Lerman’s (1998a) distinction between voluntary and non-voluntary participation and this supports my analysis of Boaler (1993a; 1993b; 1998) in relation

to my own context. Lerman (1998a) argues that students are more likely to learn when they engage on a voluntary basis (e.g. in “working practices, societies and cultural groups” (Lerman, 1998a, p.34)) and are not coerced (e.g. students in compulsory school contexts) but I believe this dichotomy oversimplifies many social arrangements. Each of my students has made a conscious decision to work for our organisation but the degree of choice that some of my students have in this decision making process is questionable. Experience has taught me that a minority of my students leave trade-related vocational practice as their bodies can no longer cope with the physical strains of construction practice yet they still need an income and perceive teaching as their only realistic source. Extrinsic motivational factors such as money commonly compel people to undertake jobs they do not want but they still accept as they perceive no alternative. In the context of construction education, obligatory qualifications associated with the teaching role might only compound feelings of coercion and this seems a far cry from the freedom Lerman (1998a) associates with voluntary social arrangements. It is possible that some of my students feel just as compelled to undertake initial teacher training and development as students of mathematics in compulsory education. In light of this, Boaler (1993a; 1993b; 1998) would surely urge me to consider individual interpretation of contexts, allowing students to interact with material in a personally meaningful and engaging way. Contemporary teacher educators do often adopt this technique (e.g. through asking learners to compile and employ schemes of work and session plans) but not to the extent that Boaler (1998) does. Although this offers good food for thought, Boaler (2000b) moved on to adapt her theories, reappraising her earlier work (Boaler, 1993a; 1993b; 1998) in light of the theory of legitimate peripheral participation in communities of practice (Lave and Wenger, 1991).

Legitimate peripheral participation in communities of practice

Lave and Wenger’s (1991) theory of Legitimate peripheral participation builds on Lave’s (1977; 1988) earlier research yet departs from accentuating difference between formal and informal contexts. To Lave and Wenger (1991), learning and identity are inseparable and are conjointly promoted and transmuted through activity

and experience in communities of practice, in context. A community of practice is understood as a social history of learning, with its own specific language, symbols, artifacts and cultures that permit the re-enactment and advancement of practice across time; necessitating the mutual engagement of participants (Wenger, 1998). Any newcomer (novice or apprentice) to a community of practice can be in a position of legitimate peripheral participation and as an apprentice learns through practice their identity aligns toward full participation/ membership, in centripetal trajectory toward mastery i.e. expertise (as an 'old-timer') within the community.

As a note on favoured terminology, Winbourne and Watson (1998) reasonably suggest that the designations of 'apprentice' and 'master' should be considered preferable to the alternative appellations of 'novice' and 'expert', as the former invests social meaning rather than cognitive-psychological activity. In accordance with Winbourne and Watson (1998), this research will correspondingly adopt their chosen terminology but will use these terms interchangeably with the terms 'newcomer' and 'old-timer', as these seem to relate to social activity in context just as well.

In their 1984 paper, Lave *et al* (1984) merely mention that we move from apprentice to master within a given context, through a series of 'complex decision processes', so this clearly demarcates a considerable shift in perspective. Lave and Wenger's (1991) and Lave's (1996) 'social practice theory' or 'social theory of mind' (Adler, 1998) offers a far more radical interpretation than Lave *et al* (1984) and Lave (1988) as it suggests learning is a dimension of social practice and is always situated; there is no such thing as decontextualised knowledge.

At first this may seem a remarkable proposition but common sense does seem to substantiate this viewpoint. Wenger (1998) states that as human beings we engage in social pursuits together and our continued participation "tunes our relations with each other and with the world accordingly. In other words, we learn" (Wenger, 1998, p.45). Brown *et al* (1989) provide evidence that substantiates this position, arguing learning to use spoken language and learning to read and write is completely context

dependent. Brown *et al* (1989) cite Miller and Gildea (1987, p.32) who demonstrate children's word use is quite incoherent when devoid of context and learnt abstractly from the dictionary:

"Me and my parents correlate, because without them I wouldn't be here;

I was meticulous about falling off the cliff;

Mrs. Morrow stimulated the soup" (Miller and Gildea, 1987 cited Brown *et al*, 1989, p.32).

Brown *et al* (1989) suggest children can only learn how to use words appropriately, through interaction with others. I believe consideration of the 'zone of proximal development' helps explain why children's semantic errors, like those above, occurred. Vygotsky (1978; Meira and Lerman, 2001; Yasnitsky, 2010) never published a complete account of the zone of proximal development, and while subsequent interpretations may have distorted his original meaning (Yasnitsky, 2010; in press), Meira and Lerman (2001) encourage me to develop my own understanding. A good starting point is the much-cited definition (Meira and Lerman, 2001) that describes the zone of proximal development as,

"the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p.86).

According to Meira and Lerman (2001, p.3), it is rewarding to perceive this distance as "a sign-mediated, intersubjective [symbolic not physical] space", which can help analyse "how people become actors and communicators within any given activity or social space"; Holland *et al* (1998), Mahn and John-Steiner (2002), Meira and Lerman (2001) and Vygotsky (1934; 1978; 1994) support this position. This hypothesis develops the principles of Marxist dialectical and historical materialism to propose that our psychological development and environment determine each other,

in symbiosis; this arrangement might not always be mutually beneficial (Vygotsky, 1978). The development of higher psychological processes, our understanding of signs, including language and number systems, tangible and psychological tools and behaviour are all dependent upon how conducive to development others (John-Steiner and Mahn, 1996) or artifacts (Brown *et al*, 1993) (i.e. our environment) are. Our tool and sign use, will in turn, shape our own environment. Relating this specifically to language development, the zone of proximal development can help explain the improper syntax use in Miller and Gildea (1987 cited Brown *et al*, 1989): we commonly appropriate language through the support of more capable others (Holland *et al*, 1998; John-Steiner and Mahn, 1996) but in Brown *et al* (1989) capable others were missing i.e. the environment was unfavourable to development. Although artifacts can help us appropriate meaning (Brown *et al*, 1993), the dictionaries in Brown *et al* (1989) were not sufficiently conducive to the appropriation of meaning.

To Vygotsky (1978), the process of recurrent experience with language and behaviour is a situated interpsychological process, which leads to the intrapsychological process of internalisation, producing higher mental functioning, affording personal meaning i.e. new knowledge (John-Steiner and Mahn, 1996; Vygotsky, 1978). Internalisation is not a unidirectional process, where information is simply transferred for use in consciousness, but can be understood as the process, which forms the 'plane of consciousness', in activity (Leontyev, 2009). Internalisation continues until a critical level of capability is reached, when activity and meaning cannot be separated and are 'fossilised' (Holland *et al*, 1998). The theory of the zone of proximal development therefore explains how identity changes (Meira and Lerman, 2001) as we move toward mastery from a position of legitimate peripheral participation (Lave and Wenger, 1991): semiotic mediation not only organises how we will respond in any given situation but it transforms our identities in our quest for agency (Holland *et al*, 1998; John-Steiner and Mahn, 1996; Vygotsky, 1978). It would be difficult to account for how we would learn to adopt the behaviour, jargon and belief systems of any job role, without the chance to observe, experience and practice the culture and activity of members of any specific community in situ (Brown *et al*, 1989).

In order to consider this further, I believe it necessary to analyse Lave and Wenger's (1991) multifaceted theory in depth, and to consider how other work from within and outside of this tradition can develop understanding. Many aspects of Lave and Wenger's (1991) theory are fairly complex. To provide clarity, I address different aspects of their theory progressively, in subsections below.

- *The social distribution of learning*

In Lave and Wenger's (1991) theory, learning is distributed across the members of the community of practice and meaning and purpose of activity are negotiated among present and past members:

"Knowing is inherent in the growth and transformation of identities and it is located in relations among practitioners, their practice, the artifacts of that practice and the social organisation and political economy of communities of practice" (Lave and Wenger, 1991, p.122).

Participants within the community share a mutual understanding of the activity they are engaged in and what it means in relation to their lives and relations with others (Wenger, 1998). Lave (1996; 1997), Lave and Wenger (1991) and Wenger (1998) illustrate some very convincing examples of communities of practice where this is clearly evident, in many socially, culturally and historically diverse examples, from the West African practices of Vai and Gola tailors, Alcoholics Anonymous, Claims processors, Weight Watchers and Mexican Yucatan midwifery practice to Islamic legal practice in 19th-Century Cairo; and, although from a more cognitive perspective, Hutchin's (1993) work supports the idea that knowledge is distributed across a social system.

Lave and Wenger (1991) propose that although masters should be considered the locus of authority within a community of practice, masters will vary in the degree of authority they retain; and the division of labour between masters and those in legitimate peripheral participation can vary significantly. At an extreme, masters

might be contractually obligated to 'teach' those in the periphery but, 'teaching' does not necessarily promote learning; it is the legitimacy of the old-timers within the social organisation of the community that really counts (Lave, 1988; 1997; Lave and Wenger, 1991; Lave *et al*, 1984); and to support this, Lave and Wenger (1991) highlight that Yucatan midwifery practice involves no teaching practice at all. Lave and Wenger (1991) argue that all prerequisites for learning reside in the community of practice, not the masters, as masters are products of the community themselves and so learning can occur through interaction with masters or peers.

Opportunities to learn and learning are therefore dependent upon the social organisation of masters and those in legitimate peripheral participation, and on the "intricately patterned relations between practices, space, time, bodies, social relationships [and] life courses" (Lave, 1996, p.154). Participation will constantly renew relations so any given community is in a position of constant flux. Avis *et al* (2002, p.34) discuss how this might unexpectedly unfold in a formal educational context, stating, "Those who are formally positioned as teacher or learner may in the pedagogic encounter have their locations reversed". Unfolding opportunities for practice within this milieu create the potential learning (not teaching) curriculum, affording the learner resources for learning with personal contextualised meaning, rather than an imposed and personally restricting teaching curriculum (Adler, 1998; Lave and Wenger, 1991); attempts to impose a teaching curriculum merely stifle the possibilities of a learning curriculum (Wenger, 1998).

- *Social organisation, learning and the concept of transparency; invisibility and visibility*

In order to develop into a master, an apprentice needs access to "ongoing activity, old-timers, and other members of the community; and to information, resources, and opportunities for participation" (Lave and Wenger, 1991, p.101); and Winbourne (2008) supports this position. Lave and Wenger's (1991) concept of 'transparency' is fundamental to understanding how this process does or does not evolve.

Transparency pertains to freedom to access and manipulate the resources of the

community, with a developing understanding of the meaning attributed to the resources, how the community uses the resources (and this includes an understanding of the possibilities and parameters of the resources) and how the community is reflected in their design. Lave and Wenger (1991) argue that the social organisation of the community must be arranged favourably to such practice. If we have free access to use and manipulate resources in practice, and if we do understand their significance, we can state that the resources are invisible; or they have 'invisibility'. The concept of invisibility is symbiotically related to the concept of 'visibility' (which relates to the ability to access additional information) as they are mutually reciprocal yet conflicting. If access to an artifact is suppressed (or the request is ignored by others within the community of practice), the resource will remain opaque and this will alienate participants.

To help explain Lave and Wenger's (1991) concept of transparency, and in order to make it more accessible to teacher educators, I transpose Adler's (1998) analogy. Imagine a teacher trainer, using a text book in class as a resource for learning. The text book details Behaviourist learning theory. The teacher wants to promote an appreciation of Behaviourist principles and how these can inform contemporary Further Education teaching practice. In essence, the book is both highly visible, as it grants access to information and highly invisible as it makes learning theory visible. The book contains examples of eminent Behaviourists, their experiments, results and conclusions but the teacher struggles to promote how this understanding can be used in teaching practice, as the focus of the book is narrower than the teacher's perspective, who demands a much wider conception of Behaviourism than offered in the book. In this instance, "effective teaching (becoming a full participant) depends not only on the availability and use of a text book, but also knowledge of and insight into its history and inner workings, its possibilities and limits" (Adler, 1998, p.166). In this instance then, the teacher cannot interpret and integrate the artifact into classroom activity, and there is no visibility as additional information is unavailable to inform the teacher's understanding.

- *The role of language*

Lave and Wenger's (1991) concept of transparency leads me to believe that learning is very much dependent upon language use. According to Scribner and Cole's (1973) more reductionist perspective, language and instruction are used to convey meaning in order to promote learning but in Lave and Wenger's (1991) theory, the role of language in learning is very different. Learning involves acquiring the language of the specific target community of practice, and this even includes learning how silence is used within communication (Wenger, 1998). Language, in specialist discourse, is often transmitted through story and it is clearly possible to see this development in Alcoholics Anonymous members (Lave and Wenger, 1991; Wenger, 1998). Although it is possible to talk about communities of practice, from the outside, what is of real issue here is 'learning to talk' (Lave and Wenger, 1991) (or 'finding your voice' (Williams *et al*, 2008)) within the practice as this not only helps perpetuate "communal forms of memory and reflection" (Lave and Wenger, 1991, p.109) but also absorbs, focuses and supports attention toward elements of membership, essential for centripetal trajectory toward mastery.

- *Developing as a teacher within a multiplicity of communities of practice and the role of emotion*

Very much akin to Giddens's (1991) thesis on the trajectory of the self in modernity, and in relation to my own learners, Lave and Wenger (1991) believe the choices that my learners make (and according to Giddens's (1991) this is dependent on perceived risk) will guide their own trajectories through and within the various communities on offer. According to Wenger (1998; 2000) there are different types of bridge between communities of practice that can make a community visible and possibly accessible to the newcomer: 1) community members ('brokers', who can introduce the new community); 2) reified visible 'boundary objects' (such as the artifacts and language specific to the community of practice); and 3) 'boundary interactions' (Cobb *et al*, 2003; Wenger, 1998; 2000) relating to activities that members of different communities of practice experience and engage in together.

People will negotiate their orientation within and between communities of practice: between membership and non-membership and any feelings of accountability to a particular group will constitute 'who they are' (Lave and Wenger, 1991; Wenger, 1998), with non-membership moulding "our identities through our confrontation with the unfamiliar" (Wenger, 1998, p.153). This process not only helps us understand 'who we are' but just as essentially, 'who we are not' (Jenkins, 2008; Maclure, 2001). Learning and therefore identity can be understood to evolve as a product of our experiences within a multiplicity of interconnected and intersecting communities of practice (Winbourne and Watson, 1998; Winbourne, 2008), our 'nexus of multimembership' of these communities (Wenger, 1998); although boundaries can be reified with "explicit markers of membership, such as titles, dress, tattoos, degrees or initiation rites" (Wenger, 1998, p.104), these boundaries are far less established than Lave *et al* (1984) and Lave (1988) previously conceived. Our 'telos' i.e. direction of movement or change of learning through these communities of practice will be determined by our experiences within a multiplicity of communities of practice, promoting and developing our learning and identity and influencing the path we take as we progress (Winbourne and Watson, 1998; Wenger, 1998).

Consideration of Vygotsky's (1994) concept of 'perezhivanie', in relation to Winbourne and Watson's (1998) and Winbourne's (2008) notions of 'predisposition' and 'alignment' is useful here too, as it provides greater insight to the mechanisms that govern the course of trajectories. If I generalise conclusions from paedology (Vygotsky's (1978; 1994) context) and pedagogy (Winbourne and Watson's (1998) context) to andragogy (my context), then I might say that the degree to which a teacher is aligned to engage in practice/ activity, concerned with developing as a teacher, will depend upon his/ her past and current perezhivaniya. How predisposed he/ she currently is will depend in part on how aware he/ she currently is, which will depend on his/ her level of development (as a teacher) in relation to his/ her environment. The development of such alignment must also depend upon characteristics of the practice (a position supported by Avis *et al* (2002), in an educational context) and its relationship to the multiple other practices that together constitute the person and represent possible futures.

As previously discussed, in relation to Lave *et al* (1984) and Lave (1988), Vygotsky (1994) shows that environments vary in terms of how conducive to development they are (the environment considered as the source rather than the context of development); and this makes me consider the possible effects of communities of practice (and those already situated within them) on the person entering a community of practice. I understand that a community of practice can be a positive, nurturing environment for those involved within the community and for some entering the community in peripheral participation but the community will also produce negative *perezhivanie* for others who experience them or come into contact with them. They might actually repel or even 'exclude' some people, making them less predisposed, less aligned to an associated future activity. This supports the understanding of Avis *et al* (2002), as opposed to aligning them toward the given practice - or possibly even supporting their alignment toward an alternative type of practice.

Wenger (1998) addresses this distinction in terms of 'participation' and 'non-participation' but explores this further with his notions of 'peripherality' and 'marginality'. The difference is slight but Wenger (1998) proposes that those in legitimate peripheral participation are not full participants and so their participation necessitates a degree of non-participation (peripherality), relative to masters with full membership; while non-participation, in an inert sense, can also prevent full participation (marginality).

Like Wenger (1998), I can use this distinction to consider why I believe some construction instructors (in my context) have historically adopted a teaching identity in which a notion of professionalism is central; and conversely, why some have chosen to remain in marginality, with this forming the basis to their 'teaching identity'. Non-participation can become an active aspect of practice, self-sustained by an often tacit communal understanding (Wenger, 1998). Wenger (1998, p.171) says this can "manifest[s] in the instantaneous legitimacy obtained by remarks about looking forward to the weekend or wishing it were four o'clock", about consciously wasting time at work, or leaving any thoughts about work for the workplace only.

This situation sounds familiar, as some instructors have frequently engaged in these activities historically, making them explicitly known and positively encouraged within the group. In my research however, my learners/ co-participants have actively engaged in their own development, their growing awareness of their developing identity as teacher/ researcher has been evident, progressing and developing during research activity, where they have participated with me. Remarkably, this has also been evident when they have continued to work together without me, during non-scheduled (personally unexpected but very welcomed) activity (please refer to page 138, for examples). Crucially, I believe my research offers a means to support a professional construction teacher identity, moving forward in my own context, post-deregulation.

The above makes me wonder about the power of communities of practice relative to each other, the impact they can have on each other and whether the 'echo' of more robust communities resonates through time. The activities associated with non-participation, listed in the paragraph directly above, are (in my experience) a norm for many in construction, but they are certainly not warranted in teaching so perhaps their bearing still influences current practice. Although I believe Viskovic and Robson (2001) display an unimpressive understanding of communities of practice and legitimate peripheral participation, they provide detail that helps elucidate understanding on this point. Viskovic and Robson (2001) explain that most vocational teachers in UK Further Education accrue much industrial experience before entering teaching. On joining Further Education, they are loath to drop the identity associated with the past vocation and attempt to retain links to industry communities of practice. They believe this creates tension and an adverse perception of teaching; they believe newcomers (and some old-timers in my experience) to teaching would rather affiliate with the familiar past industrial identity, in marginality (Maclure, 2001; Wenger, 1998), than join any new community of practice associated with teaching; and Bathmaker and Avis (2005) draw parallel conclusions from their own research data. Maclure (2001) might argue that these newcomers are denying their teaching identity, and further, that they may have adopted very 'subversive identities' toward teaching, associating teaching with negative qualities. In this sense, all teachers, by definition, have some kind of

teacher identity, and that includes those whose teacher identity includes seditious elements.

Just like Holland *et al* (1998), Lave and Wenger (1991), Lave (1996) and Wenger (1998) portray identity formation as a self-determined, active process. The above leads me to specifically consider the difference between an adult with sophisticated thinking skills and a child in development, which in turn casts a new light on Giddens' (1991) theory on trajectories and risk, and re-reading Giddens (1991) has made me consider the 'passivity' of the teacher in this context. I think Giddens (1991) illuminates the possibility that a teacher might choose to act in opposition to the 'expected reaction' to a negative emotional experience (i.e. to be repelled), and instead to consciously choose to risk participation (i.e. to align in a more cognitive sense) despite emotional content. With possible degrees in between, he or she has the option to either stick or twist - to participate or to disengage and this makes me realise that a teacher is consciously aware and has a degree of choice.

Woods and Jeffery's (2002) exploration of English primary teacher identity, changing in reaction to the educational reforms of the early nineteen nineties offers an excellent example of the impact of conscious decision making and risk on engagement and disengagement (or integration and disintegration (Giddens, 1991)). Woods and Jeffrey (2002) argue that pre-reform, teachers not only enjoyed teaching but were teachers to the core: teachers had a "strong emotional dedication to their work", a "strong moral and political investment in their work" and "their commitment was total" (Woods and Jeffrey, 2002, p.252). Woods and Jeffrey (2002) go on to explain that reform, with its associated commodification, marketisation and managerialisation instilled guilt, shame and a loss of confidence throughout the teaching community who no longer felt trusted. This effectively imposed an identity crisis and the commitment of many if not most teachers perished. While some teachers removed themselves from industry completely and others remained defiantly angry and/ or detached (Maclure (2001) would class this as a 'spoiled' identity), others chose to participate regardless of risk to self; their reactions being clearly predicated on conscious choice. Although it would have been of interest to

consider the conflict and increased risk that must have accompanied these changes within the workplace, between colleagues, Woods and Jeffrey (2002) suggest teachers were extremely worried about the effects of compliance on their own personalities, emotions, futures-selves and careers.

Winbourne (2008) and Wenger (1998) believe identity develops through an often turbulent reconciliation of our fragmented experiences into a coherent whole and Wenger (1998) argues this helps explain why we sometimes find it personally challenging to cope with “conflicting forms of individuality and competence as defined in different communities” (Wenger, 1998, p.160). This is personally very interesting as this offers a possible explanation for why so many new construction instructors find it difficult to assimilate into their new teaching role. The figured world (Holland *et al*, 1998) of construction worker and the figured world of construction teacher are two very different historically and culturally situated worlds epitomised not only by different activity, but by different language use, ethics and motivations and so on. In my experience, while some construction teachers whole-heartedly embrace a teaching identity (as they have in my research (please see above)), others (somewhat obstinately) have historically retained the perception that construction is a much more masculine occupation than teaching and this reconciliation with the need to adopt new ways of talking, acting etc. threatens the current self-image, which they stubbornly resist. My research partly focuses on how membership and even past membership of communities of practice impact upon current teaching practice and development. It will therefore be useful to consider whether this reconciliation of identities is evident in data collection.

It is useful here to consider Fuhrer (1993), who supports the theory that emotion plays a much greater role in the learning process than Lave and Wenger (1991) and Lave (1996) (at least explicitly) stipulate. Fuhrer (1993) proposes that social factors such as embarrassment and anxiety are key determinants in the learning process, as he views learning as a means of coping with social embarrassment: we evaluate our present situation and our emotions are a coping response.

To explore the role of emotion in learning further, Mahn and John-Steiner (2002) suggest it useful to consider how the concept of *perezhivanie* (Vygotsky, 1994) can inform thinking on the zone of proximal development (Vygotsky, 1978). Mahn and John-Steiner (2002) posit that while reason and emotion are inseparable they are also mutually reinforcing; as one develops in activity, the other will too. They consequently believe that research on the zone of proximal development has an excessively cognitive focus and the role of emotion warrants greater recognition. From their perspective, learning is a risk taking process that can only occur if the person feels sufficiently confident, and this can only arise through “dignified, collaborative, caring support” (Mahn and John-Steiner, 2002, p.5); insufficient support will create anxiety, the zone of proximal development will weaken and learning will not ensue.

If the views of Mahn and John-Steiner (2002) are considered in relation to Lave and Wenger (1991), communities of practice are only sustainable if members feel sufficiently confident and supported; without support, a centripetal trajectory is inconceivable. I previously discussed how *perezhivaniya* might influence our trajectories toward or away from practice but Mahn and John-Steiner (2002) suggest that emotion is more pervasive still, as it also fuels centripetal trajectory toward mastery. If communities of practice are in perpetual flux (Lave and Wenger, 1991; Lave, 1996), I imagine emotional support within the practice is not always available, possibly adverse or even non-viable in some instances and we therefore experience varying levels of emotional support as we progress toward mastery. O’Sullivan (2007, p.11) states, “a community of practice’s life cycle is determined by the value it provides to its members”; I envisage that as value diminishes, emotional support/ learning fades until extinction. While this might be an especially personal process, solitary masters can continue practice in isolation until the demise of practice or until they enter into other communities of practice but very little is known on this possibility (Fuller *et al*, 2005).

- *Are identities actively or passively developed?*

McDermott (1993) reinforces the idea that others influence our telos through the communities on offer, as our own identity (and learning) can be firmly moulded by the activity and social practice of others. McDermott's (1993) research illustrated that historically, socially and culturally formed perceptions of 'learning disability' (LD), within the classroom and educational arena, can have a terrifying impact on the development of a child's identity as an 'LD child'. In this instance, McDermott (1993, p.277) says that it, "makes more sense to talk about how learning acquires people more than it makes sense to talk about how people acquire learning" and this all suggests that teachers are the sum of their experiences with communities of practice but we can obviously only ever learn from what we are exposed to (Minick, 1993). How passive or active we are in this process seems up for debate – my position is clarified in the following section.

In a humble admonishment of the inadequacies inherent in her own earlier theories (Boaler, 1993a; 1993b; 1998), Boaler (2000b) states that her earlier theories failed to account for the pivotal role of environment in situated learning and identity development and therefore supports McDermott's (1993) position. I am therefore quite certain that Boaler would support Vygotsky's (1994) theory of *perezhivanie*, though she does not cite him.

Gee (2000) believes identity consists of multiple identities but not in the sense proposed by Winbourne (2008). It is of interest to examine Gee (2000) here as his theory provides additional detail on the degree to which identity development is an active process. Gee (2000) argues that identity forms in discursive process with others; when we interact in context, others will have preconceived views of the type of person we are and the reasons for our actions. These assumptions provide the source of our socially formed multiple identities that become components of our own identity, framing a stable 'core identity'. Gee (2000) believes 'we are what we are' because of our nature (the natural perspective); the positions we occupy in society (institutional perspective); our achievements (discursive perspective); and our

experiences with 'affinity' groups (affinity perspective). These perspectives work in synthesis, the effects combining to produce identity.

Complementing the argument proposed by McDermott (1993), Gee (2000) considers natural and institutional perspectives in relation to a child diagnosed with ADHD. He asserts others e.g. teachers or parents will initially attribute 'abnormal' levels of hyperactivity to natural causes and the medical practitioners diagnosis will reinforce this perspective. The medical practitioner wields powerful institutional authority, the process of diagnosis and remediation will influence the child's development and socialisation as an 'archetypal' ADHD child, adversely determining the child's learning disability identity. While the child is a very passive recipient in this process, other institutional identities we adopt, such as construction teacher can be accepted very actively. According to Gee (2000), we vary in how active or passive we are in terms of these aspects of identity development.

The discursive perspective of Gee (2000) contends that identities are sustained and produced through discourse and dialogue, which is based on assumptions others make on our own individual 'achievements'. For example, different people will have diverse opinions about why the child displays activity ('achievements') beyond 'normal' levels in the same or different setting. What is really important here is meaning and affiliations others ascribe to behaviour and the impact this has on the child's identity. Some people will consequently treat the child as if an 'abnormality' exists, some will talk about the child's 'abnormality' and some will interact with the child as if he or she is 'abnormal'. Gee (2000) highlights that although this particular example might be construed as a passive process, discourse can also reflect active achievements. For instance, teachers might portray very positive attributes that can be attributed to more proactive activity such as charisma; the subsequent discourse will reinforce this characteristic of identity.

Gee's (2000) affinity perspective contends members of 'affinity groups' share the same common interest and practices, across space; they affiliate with other members of the affinity group and this influences identity development. Members of

affinity groups demonstrate allegiance toward the group, toward common practices, which sustain growing bonds of allegiance toward group membership. For example, when a child and the child's parents are told that the child suffers from ADHD many join ADHD support groups. Many affiliate with the group, the members and their practices, influencing identity development. Gee (2000) likens an affinity group to a 'community of learners', not community of practice but he believes affiliation to any community is an active and personally motivated, not passive process.

Gee (2000), leads me to speculate that common interests of communities of practice (Lave and Wenger, 1991; Lave, 1996) (or affinity groups (Gee, 2000)) often conflict and so conflictual communities of practice often coexist in the same location. I imagine they also conflict across wider space and time. Although community members might have a tacit understanding (Polanyi, 1962; 1964) of this conflict, some may not, while others may have a very full understanding. Some members might cross this conflictual boundary though integrating with members of the incompatible community of practice within other communities of practice. It would undoubtedly be very complicated to unravel this tangle of multiplicities of communities of practice; however, I think that if members of conflicting communities of practice find a more powerful overriding common commitment, through alternative practice, conflict will become manageable. This leads me to a major focus of my research: the possibility of building communities of practice.

Applying understanding of situated cognition to construction teacher development

It is tempting to consider how examples of communities of practice might be directly applied to teacher education but Lave (1996; 1997) cautions against this, as they are socially, historically and culturally bound practices, specific to time and place; and Winbourne (2008) supports this position. Many researchers (Adler, 1998; Boaler, 2000b; Sullivan Palincsar *et al*, 1998; Viskovic and Robson, 2001) urge teacher

educators to reflect on theories of situated cognition to further their own practice though and given the strength of the arguments advanced in reading for this review, I concur. Many authors (e.g. Adler, 1998; Avis *et al*, 2002; Literacy Study Group, 2010; Putnam and Borko, 2000; Viskovic and Robson, 2001) have specifically considered how theories of situated cognition can inform teacher development practice so I will now move on to analyse how this literature can inform teacher development in my own context, post-deregulation.

It is important initially to distinguish between *figured world* and *community of practice*. A figured world is defined by Holland *et al* (1998) as an imaginary mental world that helps us interpret the world in which we live. Culturally produced and defined, figured worlds are realms such as academia, construction or romance, which provide a simplified conceptual landscape for abstract possibility. Stories and artifacts, themselves vehicles for the transmission of possibilities from the figured worlds of others, mediate our own understanding and the value we attach to roles and artifacts within these worlds; figured worlds are defined and redefined relative to other figured worlds, in situ and in time. Holland *et al* (1998) believe we embrace stereotypical ideas about the types of people who populate figured worlds, the roles they hold, the types of meaningful activities they engage in (e.g. “flirting with, falling in love with, dumping, having sex with” (Holland *et al*, 1998, p.52)) and what forces motivate behaviour (e.g. “attractiveness, love, lust” (Holland *et al*, 1998, p.52)). Although figured worlds are hypothetical devices they have the power to inspire identity development and activity. The motivations and feelings figured worlds inspire align us toward practice (Holland *et al*, 1998; Winbourne, 2008); and so while communities of practice (Lave and Wenger, 1991) and figured worlds (Holland *et al*, 1998) share common ground, they markedly differ. Adler (1998) and Avis *et al* (2002) consider communities of practice in relation to two distinctive figured worlds (Holland *et al*, 1998): the world of the teacher and learner. My research has the potential to consider the third figured world of teacher educators/ my own work as a teacher educator. What is most central to my research however is the relationship between a community of practice and activity; examined in this section, below.

Adler (1998) considers the communities of practice that school mathematics teachers are part of and how these relate to the communities of practice of their learners and other teachers. Although her work sheds light on the complexities inherent in considering relationships between multiplicities of communities of practice (Winbourne, 2008), Adler (1998) appears to accept that teachers of mathematics are always members of communities of practice, whose constitutive activity is essentially the business of teaching mathematics. However, just because a teacher engages in the practice of teaching mathematics, we should not automatically assume that the teacher is a member of such a community of practice or even that there is such a practice within their educational establishment or social/ geographical area.

Below, I analyse criteria (Winbourne and Watson, 1998; Wenger, 1998) that have been used to define communities of practice, through observation in situ, and these provide a means to distinguish between activities associated with communities of practice and figured worlds. It is important here to initially consider my perspective on the relationship between communities of practice and figured worlds. I believe that while we learn and develop within communities of practice (Lave and Wenger, 1991) our activity is influenced by our imagination, how we view the world and others who live within it (Holland *et al*, 1998). I envisage that while figured worlds provide us, as individuals, a landscape of possibilities (Holland *et al*, 1998) we are members of multiplicities of communities of practice (Lave and Wenger, 1991), which are intensely personal and overlapping (Winbourne, 2008). The evidence advanced in this review provides good reason to believe that the personal meaning we attribute to our own relative position in our multiplicity of communities of practice is specifically constructed within figured worlds (Toohey and Gajdamaschko, 2005).

I will now consider how collective activity and individual activity, as discussed in relation to cultural-historical activity theory (e.g. Lektorsky, 1999) (or activity theory for short) (Engeström, 1999a; 1999b) relate to communities of practice (Lave and Wenger, 1991) and figured worlds (Holland *et al*, 1998). I will start by explaining why this discussion is important. Firstly, it must be noted that Engeström, in his work with both Cole (Engeström and Cole, 1997) and Miettinen (Engeström and Miettinen,

1999) far too easily dismisses the explanatory power of the theory of legitimate peripheral participation (Lave and Wenger, 1991):

“The theory of legitimate peripheral participation depicts learning and development primarily as a one-way movement from the periphery....What seems to be missing is movement outward and in unexpected direction” (Engeström and Miettinen, 1999, p.12).

The reading I have engaged in for this literature review leads me to believe that this is an ill-informed perspective. In contrast, I believe a full appreciation of the notion of a multiplicity of communities of practice (Winbourne, 2008) leads to interesting parallels that can develop understanding onward: while the notion of a community of practice is primarily concerned with identity (Lave and Wenger, 1991), the ultimate concern of cultural-historical activity theory is the collective (Engeström, 1999b) and so identity is subsumed within its broader historical perspective. In this sense, the notion of a community of practice helps me consider social practice at the micro level and activity theory provides the encompassing macro level of analysis. However, I believe the two theories offer complementary units of analysis. Reading Engeström (1999b), in light of Lektorsky (1999) leads me to believe that all communities of practice are constituted by some (collaborative) activity (in the sense of activity theory). Lektorsky (1999) argues that individual and collective activity differs markedly. In contrast to individual activity, collective activity presupposes inter-individual relations and inter-activity, which can be understood as communication. Collective activity presupposes a common commitment that can only be achieved through group membership in interaction, where all members have different roles; highlighting the value of diversity. Collective activity presupposes constant communication (dialogues and “*multilogues*”): for success it is crucial members understand and reflect on their own relative position in relation to other members (Davydov (1999) does not oppose this position yet he views communication as merely a product of activity). It is notable that Lektorsky (1999) uses the term membership here, rather than participation; membership denotes affiliation, which is central to the notion of a community of practice.

Engeström (1999b, p.382) suggests that the starting point for collaborative activity (in the sense of activity theory) is a “new theoretical idea or concept”: a *germ cell*; defined as “an abstract, simple explanatory relationship”. All participants will perceive this initial abstraction differently, through their own perspectives. It is possible for participants to negotiate a common understanding (even though conflict will inevitably continue after the common understanding is achieved) through expansive cycles/ through epistemic or learning actions and so the abstract “is transformed into a complex object, a new form of practice” (Engeström, 1999b, p.382). In light of my proposal that communities of practice are constituted by some (collaborative) activity (in the sense of activity theory) this starting point also offers explanation for the genesis of a community of practice and some insight into how it develops. A germ cell: an “abstract, simple explanatory relationship” (Engeström, 1999b, p.382) provides the theoretical starting point of a community of practice, which then transforms in to a new form of practice, through negotiation in activity. Hence, the community of practice shapes activity (collective and individual) in process. I believe that if people engage in collaborative activity, in a shared experience, where they have the opportunity to negotiate meaning, from preliminary abstraction (Engeström, 1999b), where they can work together toward a negotiated common commitment, then there is a good chance that a community of practice will be constituted by that activity.

Given that Vygotsky (1994) emphasised the fundamental role of emotion in social interaction, and in light of the fact that the work of Vygotsky played an important formative role in the early work on activity theory (Ryle, 1999), Engeström (1999a; 1999b) and Chaiklin *et al* (1999) seem to underestimate the role of emotion in activity. In contrast, I am sure Vygotsky would stress the role of emotion (and therefore learning, according to John-Steiner and Mahn (1996)) in collaborative activity, in an activity theory sense.

For this reason, I propose emotional support is a necessary requirement to initiate and sustain collaborative activity, in an activity theory sense. As members join together in activity, within an activity system, they develop their own unique

interpretation, even if this is only a tacit understanding of what it means to participate; and so meaning develops in relation to other members (Lektorsky, 1999). However, I also believe that the individual's unique interpretation develops in relation to the activity s/ he is currently engaged in elsewhere, and the other people involved, outside of the immediate activity system. If I link collaborative activity (in an activity theory sense) to a community of practice, the *perezhivanie* (Vygotsky, 1994) that accompanies activity affects individual membership within all communities of practice of which they are currently members. The establishment of a centripetal trajectory toward mastery is therefore dependent upon whether the individual perceives that s/ he is emotionally supported (i.e. the environment is 'sufficiently' fertile (Vygotsky, 1994)) by the community of practice. As activity persists, the meaning of membership develops and the way in which emotional support is expressed in collaborative activity changes; and so artifacts that convey this emotional support change. As the expression of emotion changes and members learn, their identities change (as a consequence of multi-membership within a multiplicity of communities of practice) and some members within the community of practice may no longer feel emotionally supported. As time passes and the collaborative activity becomes historically and culturally situated, continued participation becomes dependent upon an evolving sense of whether the emotional support received is sufficient to sustain membership, in activity toward the object of that activity (Engeström, 1999a; 1999b). As the individual moves in centripetal trajectory toward mastery other members recognise the legitimacy of participation, and so they issue emotional support. The individual therefore starts to develop a new sense of self, with feelings of belonging. In the dialectical process, emotional support originates in the newly developed sense of the self that comes with participation.

The above throws a new light on the relationship between individual activity (as far as any individual activity can be individual as it is always situated in relation to society (Marx 1964)) and imagination. If an individual disengages from a community of practice, it is entirely possible that this places the person in a position of legitimate peripheral participation in some other palpable community of practice (Lave and Wenger, 1991). However, this leads me to speculate on the role of imagination and

figured worlds (Holland *et al*, 1998); and it seems entirely plausible that we can imagine (possibly quite correctly) that we are members of a community of practice.

For example, let us consider a person completing a work of art, a painting; she has no tangible contact with any other artist. While the artistic activity she engages in can make personal sense, it will lead to outcomes (in an activity theory sense) (Engeström, 1999a; 1999b). As it is a physically solitary experience, the person gains no immediate emotional support from others, on developing work, as they are not present. She will therefore need to rely more heavily on her current interpretation of past experiences, shaped by her imagination. She might actually imagine that she is part of a community of practice, although in reality she has no tangible contact with others who work within the field of art. So it is therefore possible for a person to paint alone, she does not know any other artists, has no contact with other artists except for access to some art work, but her memories and available objects from the world of art (e.g. paintings and stories) compel her to believe (i.e. act as a pivot (Vygotsky, 1978) from within her figured world (Holland *et al*, 1998)) that she is a member of some form of artistic community, perhaps even a member of a powerful artistic community of practice. Perhaps in such cases our imagination leads us to perceive that other members within the community would bestow emotional support for our endeavours. According to Marx (1964), all activity is undertaken in relation to society, which supports the hypothesis that we do not have to be near others physically (or even in time) to engage in a community of practice, which helps explain how communities of practice exist across time and space.

It is interesting to consider Bourdieu (1987) here, who suggests an interesting insight in to how, in the above example, the artist comes to appreciate her own work. To Bourdieu (1987), the aesthetic experience of an artist valuing her own work reflects a delineated institution; with relation to my example an *artworld*, which simultaneously exists in the artist's mind and things (artifacts) of the artistic field. While together these constitute the artist's social conditions of possibility, the historically and culturally forged institution permits meaning and aesthetic appreciation. This

essentially offers a means of cultural reproduction and a means to distinguish the self from others outside the cultured habitus, who, as such, cannot form such an appreciation. Bourdieu (1987) offers an explanation for how cultural reproduction occurs and how we forge distinct identities in relation to others. In light of all evidence considered in this review, such as Lave and Wenger (1991), Lave (1996), Wenger, (1998), Winbourne and Watson (1998) and Winbourne (2008) however, I now believe identity can be understood as a constant process of invention and reinvention in relation to powerful local discourses (Holland *et al*, 1998; Gee, 2000); I therefore adopt an anti-essentialist position to identity in my research (Jenkins, 2008).

Communities of practice that impact on my students' teaching practice and identity as teachers might exist both within and outside of education and some might traverse both fields (Winbourne and Watson, 1998). Winbourne (2008) provides two excellent examples of intersecting communities of practice influencing classroom activity; he makes me realise that some of my learners may be less successful in my classroom than others, as their practices within intersecting communities of practice might bear little semblance to those prized in my classroom. How this relates to and impacts on the learning of my own students' apprentices adds another analytic level for consideration. My research will examine the communities of practice of my students, how these communities of practice impact or influence each other and how they in turn influence the communities of practice that their students are members of. My research will also examine the figured worlds (Holland *et al*, 1998) of my students and how these influence and impact upon these communities of practice. This will be considered in depth in Chapter 3 and runs as a central theme throughout my research.

If any community of practice does exist where construction teachers are socially related in terms of legitimate peripheral participation and mastery, the process of becoming a master would be, at least partly dependent upon motivation (Lerman, 1998a; Lave and Wenger, 1991) and some might be demotivated and disengage from such activity. Lave and Wenger (1991) believe that in such cases, communities

of practice will develop interstitially and informally and so communities of practice that influence the teaching practice of my students may exist in my classroom but not through intentional design (Winbourne, 2008).

Identifying communities of practice

I therefore agree with Lave (1996, p.159) when she states, “Teachers need to know about the powerful identity-changing communities of practice of their students, which define the conditions of their work”. Lerman (1998b) and Boaler (2000b) suggest that such an endeavour would need to refocus, or ‘zoom out’ (Lerman, 1998b) to consider the students’ ‘macro-context’ (Boaler, 2000b) i.e. “the broader systems in which students operate” (Boaler, 2000b, p.118). Lave (1996, p.159) continues, “It is a puzzle, however, as to where to find them [communities of practice], and how to recognize them [communities of practice]” but Winbourne (2008) believes it possible to identify communities of practice through observation. Winbourne and Watson (1998, p.94) provide criteria as characteristic of all communities of practice:

- “1. *Participants, through their participation in the practice, create and find their identity within that practice (and so continue the process of creating and finding their more public identity);*
2. *There has to be some social structure which allows participants to be positioned on an apprentice/ master scale;*
3. *The community has a purpose;*
4. *There are shared ways of behaving, language, habits, values, and tool-use;*
5. *The practice is constituted by the participants;*
6. *All participants see themselves as engaged essentially in the same activity”.*

Wenger (1998, p.126-127) states communities of practice can be uncovered through observation but provides the following, alternative criteria:

- “1. *Sustained mutual relationships – harmonious or conflictual;*
2. *Shared ways of engaging in doing things together;*
3. *The rapid flow of information and propagation of innovation;*
4. *Absence of introductory preambles, as if conversations and interactions were merely the continuation of an ongoing process;*
5. *Very quick set up of a problem to be discussed;*
6. *Substantial overlap in participants’ descriptions of who belongs;*
7. *Knowing what others know, what they can do, and how they can contribute to an exercise;*
8. *Mutually defining identities;*
9. *The ability to assess the appropriateness of actions and products;*
10. *Specific tools, representations, and other artifacts;*
11. *Local lore, shared stories, inside jokes, knowing laughter;*
12. *Jargon and shortcuts to communication as well as the ease of producing new ones;*
13. *Certain styles recognised as displaying membership;*
14. *A shared discourse reflecting a certain perspective on the world”.*

In light of Mahn and John-Steiner (2002), I believe Winbourne and Watson (1998) and Wenger's (1998) criteria do not sufficiently account for the role of affect in learning. Wenger's (1998) criteria number 1 and 6 implicitly suggest the role of emotion in learning but criteria 3, 5 and 9 have greater cognitive connotation, with no reference to affect. If newcomers do experience varying levels of emotional support in progress toward mastery, Wenger's (1998) criterion number 1 seems apt. While Winbourne and Watson's (1998) criteria may better reflect the centrality of social activity and practice than Wenger's (1998) criteria, Winbourne and Watson's (1998) criteria lack explicit reference to emotion (although the role of emotion is implicitly suggested in how people see themselves).

The work of Mahn and John-Steiner (2002) suggests a reconsideration of criteria. If learning and emotion are inextricably linked, and it is possible to identify a community of practice through observation of learning, then the identification of a community of practice should require the observation of some component of emotion. I propose that emotional cohesion will be most evident in field observation of practice; and perhaps most easily seen in communication, through language, story or reified artifact.

Building and nurturing a community of practice

Lave (1996) and Wenger (1998) suggest insight into student communities of practice can be used to build an 'identity changing practice'/'an architecture for learning' that promotes legitimate peripheral participation and full membership within a powerful teaching community of practice. If successful, such a community of practice could promote learning and professional development, critical reflective and reflexive practice (Craig, 2004; Hopkins, 2000; Morrell, 2003; O'Sullivan, 2007) (leading to more informed understanding of student need (Butler and Schnellert, 2012)), group relations (Boaler, 2000a; Thomas *et al*, 1998), motivation, inclusion (Hopkins, 2000; O'Sullivan, 2007; Thomas *et al*, 1998) and possibly self-esteem and confidence (Beck and Kosnik, 2001). I therefore set out to build a teaching community of practice, in my research, through learning architecture design. Communities of

practice influencing student teaching practice are initially explored and considered; as are the andragogical identities of students within these communities. In my research, I employ the criteria of Winbourne and Watson (1998) to help identify existing communities of practice through observation but the usefulness of their proposed criteria is considered with a critical/ distanced approach.

According to Wenger (1998; 2000), an architecture for learning is not prescribed and rule-bound but a minimalistic, coordinated, rough guide to activity, based on common galvanising focus; and O'Sullivan (2007) and Sullivan Palincsar *et al* (1998) concur that the development of a community of practice necessitates a common commitment. Although Nelson and Slavit (2008), Butler and Schnellert (2012), Thomas *et al* (1998) and Mahn and John-Steiner (2002) do not directly focus on the development of communities of practice, their work has helped me develop my own understanding of communities of practice. Specifically, this body of work leads me to suspect that a sustainable community of practice can only develop if members do come to share a common commitment.

Although insight into communities of practice can help guide design, design should always afford opportunities for engagement and negotiation of meaning in practice, to develop competence, apply skills or devise solutions etc., to explore and reflect on possibilities in legitimate peripheral participation and mastery: so learners can “explore who they are, who they are not, who they could be” (Wenger, 1998, p.272). Although practice should be organised around reified artifacts such as lesson materials, the role of members should be considered and how members might interact most effectively with artifacts, in space. The degree of reification of artifacts during the collaborative process must be considered, as reification can become a distraction, not help. The ability to improvise is essential, as is imagination, as emerging opportunities offer learning potential. Communities of practice evolve when participants cooperatively engage together, and when others have the opportunity to engage in process (Wenger, 1998; 2000).

O'Sullivan (2007) and Sullivan Palincsar *et al* (1998) believe that if the diversity of group members can support the common commitment, the community of practice is more likely to form and sustain. In my context and experience, the common commitment of all construction teachers in our college is helping construction apprentices succeed for the greater good of industry.

Thomas *et al* (1998) highlight collaboration invariably provokes tension and contradiction, and therefore, any who try to develop a community of practice must remain sensitive to the needs of those involved. Although any community of practice is invariably under tension, difference in the activity reported by Thomas *et al* (1998), who attempted to develop a 'community of teacher learners', stemmed from college interdepartmental differences. As I am attempting to develop a community of practice, I will need to be attentive to any socially, historically and culturally defined variance that exists between teachers of different construction disciplines; stereotyping as one homogenous group must be avoided (Viskovic and Robson, 2001; Wenger, 1998).

O'Sullivan (2007) believes teaching communities of practice are easier to sustain if other stakeholders, located outside the community of practice, value the worth of the community. In my context, other stakeholders include college management, construction companies, federations, regulatory bodies, parents and partners. A community of practice of teachers might therefore be sustainable if the backing of stakeholders is sought (Clemans, 2007); and Wenger (1998, p.274) suggests that "dense connections" should be made with stakeholders. Fullan (2001) and Nelson and Slavit (2008) make no explicit reference to communities of practice; nevertheless, their work has helped me consider the possible impact of other stakeholders (which of course could be other communities of practice) on any given community of practice. In my research, I attempt to build a community of practice, and as I progress, I critically evaluate the possible impact of others on the community of practice that I am trying to build. If the individual lone activity/ solitary practice or collective activity/ collective practice (in an activity theory sense, i.e. possibly another community of practice) of others is detrimental to members of the

community of practice that I am attempting to build, then I would want members of the affected community to free themselves from the opposing, conflicting or suppressing power (Nelson and Slavit, 2008). Nelson and Slavit (2008, p.102) suggest this can only “occur if teachers feel empowered to see beyond their immediate contexts and have the confidence and ability to attempt to influence, and not just be influenced by, the various forces that shape their immediate work and development”.

Nelson and Slavit (2008) discuss the development of communities - not communities of practice per se; nevertheless their work has helped me develop my own understanding of communities of practice. Rereading Lave and Wenger (1991) and Wenger (1998; 2000) it seems communities of practice only sustain if sufficient levels of trust endure. For example, it would be very difficult to imagine how the Alcoholics Anonymous community of practice could function without trust. As further cases in point, I would suggest newcomers to Vai and Gola tailor practice (Lave and Wenger, 1991; Lave, 1997) place trust in the understanding of old-timers to gain a sustainable living; and if newcomers to navigation (Hutchins, 1993) did not steadfastly trust the expediency of artifacts and old-timers, in their own context, then activity would become life threatening. In addition and as previously discussed, the perception of being untrustworthy was pivotal in the extinction of the teaching community described by Woods and Jeffrey (2002). Yucatan midwifery practice and those practicing 19th century Islamic law (Lave and Wenger, 1991) were undoubtedly trusted by the communities which they served but if this trust died, it is difficult to see how these communities of practice could sustain. This all suggests that communities of practice are influenced by culture and political influence and other communities of practice that intersect and surround the community of practice. Avis *et al* (2002), Morrell (2003), O’Sullivan (2007) and Sullivan Palincsar *et al* (1998) substantiate the hypothesis that trust is crucial in developing and sustaining communities of practice.

Sullivan Palincsar *et al* (1998) believe trust can only come about if equitable working conditions are established from the outset. In order to establish equitable working

conditions, Perry and Lewis (2008) believe norms should be negotiated at the outset of any collaborative endeavour and research suggests these should include:

- i. The understanding that learning can occur from what goes wrong and right (Dudley, 2012); and
- ii. That development of practice is not restricted by innate ability but can occur through hard work (Lewis and Tsuchida, 1998).

Lewis *et al* (2006) and Thomas *et al* (1998) believe it imperative to develop and uphold a sense of equality within the group, where opinions of all members are equally respected (respect and reactions to respect being culturally defined). All involved must have equal opportunity to collaborate (Butler and Schnellert, 2012). Thomas *et al* (1998) suggest it is easier for a person located outside the main target group (e.g. a researcher) to mediate conflict within the developing community of practice than another located within. While I am the researcher, I am also the teacher educator in my students' context; while I try to develop a community of practice, I am also a member of the practice and so must remain mindful of my position (Sullivan Palincsar *et al*, 1998) and power (Cohen *et al*, 2000).

The development of a community of practice is complex and takes time (O'Sullivan, 2007; Perry and Lewis, 2008; Winbourne, 2008); it does not just occur automatically when people work together (Cobb *et al*, 2003; Wenger, 1998). Collaborative inquiry has been employed to help foster communities that demonstrate all the hallmarks of communities of practice (e.g. Beck and Kosnik, 2001; Butler and Schnellert, 2012; Erickson *et al*, 2005; Nelson and Slavit, 2008; Thomas *et al*, 1998) and the development of communities of practice directly (Avis *et al*, 2002; Morrell, 2003; Sullivan Palincsar *et al*, 1998). Collaborative inquiry affords the possibility to set up "opportunities for practices to develop within which [their] students have a good chance of becoming legitimate participants with a very high chance of functioning as 'experts'" (Winbourne, 2008, p.100). It is therefore possible to design architecture for

learning, in order to promote a community of practice, based on insight into existing communities of practice and through employing understanding from research on collaborative learning/ inquiry.

- *Collaborative inquiry*

Collaborative learning essentially offers the chance for joint discovery, where participants can engage in the co-construction of knowledge and understanding. It affords the opportunity for mastery and apprenticeship in practice (Lave and Wenger, 1991), the establishment of joint perspectives (John-Steiner and Mahn, 1996); and from my own perspective, it offers the chance to sensitively guide participation (Vygotsky, 1978), the development of learning and identity in practice (Lave and Wenger, 1991), remaining mindful of my own position and power (Cohen *et al*, 2000; Sullivan Palincsar *et al*, 1998).

Carlock (undated cited Lave, 1996) used collaborative inquiry to establish a productive community of practice to nurture the school-based chemistry practice of her students. She worked with them to establish activity where learners were responsible for the learning of other students, which in turn developed their own practice. The social organisation was shaped by students and as the community of practice developed they established new spaces for learning, taking their investigations outside the laboratory. Winbourne (2008, p.98) offers explanation for such engagement suggesting that “given the opportunity, many (most?) Students would be able to respond positively to situations which allow them to function as ‘experts’ in some practice in which they participate”.

When attempting to build a teaching community of practice, in my own context, Lave (1996), Sullivan Palincsar *et al* (1998) and Westheimer and Kahne (1993) suggest it necessary to interact with the group members in inquiry, identify with the group and become part of it, in collaboration, as “teachers are probably recognized as “great” when they are intensely involved in communities of practice in which their identities

are changing with respect to (other) learners through their interdependent activities” (Lave, 1996, p.158). If I were to adopt the practice of Carlock (undated cited Lave, 1996), I would need to consider what ‘masterful teaching’ practice might look like in the different teaching confines of my learners and my own classroom (Sullivan Palincsar *et al*, 1998; Wenger, 1998). Lave and Wenger (1991) and Wenger (1998; 2000) illuminate the possibility that members of any teaching community of practice negotiate a shared vision of what ‘masterful teaching’ is and so my singular effort might be wasted. Although the apprentice and master tailors in Lave and Wenger (1991) would know who the master tailors are, I believe it doubtful that apprentice and master tailors share an explicit understanding of what masterful tailoring is. Polanyi (1962; 1964) does not talk on communities of practice explicitly but his work has shone a new light on what ‘understanding’ is within a community of practice. His work leads me to believe that part of what binds members of any community of practice is a tacit understanding of mastery. He suggests that the combination of intellectual and physical activity in practice provides surplus meaning: an implicit awareness; exceeding what is obtained through explicit reason and focus alone i.e. that we know more than we can say. Providing further supporting evidence for my argument laid out above, Zappavigna (2006) believes effective transfer of tacit knowledge requires extensive personal contact and regular interaction within a community of practice and sufficient levels of trust are imperative.

Lave (1996) suggests that the success of teaching within a community of practice should be measured in terms of “changes in the participation of learners learning in their various communities of practice” (Lave, 1996, p.158). Mastery within such a community, from a teacher educator’s perspective, will need to consider learning, the need to develop critical reflective and reflexive practice, and the learning needs of my learners’ learners. In my research, I attempt to develop a powerful teacher community of practice, through collaborative inquiry. In collaboration, the teachers involved attempt to promote the learning of their own apprentices, for the good of industry; in doing so they work toward a common commitment, developing their own abilities and understanding in process (Dudley, 2012).

Given the arguments laid out directly above, I believe that a powerful teacher community of practice will only grow if the environment (including situation and events i.e. “in the purely external sense of the word” (Vygotsky, 1994, p.2)) is ‘sufficiently’ favourable/ fertile. I will now explain what ‘sufficient’ means to me in this context. Although we can situate any group of individuals within what would look like, to all intents and purposes, the same environment, the environment will be more fertile for some individuals than others; if the environment is ‘sufficiently’ fertile to a group of individuals then a community of practice might develop. Vygotsky (1994) argued that we can only explain the role of the environment when we know the relation between the child and his environment. He writes; “one should give up absolute indicators reflecting the environment in favour of relative ones” (p.1). It is therefore a challenge to definitively assert the precise meaning of sufficiency in this sense, as ‘sufficient’ conditions will vary between individuals, based on their own unique *perezhivaniya* (Vygotsky, 1994) and current predisposition (Winbourne, 2008); each individual will experience the same situation in different ways (Vygotsky, 1994). In relation to my research, sufficiency relates to meeting the expressed needs of all co-participants, which illustrates the intrinsic complexities involved in developing a community of practice: developing a community of practice in any context is an extremely difficult task, as all people and all situations differ. As different people (with unique histories, experience, language and cultures etc.) will require different levels of ‘emotional support’, ‘trust’ etc. and amounts of time to explore practice, artifacts etc., concepts and conditions can only guide attempts to build and nurture communities of practice.

- *Lesson study*

Lesson study (also known as lesson research (Lewis, 2000) or research lessons (Lewis and Tsuchida, 1998)) is a form of collaborative inquiry (Dudley, 2012; Fernandez, 2002; Fernandez *et al*, 2003; Perry and Lewis, 2008). It has been claimed to help: improve pupil engagement; promote learning (Dudley, 2012); increase teacher motivation; develop teaching practice and networks; generate a sense of worth and self-confidence (Lewis *et al*, 2004; Rock and Wilson, 2005;

Takahashi and Yoshida, 2004); develop professional knowledge; promote collaboration; and, develop reflective and reflexive practice and attitudes toward diversity (Lewis and Tsuchida, 1998; Myers, 2012; Perry and Lewis, 2008; Rock and Wilson, 2005; Stigler and Hiebert, 1999).

Variations of lesson study have emerged (Perry and Lewis, 2008; Stigler and Hiebert, 1999) but all involve a cyclical iterative process, where teachers collaborate in structured problem solving (Fernandez *et al*, 2003; Takahashi, 2006). As co-participation and joint discovery are fundamental tenets of lesson study, I believe lesson study offers a 'mediating structure' (Vygotsky, 1978) that can be employed to "facilitate strategic connections, multiple paths" (John-Steiner and Mahn, 1996, p.202). It has the power to establish a powerful teaching community of practice, as it offers participants the opportunity to work in collective activity, negotiating collaboratively through dialogue and multilogues, reflecting on their own relative position in relation to other members (Lektorsky, 1999). I therefore use lesson study in my research, as a tool, to help build a powerful teacher community of practice.

Conclusion

I set out, at the beginning of this literature review, to show how theory informs my understanding of construction teacher development practice. I believe theories of situated cognition (e.g. Lave, 1996; Lave and Wenger, 1991; Winbourne and Watson, 1998; Winbourne, 2008) offer a powerful argument for how learning occurs, how values become ingrained (Lave and Wenger, 1991; Viskovic and Robson, 2001) and how great teachers are made in process (Lave and Wenger, 1991; Lave, 1996; Wenger, 1998). These theories now lead me to believe that teacher development needs must be tackled in relation to the collective abilities of other teachers (Knight, 2002; Thomas *et al*, 1998).

Although Štech (2008) suggests the withdrawal of teacher training qualifications is misguided, I detail in chapter 3 (page 93) how abstraction can become the constitutive activity of a powerful teacher community of practice, and how learning design (Wenger, 1998) offers a means to replace (or support if necessary) commonly accepted UK Further Education teacher development practices. While I accept Štech's conclusions (2008), I nevertheless challenge the utility of such formal qualification. With deregulation, the UK government favours work-based training for teachers (for what Eraut (1994) would call pupillage or internship). The conclusions I draw at the end of my research do not call for an end to formal training; they call for an alternative more radical model of development, where teaching success is measured in terms of "changes in the participation of learners learning in their various communities of practice" (Lave, 1996, p.158).

My literature review suggests communities of practice can only develop if conditions and environment are conducive (Vygotsky, 1978; 1994) and I have argued that motivation is a key factor in this process. It seems learning occurs in classrooms, irrespective of teacher activity (Winbourne, 2008) so it becomes the teacher's responsibility to support and focus learning, through design (Lave, 1996; Wenger, 1998; 2000; Winbourne, 2008), predicated on understanding of existing communities of practice (Lave, 1996).

I now believe it most useful to consider the extent to which individuals are aligned (Winbourne, 2008) to participation; alignment being dependent upon perezhivaniya (Vygotsky, 1994) and relative position within a multiplicity of intersecting, interrelated (Winbourne, 2008) and often conflicting (Wenger, 1998) communities of practice, influenced by our perceptions of figured worlds (Holland *et al*, 1998). I think it is of real interest to note here too that all prerequisites for learning are found within the community of practice (Lave and Wenger, 1991). This not only highlights the true value of diversity but the consequence of idiosyncratic associations and relationships between different people on unique life courses, their own personal trajectory (Lave, 1996; Winbourne, 2008). This view demarcates a highly personalised view of identity and culture, where labels and categories subsume genuine unique meaning

as they impact so greatly on our identities; on our perceptions of who we are and who we are not. It not only supports the position that our environments are source, and not merely context of development (Vygotsky, 1994), but also the view that our emotional experiences, our perezhivaniya, predispose or align us to engage with certain communities of practice over others. When people feel that their own diverse nature is valued, when they feel trusted (Avis *et al*, 2002; Morrell, 2003; O'Sullivan, 2007; Sullivan Palincsar *et al*, 1998) and emotionally supported (Mahn and John-Steiner, 2002), sustainable communities of practice can be developed.

The conflict that inevitably occurs within and between communities of practice creates unique tensions and possibilities (Wenger, 1998; 2000; Winbourne, 2008) and I believe Vygotsky (1978; 1994) affords remarkable insight into how the processes of learning and identity formation occur and how meaning is appropriated in process; Giddens (1991) and Gee (2000) greatly enhance my understanding and lead me to embrace an anti-essentialist perspective on identity formation.

Observational criteria (Winbourne and Watson, 1998; Wenger, 1998) have been established to identify communities of practice but these undervalue the role of emotion in learning (Fuhrer, 1993; Mahn and John-Steiner, 2002; Woods and Jeffrey, 2002). These criteria should therefore be used critically in practice. The evidence reviewed suggests that communities of practice can be discovered through observation of emotion and/ or learning, not learning alone, which itself suggests that identity has an emotional dimension. While I accept that Winbourne and Watson's (1998, p.94) first criterion, "*Participants, through their participation in the practice, create and find their identity within that practice (and so continue the process of creating and finding their more public identity)*" implies a need to invest or the need to be aligned (Winbourne, 2008), the data collected in my research urge me to include an explicit reference to emotion; I would now add the following criterion to those of Winbourne and Watson (1998) and Wenger (1998):

- ❖ All members within the community have an emotional investment to the object of the constituent activity of the community.

My review suggests teachers should be given the chance to work together, voluntarily, toward a common negotiated commitment. The collaborative group can engage with theory in formal context, and in practice within informal contexts, as the group sees fit, and as the arena (Lave *et al*, 1984) permits. In my research, I can offer theory (i.e. I will be visible and invisible (Wenger, 1998)) to formally mediate practice, promoting higher psychological processes and new horizons (Štech, 2008; Vygotsky, 1978). I hope this will develop positive teacher identities, critical reflective and reflective practice (Craig, 2004; Hopkins, 2000), confidence, motivation (O'Sullivan, 2007; Thomas *et al*, 1998) and so on, as previously proposed.

In this chapter I have reviewed theories of situated cognition, and used this to underpin a more effective means of construction teacher development practice. In the next chapter I build on this to consider the most appropriate form of teacher professional development. I state my research questions and explore the most appropriate methodology and methods of data capture. I also show how second generation cultural-historical activity theory can support my analysis of research data.

Chapter 3: My approach to research, data collection and analysis

Introduction

In this chapter I consider the main aim of my research and the most appropriate methodology that will help me achieve my aim, in tune with the development of my own worldview (Creswell, 2009). These discussions explain my approach to research and help me formulate my research questions. I subsequently discuss the methods of data collection that I employ, explaining how my approach both supports the development of a community of practice and enable me to address my research questions. I also show how I use second generation cultural-historical activity theory to support data analysis.

The main aim of my research – initial methodological considerations

The main aim of my research is to explore possibilities for developing a sustainable and powerful teaching community of practice that replaces or supports formal initial teacher training qualifications so that instructors have a vehicle for professional development that is personally relevant, meaningful and engaging and not officially enforced. I consider it is necessary that such a community of practice promotes critical reflectivity and reflexivity, moving toward praxis, and so I document the methodology I have found most appropriate.

A methodology should be selected if its fundamental assumptions accord with the researcher's own ontological and epistemological beliefs (or 'worldview' (Creswell, 2009)) (Brown and Dowling, 1998; Crotty, 1998; Hitchcock and Hughes, 1989; Slife and Williams, 1995; Whitehead and McNiff, 2006). And likewise, the chosen methodology influences adopted methods of data collection. While ontology pertains

to our understanding of the nature of reality, epistemology relates to how we believe we should study it (Cohen *et al*, 2000; McNiff, 2013a; Morrow and Brown, 1994).

This chapter explores the development of my worldview. Given my understanding of how learning occurs (refer to chapter 2 for a full account), I perceive my own beliefs, like those of Gordon (2010) and Hanrahan (1998), have developed through personal exposure to academic practices and my own personal and cultural history.

The development of my beliefs and worldview

As an experienced student, I have encountered a wide spectrum of diverse academic beliefs. In hindsight, I believe my unfolding understanding has been influenced by the power academics (as Bernstein (1974; 1999), Giddens (1991) and Morrow and Brown (1994) all suggest) have wielded through position and achievement, reinforced through association with powerful institutions.

In this section, I initially examine the worldviews of positivists and interpretivists and my developing relationship with their beliefs. As my thesis is constrained by word count, I offer a polarised interpretation of these traditions, though in practice, standpoints can fall anywhere on a continuum between these two poles (Carr and Kemmis, 1986; Morrow and Brown, 1994). I move on to explore an alternative emancipatory perspective.

Objectivism and positivism

My evolving understanding of ontological and epistemological perspectives - my “socialisation into the various ‘approach paradigms’” (Bernstein, 1974, p.145) - began when studying for my undergraduate degree in Psychology. The curriculum and the majority of teachers who delivered it upheld the tenets of the scientific

approach, which includes the fundamental positivist (Creswell, 2009) conviction that human society and behaviour should be studied objectively, through direct empirical observation and experimentation (Leahey, 1997). The ontological position of this perspective asserts a single objective reality and therefore that universal laws exist independent of the observer (Carr and Kemmis, 1986; Hitchcock and Hughes, 1989). Advocates of objectivism hold that the causes of human behaviour and the circumstances in which it occurs can be studied like natural phenomena, through the epistemological lens of positivism. From this perspective, everything can be explained and understood through the law of cause and effect (Hitchcock and Hughes, 1989; McNiff, 2013a).

Although positivism continues to achieve great success in the physical sciences, McNiff and Whitehead (2006) believe it less successful when applied to studying human practices, as “humans are unique, unpredictable, and make their own choices” (McNiff and Whitehead, 2006, p.27). Bernstein (1974) supports this position. Carr and Kemmis (1986), Habermas (1971) and Horkheimer (1972) argue positivistic reductionist (Morrow and Brown, 1994) assumptions are naïve. Not only do they dehumanise the individual (Frisby, 1974; Kierkegaard, 1974) and overlook open-ended and creative aspects of human identity and knowledge such as moral, creative and aesthetic knowledge (Habermas, 1971), but they also incorrectly assume that facts and values coexist discretely (Horkheimer, 1972).

I spent my undergraduate degree in the company of lecturers and fellow learners who supported positivist ideals and at the time I accepted their worth. In the process of completing my postgraduate teaching qualification and Masters of Arts I explored and adopted a more anti-positivist perspective, as I believed it could offer a greater understanding of human practices, I hope guiding my efforts to become a better teacher educator.

Subjectivism and anti-positivism

The interpretivist tradition encapsulates different ways of thinking, some more radical than others (Carr and Kemmis, 1986; Denzin and Lincoln, 1994; Morrow and Brown, 1994) that emerged in direct opposition to positivist assumptions. Anti-positivists maintain human behaviour is voluntary and individualistically dynamic (Kierkegaard, 1974), not determined and passive. Its advocates propose that we interpret the world subjectively and so multiple realities exist; researchers of this tradition focus on meaning and interpretation (Hitchcock and Hughes, 1989; Morrow and Brown, 1994).

Although interpretive research is able to draw on the richness of human experience (Denzin and Lincoln, 1994), the subjectivist, or naturalistic approach has been criticised on numerous grounds. Positivists criticise interpretivists as they do not verify or refute their own research claims; they also believe subjectivist findings lack substance as they are non-generalisable (Carr and Kemmis, 1986). Carr and Kemmis (1986) argue that subjectivist research is often misleading and inaccurate. It is a flawed approach, as it is impossible to provide an impartial interpretation of any situation; any observation is an inevitable product of the context in which it took place (Bernstein, 1974; Kemmis, 2007; Ladkin, 2004). These arguments, made by Bernstein (1974) and Kemmis (2007) note that the interpretive approach fails to sufficiently account for the situated context of the observer, which includes the influence of institutions, power, activity and historical context. If research does fail to sufficiently account for context, it separates the focus of study from the outside world: a parochial approach to study (Carr and Kemmis, 1986). The interpretivist approach has also been criticised as it does not adequately explore the underlying causes of human behaviour or culture (Little, 1991).

The emancipatory worldview and critical theory

The objectivist ontological position supports the existence of an external singular reality, which can be studied objectively through positivism. At the opposite end of the continuum, supporters of interpretivism support anti-positivist ideals and methods of study. They accept multiple realities exist, as reality is constructed personally and uniquely. Although these perspectives differ they both concur that reality can be understood by the observer (Kemmis, 2007). Critical theorists (e.g. Carr and Kemmis, 1986; Kemmis, 2007; Morrow and Brown, 1994) however, support the emancipatory perspective; this aligns with advocacy and participatory (Creswell, 2009) approaches and presupposes an alternative worldview: a perspective that I have encountered during my EdD programme and have adopted through my own developing understanding of life and in the process of becoming an increasingly experienced teacher educator (Gayá Wicks *et al*, 2008).

Critical theory encapsulates manifold traditions of thought and contemporary lines of enquiry (Blake and Masschelein, 2003; Morrow and Brown, 1994). While these often conflict they commonly contend that “positivism has resulted in a widespread growth of instrumental rationality and a tendency to see all practical problems as technical” (Carr and Kemmis, 1986, p.130) (this criticism is aimed at positivists and interpretivists alike, as the latter has been considered a mere attenuation of the former (Cohen *et al*, 2000)). Critical theory denounces positivism and interpretivism, as these paradigms fail to account for the overwhelming influence of power, which merely perpetuates the interests of the powerful (Blake and Masschelein, 2003; Carr and Kemmis, 1986).

While positivism is said to serve ‘technical’ interests, interpretivism supports ‘practical’ interests, as this approach merely aspires to describe prevailing conditions (Habermas, 1971). In contrast, the interests of the critical approach are ‘emancipatory’: this view incorporates technical and practical interests but aims to promote praxis to emancipate. Advocates of the emancipatory approach support objectivist ontology, as they seek to understand social reality; they simultaneously

support subjectivist epistemology, as they seek to explore what it means to experience reality (Morrow and Brown, 1994). While objectivists and interpretivists agree that reality can be understood by the observer – Habermas (cited Kemmis, 2007), a prominent critical theorist, contends that reality can only be understood through negotiation, in intersubjective agreement, and so the “‘truth’ becomes manifest only in attempts at ‘telling-truth’” (Kemmis, 2007, p.121). Understanding should then be applied through research to transform reality, to promote equality (Morrow and Brown, 1994).

Proponents of the emancipatory worldview contend that while consciousness defines reality, reality in turn shapes consciousness (Carr and Kemmis, 1986) i.e. subject-world relations constitute each other. This dialectical position supports the notion of the situated self, where individuals develop in relation to their own unique histories and environment (Morrow and Brown, 1994). It is therefore harmonious with my own understanding, which has developed through my research process, in writing my thesis, through my EdD and professional and personal life in general. In short, I support the emancipatory worldview.

The most appropriate research methodology

From a critical-emancipatory perspective Blake and Masschelein (2003), Carr and Kemmis (1986), Habermas (1971), Kemmis (2007) and Morrow and Brown (1994) agree it is the researcher’s role to liberate the disempowered from unproductive, irrational, unjust and unsatisfying social structures and media (rooted in language, modes of work and relations), which suppress the ability to develop. I believe the current form of initial teacher training, in Further Education (as outlined in chapter 1), is such an unproductive structure as to make it irrelevant and meaningless to many of my learners. Much work (Enfield and Stasz, 2011; Little, 1992; Thiessen, 2001; Wubbels, 2007) supports my belief that it does not promote critical reflectivity and reflexivity.

Researchers can employ the Marxist concept of ideology critique (Carr and Kemmis, 1986; McNiff, 2013a) or action research, the two research methodologies of critical theory, to critique prevailing conditions, to redress or at least minimise inequality (Creswell, 2009; Cohen *et al*, 2000; Kemmis, 2007; Kemmis and Wilkinson, 1998). As this clearly signifies ethical concern, researchers of this tradition cannot remain neutral but act with or for others, rather than conduct research on others (Creswell, 2009; McNiff and Whitehead, 2006). Ideology critique and action research are both used to overcome ideologically distorted practice and belief (Carr and Kemmis, 1986, p129); they offer a deliberately political approach (e.g. Carr and Kemmis, 1986; Kemmis, 2007; Whitehead and McNiff, 2006): “Thus, we may use research not simply to reflect the past, but to create new futures” (Gayá Wicks *et al*, 2008, p.18; McNiff, 2012). Ideology critique offers a means to critique and lessen the impact of dominant forces on disempowered groups and individuals (Carr and Kemmis, 1986) in order to expose interests, in a move toward a more democratic society (Morrow and Brown, 1994). Action research is regarded as the more practical methodology that is “a powerful tool for change and improvement at the local level” (Cohen *et al*, 2000, p.226; McNiff, 2002; 2012; 2013a; Somekh, 1995; Whitehead and McNiff, 2006).

Action research

Although I consciously select action research as my methodology, reading McNiff (2002; 2010; 2013a) and Whitehead and McNiff (2006) leads me to believe I have been involved in what might be described as a loose form of action research from the very start of my research process. My ideas have unfolded and continually reshaped, reinventing my understanding as I have engaged in the research process. This reflects my advocacy of the emancipatory principles and ontological and epistemological foundations of action research (Carr and Kemmis, 1986). Action research *feels* like the right thing to do (McNiff, 2002; 2013a); because it accords with my own identity, with ‘who I am’ (Ingram, 2014).

I also believe action research offers a potential means to develop a powerful teaching community of practice (I go on to explain how, within this chapter). A community of practice might not necessarily benefit others located outside it, and so the community of practice that I want to develop in my research should be productive, rational, just and satisfying for those involved and it should empower and cultivate critical reflectivity and reflexivity, toward critical praxis. It is vital the community of practice positively promote my learners' learning and serve the greater good of the construction industry.

Different forms of action research have emerged since the early works of Collier (1945 cited McNiff, 2013a, p.56) and Lewin (1948) but essentially, all action research integrates research with action (Gordon, 2008; McNiff, 2013a), as this approach presupposes that understanding can only be achieved through action (Ladkin, 2004).

All action research generally starts with an initial planning stage, when actions that will instigate change are considered. Those involved in the research process then engage in the activity they deem most appropriate, they observe the impact of action and reflect on success. Although it is not always a clearly delineated process (Ladkin, 2004; McNiff, 2013a), action research is a recursive process, as this generally leads back to another planning stage, progressing to further cycles (or a cycle) of action, observation and reflection until practice or conditions are ameliorated (Cohen *et al*, 2000; McNiff, 2002). Although action researchers start off with a plan of action they must remain open to the emergent properties of the research situation as it unfolds, in practice. They may start off with a predetermined understanding of the ideal course of action that will lead to desired outcomes but they must remain open to new ideas and ways of working (Carr and Kemmis, 1986; Elliott, 1991; Hanrahan, 1998; Ladkin, 2004; McNiff, 2002; 2006; 2013a; Morrow and Brown, 1994).

To Lewin (1948), action research is a collaborative research activity, where groups of researchers aim to improve the conditions of others outside the research circle. Since Lewin (1948), action research has been used for multiple purposes, in multiple

ways; reflecting worldviews and professional agendas. Action researchers, who support the Habermasian ideals of critical theory, work with those directly affected by power to help them emancipate themselves from the shackles of power (Carr and Kemmis, 1986; Ladkin, 2004; Morrow and Brown, 1994). In contrast, others such as Coghlan and Brannick (2005) advocate action research that extols the virtues of the reflective practitioner (Cohen *et al*, 2000). They argue that groups or individuals should employ action research to improve their own professional practice. Action research has therefore been used to work for others, with others and for more self-serving interests (Gordon, 2008).

Although action research is a research methodology of critical theory, the disparity highlighted within the paragraph immediately above, illustrates action research can nevertheless reflect technical, practical or emancipatory interests (Morrow and Brown, 1994). Action research that reflects a technical or practical interest has been heavily criticised by critical theorists such Ladkin (2004). Action research is most likely to reflect technical interests when the researcher works in isolation to improve a particular and fairly narrow aspect of practice (against given standards that may be explicitly considered in the research process), through reflection-in-action (Carr and Kemmis, 1986; Elliott, 1991). While isolation typically relates to isolation in the absolute sense, it also pertains to working in relative isolation (Carr and Kemmis, 1986): as an example, a researcher devises his/ her own research questions then coerces others to participate. If the research questions are of no concern to the participants, the researcher will work in relative isolation, as an outsider. “For the isolated teacher [researcher], ignorance is bliss” (Elliott, 1991, p.55)...the researcher will inevitably fail to understand and account for the influence of power...“it allows such a teacher [researcher] to sleep at night by living under the illusion that the improvement of practice is largely a matter of developing technical skills” (Elliott, 1991, p.55). Carr and Kemmis (1986) and Morrow and Brown (1994) reject technical action research as it fails to empower and instigate real change, it merely shapes technical matters (although, in certain circumstances this might be sufficient to promote inclusion (Armstrong and Moore, 2004)).

In comparison, Cohen *et al* (2000) believe action research serves practical interests when it is characterised by reflection-on-action i.e. when the researcher reflects on his/ her own situation in order to interpret and subsequently improve it through a professionally informed process. In practical action research a researcher typically works with practitioners to facilitate a change in practitioner practice or a practical concern that practitioners voice (Banegas *et al*, 2013; Elliott, 1991; McNiff and Whitehead, 2006). Although practical action research is a more collaborative approach than technical action research it is criticised by Carr and Kemmis (1986) as it fails to develop the reflective skills of the practitioners involved. Carr and Kemmis (1986) argue that practical action research only develops the practical ability to form judgements on how to alter practice in accordance with standards. From a critical perspective, these standards can be the very phenomena that restrict growth (Habermas, 1971; Morrow and Brown, 1994).

Participatory action research

Participatory (or emancipatory) action research attempts to realise the Habermasian emancipatory ideals of critical theory (Carr and Kemmis, 1986; Hanrahan, 1998; Morrow and Brown, 1994). As the foundations of this approach are to be found in socialist politics, it is ultimately concerned with power and exploitation and how power might be fairly redressed (Morrow and Brown, 1994). Reading (Cohen *et al*, 2000; Kemmis and McTaggart, 1988; Morrow and Brown, 1994) leads me to regard participatory action research as critical ethnography: a critical theory-based approach to the investigation of culture. From this perspective, participatory action research is an “anthropological, participant, observer-based” (Cohen *et al*, 2000, p.153) form of qualitative research, where the researcher works democratically with those affected by power, in order to try to empower them.

The researcher can propose the research aim(s) to those affected by power and ask them to voluntarily participate (I discuss voluntary participation, in the ensuing section). Alternatively, the researcher can listen to the concerns of others affected

by power, to produce the aims of study with them/ recruiting them into the research process as voluntary co-participants (Armstrong and Moore, 2004).

Ladkin (2004, p.478) states that the participatory action researcher must try to embrace and accommodate co-participants' "emotional, social, spiritual and political" need throughout the entire research process. Although this is not easy to achieve, it is more easily achieved if the researcher tries to understand his or her own prejudices (Kemmis, 2007). Working together, co-participants try to transform practice into praxis, as informed action consistent with their own beliefs (Hanrahan, 1998; Kemmis, 2007). To inform this process, co-researchers initially endeavour to critique their own habitual practice and the context in which their practice and research is situated (Ladkin, 2004). For example, they investigate "habits, customs, precedents, traditions, control structures and bureaucratic routines" (Carr and Kemmis, 1986, p.204). Advocates of participatory action research, such as Carr and Kemmis (1986), Gordon (2008), Hanrahan (1998) and Morrow and Brown (2004) believe understanding is only attainable through multiple perspectives, which arise and develop in action. As understanding develops (Cohen *et al*, 2000) knowledge is interpreted collaboratively, and is used to inform the iterative research process (Hanrahan, 1998; Ladkin, 2004; Zuber-Skerritt, 1996): any potential course of action must be democratically negotiated and endorsed before action.

As the process continues it is possible to recruit others from outside the research group to help achieve research aims. These might be others with a desire to pursue the aims of research (research activity may inspire additional recruitment) and/ or knowledgeable or skilled others who can help achieve aims (Ampartzaki *et al*, 2013; Taylor *et al*, 2012). The researcher must remain open to new ideas, emergent ways of working and possibilities, which is difficult to achieve in practice (Hanrahan, 1998; Ladkin, 2004). As research activity leads to multiple perspectives it leads to multiple possibilities for an acceptable solution. Action researchers must assume there is no single precise course of action that will predictably determine an acceptable solution (Kemmis, 2007; Ladkin, 2004). Although the recursive research process might be difficult to facilitate, e.g. it can become ill-defined and confusing (Beck and Kosnik,

2001; Ladkin, 2004; Taylor *et al*, 2012), the process ideally continues until change is collectively considered acceptable (Ampartzaki *et al*, 2013; Carr and Kemmis, 1986; Coghlan and Brannick, 2005), or until research parameters dictate.

The quality and validity of participatory action research is assessed against a number of criteria. First and foremost, it must be questioned whether the research aims are of sufficient practical worth. The researcher must also consider whether multiple perspectives, which emerge during the research process, are sufficiently listened to and whether actions are democratically considered and implemented (Heikkinen *et al*, 2007; 2012; Ladkin, 2004). Others however, believe egalitarian emancipatory ideals are elitist and unrealizable as it is not possible to rationally distribute power equitably (Cohen *et al*, 2000).

If co-participants feel the research has been successful i.e. if they believe they have achieved their goal(s) (or at least feel that they have 'sufficiently' improved their own situation), it may empower liberty and a sense of achievement, yet it is often difficult to instigate change within organisations, as entrenched practices and mind-sets can pose insurmountable barriers. Many variables can confound the research process. For example, although co-participants may start with the best intentions, it is not always easy to maintain their engagement. Despite challenges, the process is considered more rewarding than the product (Ladkin, 2004), at least from the action researchers' perspective. Evidence suggests participatory action research can be employed to improve relationships and encourage development (Kemmis, 2007).

An ethical approach, enabling the conditions to form a community of practice

Reading Kemmis (2007; 2009; 2010), participatory action research seems 'well-suited' (Stuart, 2012) to support the development of a community of practice. There is a paucity of research in this area but Ampartzaki *et al* (2013) suggest participatory action research will, somewhat inevitably, lead to the development of a community of

practice. Mitchell *et al* (2009) and Taylor *et al* (2012) discuss the development of communities of practice during collaborative practical action research but their conclusions are also based on ill-founded interpretations of what a community of practice is. Goodnough (2010) presents a more robust theoretical basis but (like Ampartzaki *et al* (2013)) conflates the concepts of community and community of practice. I suggest participatory action research has the *potential* to facilitate the *sufficient* conditions, within which a community of practice can form and sustain.

At the start of participatory action research, individuals are asked to participate voluntarily. In light of my discussion of Lerman (1998a, see page 33), I believe co-participants must be recruited only on a voluntary basis. They should only participate if they are willing to engage in activity for personal empowerment, as they perceive research aims are personally worthwhile, rather than in reaction to external pressure; Ingram (2014), discussed in chapter 1, develops this point. He maintains that reflexion provides the capacity for abstraction. To be reflexible, his neologism, means to respond intuitively to an event because it feels like the right thing to do: in tune with 'gut-feeling'; identity. I therefore argue that if a group of individuals is motivated to voluntarily pursue the aim of participatory action research because it *feels* like the right thing to do, then this aim can provide the initial abstraction, from which a community of practice can develop. If, during research, co-participants no longer feel that participation is the right thing to do, then they should be free to leave the research process (Coghlan and Brannick, 2005; Locke *et al*, 2013).

The participatory action research process can support the development of a community of practice as it "opens a communicative space so emerging agreements and disagreements, understandings and decisions can be problematized and explored openly" (Kemmis, 2007, p.126). Within the communicative space, participants can negotiate from abstraction, developing practice through collaborative activity (Engeström, 1999a; 1999b). Ladkin (2004) and Sachs (2001) argue that it is the researchers' role to ensure a democratic process, where multiple perspectives are embraced and accounted for. In chapter 2 (see page 46), I argued that communities of practice only develop and endure with sufficient emotional support.

Even if the participatory action researcher does embrace and account for the diverse needs of all co-participants, this alone is insufficient. A community of practice will only form if all members provide and receive sufficient emotional support. As 'sufficiency' evolves on a personal basis (Vygotsky, 1994), the researcher can only try to nurture conditions where emotional support and feelings of trust can grow. The researcher should try to ensure equal rights, no deception or coercion, and all perspectives are respected (Kemmis, 2007). Anonymity and confidentiality must be maintained (Coughlin and Brannick, 2005; Locke *et al*, 2013).

In chapter 2, I explored how communities of practice can be built and nurtured (please refer to page 59). I argued that a community of practice is more likely to evolve if members have free access to use and manipulate resources in practice, and if they understand their significance. The participatory action researcher should therefore consider how members interact most effectively with artifacts and how reification will assist or hinder development. If a community of practice does develop, the researcher must consider bridges to other communities of practice and how the visibility/ invisibility of artifacts impacts upon new members joining the community of practice (Wenger, 1998).

I have provided my rationale for the type of research I will engage in. I have considered my worldview, and consequently, the most appropriate methodology to employ. I now pose my research questions and move on to explain how my own specific approach to research, my choice of methods and my analysis enable me to make inferences in regard to my research questions.

Research questions

Main research question

1. What are the barriers and bridges to establishing a professional development community of practice in initial teacher training in Further Education?

Subsidiary questions

2. What might a professional development community of practice in initial teacher training in Further Education look like?
3. Can participatory action research become a constitutive and characteristic activity for a professional development community of practice in initial teacher training in Further Education?
4. Given that established instructors have learned to be the instructors they are, can they be seen as participants in other communities of practice whose activity bears upon their professional identity? If so, what might these communities of practice be, and how might they be recognised?
5. What kinds of instructor identities might be produced by such a professional development community of practice in initial teacher training in Further Education?

My approach to data collection, supporting the development of a community of practice

In this project, I facilitated (Cohen *et al*, 2000) participatory action research, with the voluntary co-participation of instructors, who were those most affected by the aim. At the start of the research process, I explained the purpose of my research to all of the instructors based at the research campus, individually and privately. I explained the aim, the proposed framework for research and the democratic research process. The recruitment process is detailed in full, within the following chapter. Instructors volunteered to participate if they felt it personally worthwhile.

On recruitment, power shifted to co-participants who used the process to support the development of their own practice. I guided (or 'moderated') the process (Carr and Kemmis, 1986) in line with my own understanding; outlined above. Although I consider myself an 'outsider' (Gordon, 2010) inside our college (see page 9), Carr and Kemmis (1986) and Hanrahan (1998) argue that 'outsiders' (Gordon, 2010) i.e. co-researchers who are not immediately affected by the suppressing power, as focused on in research, can justifiably and effectively facilitate or guide participatory action research. Hanrahan (1998, p.316) states, "the insider-outsider problem is only a problem in a positivistic system. In a world where difference is allowed and dialogue replaces domination or consensus, inclusion or exclusion become less relevant terms". As the research progressed, I attempted to remain constantly mindful of the power I brought to the research process (Carr and Kemmis, 1986).

Subsuming my research aim into participatory action research, the framework for research was split into two distinct parts: in Part 1, I explored instructor communities of practice and their andragogical identities within these practices (employing criteria (please refer to page 57) as a means of identifying communities of practice) within the confines of routine college activity. The literature reviewed in chapter 2 indicates that communal practice does not automatically signify the development or existence of a community of practice. The criteria of Winbourne and Watson (1998) helped me understand what a community of practice is and so we used their criteria, revisiting

them, as we attempted to identify possible communities of practice through observation. Although Winbourne and Watson (1998) cannot legislate on what is or is not a community of practice we used their criteria to guide our thinking, as without such an approach the notion of a community of practice becomes weak.

In Part 2 I attempted to employ insight from Part 1 activity to develop a learning architecture (Lave, 1996; Wenger, 1998), promoting a powerful teaching community of practice. I now explain what Part 1 and Part 2 activity entailed, and how my methods of data capture supported my attempts to develop a powerful teaching community of practice. I go on to explain how this helped me make inferences in regard to my research questions.

Part 1: Identifying communities of practice

As participatory action research is a participant, observer-based form of qualitative research (Cohen *et al*, 2000) I opted to use methods that could provide rich qualitative data. I divided Part 1 into two Parts: Part 1(a) and Part 1(b). Part 1(a) included two data collection methods, both inspired by Winbourne (2008). For an overview of Part 1(a) procedure and how this related to the participatory action research process, please see Table 1 (below). A full explanation follows.

Part 1(a) process (15/04/13 – 30/06/13)	Action	Who was responsible
Initial planning and action	<p>Design and propose overall research aims and participant observation procedure (as detailed previously)</p> <p>A joint decision on who and what we should observe</p>	<p>Me</p> <p>Co-participants</p>
Observation, reflection and evaluation	<p>Observation of co-participants (and students of co-participants) in teaching contexts.</p> <p>Observation of co-participants in wider college settings</p> <p>Reflection in discussion and written journals</p>	Co-participants
Re-planning	A joint decision on who and what we should observe next	Co-participants
Subsequent observation, reflection and evaluation	<p>Observation of co-participants (and students of co-participants) in teaching contexts.</p> <p>Observation of co-participants in wider</p>	Co-participants

	college settings Reflection in discussion and written journals	
Re-planning	Process of starting subsequent cycle(s) of observation, reflection and evaluation	Co-participants
This facilitated greater understanding when we moved on to:		
Initial planning and action	Design video procedure and method of analysis (explained on page 90-91)	Me
Observation, reflection and evaluation	Participate and consider communities of practice in post-workshop discussion (explained on page 90-91) (during face-to-face research activity and subsequently within written journals)	Co-participants
Evaluation	Reflect on learning and process, enabling us to move to Part 1(b)	Co-participants

Table 1: Part 1(a) Framework for Research

The research activity was confined to one college campus. During Part 1(a), co-participants collaborated to undertake naturalistic participant observation (Cohen *et al*, 2000) to observe co-participant practice in context, within training areas and wider college practice. This afforded the chance to consider and explore co-participant communities of practice.

When we observed co-participants in other non-teaching wider-practice settings, we did this as informally as possible, discussing, when alone in our co-participant group, observable practice and their part in interactions with other co-participants. Other members of staff were unavoidably present during research activity but we did not observe or comment on the activity of others; only interactions between co-participants were considered. These initial observations helped us get a feel for practice and aided reflection during Part 1(b).

Co-participants collaboratively agreed on the direction of our research process, deciding on what practice to observe and who and when to observe. We considered from where instructors currently gain knowledge relating to learning and how they work with other co-participants to improve their practice. This helped us gain a holistic understanding of how practice in one context related to practice in another (Denscombe, 2007). I guided co-participants to reflect on the physical setting, people in the teaching-learning context, their goals, how they felt, practice and timings/ sequence of events (Cohen *et al*, 2000).

Following this, like Winbourne (2008), I video recorded (using a Panasonic HDC-TM700 video recorder) co-participant contributions in a teaching (continuing professional development) session (workshop). During this workshop, my co-participants along with other instructors (non-participants) participated as learners; I delivered the session. I then examined the video after the workshop alone, for one particular 'teaching moment': a short clip/ a 'snapshot' of the session, where my teaching objectives were clearly visible. All co-participants then watched (using my works laptop, projector and speakers) this snapshot together, with no others present. This helped co-participants consider what was happening in class, during the

teaching moment, from my learners' perspective. Like Winbourne (2008), I hoped it would provide insight into co-participant identity and collective ways of behaving.

When co-participants met to engage in Part 1(a) research activity, we spent time considering the communities of practice that we are currently members of (and may have been part of in the past). The opinions of all co-participants were considered during these face to face encounters; thoughts were re-counted and sometimes added to during the journal writing process. As all co-participants had access to all co-participant written journals, we had the opportunity to reconsider our initial thoughts from face to face research activity. It was therefore possible to re-evaluate our understanding and reflect on how our perceptions changed during subsequent research activity and/ or journal entries (depending on how co-participants wished to express themselves). This process allowed us to continually return to consider how membership within communities of practice related to instructor identity. The initial observations of practice were intended to situate the 'teaching moment' in context (Winbourne, 2008).

At the start of Part 1(b) co-participants recruited as many instructors as possible from the campus where they are based.

Winbourne (2008) gathered productive data when he captured students' stories so Part 1(b) concentrated on stories, as a method of data capture, to illuminate communities of practice, building on understanding derived from Part 1(a). As stories have been considered the cornerstone of identity (Thody, 1997), I believed this would be the most fruitful approach. I hoped this approach would also provide insight into the figured worlds of instructors and how these influence and impact upon membership within communities of practice. We held story groups, where co-participants verbally related stories to each other and this inspired stories from others present. As Thody (1997) argues story groups are most productive if they adhere to a theme, we focused on our experiences with learning, and in particular learning to develop as a teacher. Our starting point was our understanding derived from Part 1(a); as previously detailed, this understanding developed through our

face-to-face research activity, where we considered and attempted to identify existing instructor communities of practice, the process facilitated by our written journal entries (Myers, 2012; Rock and Wilson, 2005; Stigler and Hiebert, 1999), freely available to all co-participants. I guided co-participants to talk about past and current experiences with formal and informal learning and future aspirations (Wenger, 1998), in relation to “Practices, space, time, bodies, social relationships [and] life courses” (Lave, 1996, p.154).

Stories were audio recorded, using an Olympus VN-713PC Voice Recorder, for subsequent analysis and to assess whether there were any recurring themes, emerging from the narrative. I transferred the audio recording to co-participant laptops, and we listened to these recordings in our own time to consider repeated themes or explanations, providing insight into instructor communities of practice. We talked on our analysis and subsequent reflections in our story groups, recounted in reflective journals, in subsequent meetings (Cohen *et al*, 2000; Thody, 1997).

I illustrate the framework for research for Part 1(b) and who was responsible for which actions directly below in Table 2: Part 1(b) Framework for Research.

Part 1(b) process (01/07/13 – 18/08/13)	Action	Who was responsible
Initial planning and action	Design aims and story group process	Me
Observation, reflection and evaluation	Participate in story groups, reflecting on learning and communities of practice Reflecting in discussion and written journals	Co-participants Co-participants
Re-plan	Consider how we can take understanding from Part 1 into Part 2	Co-participants

Table 2: Part 1(b) Framework for Research

Part 2: Developing a community of practice through lesson study

Part 2 commenced with another recruitment drive to garner greater instructor support. Lesson study was a central research tool in Part 2: its recursive process fed directly into the participatory action research process. In chapter 2, I suggested lesson study has the power to establish a powerful teaching community of practice; I will now explain how I believe lesson study has the power to establish a powerful teaching community of practice. I previously argued (see page 83) that participatory action research can provide the initial abstraction, from which a community of practice can develop; as lesson study is fundamentally a form of action research, it follows that lesson study can provide the potential initial abstraction too. If those involved engage in the shared iterative experience of lesson study, in an egalitarian and democratic manner i.e. if it shares all the hallmarks of participatory action research, and if there is ample opportunity to negotiate meaning through dialogue

and *multilogue* (Lektorsky, 1999), with participants reflecting on their own position relative to other members within communicative space, there is a good chance that a community of practice will be constituted by that activity. The community of practice will only form however, if the environment is 'sufficiently' favourable, and so the teacher plays a leading role.

As those involved worked toward their negotiated common commitment, I drip fed theory and understanding from the world of teacher education to support co-participant understanding and development, 'fuelling' the community of practice. In an activity theory sense (Engeström *et al*, 1999), this provided co-participants with an increased array of tools (Williams *et al*, 2008), in negotiated collaborative activity, for working toward the object of activity. It was my responsibility to ensure co-participants could access, use and manipulate the tools I provided, and I provided more (Wenger, 1998) when co-participants said they needed more or if I believed they needed more.

- *Negotiating meaning, throughout Part 1 and Part 2*

In chapter 1, I discussed the work of Ingram (2014). He suggests reflection is used to construct and apply knowledge toward praxis, and so I guided co-participants, throughout Parts 1 and 2, to reflect on research activity and their developing understanding that arose in process, within written journals (McNiff and Whitehead, 2006). I anticipated, as Stuart (2012, p.442) argues, that "the act of constructing a narrative forces reflection on the original event". I advised co-participants to keep four types of notes: "notes made in situ; expanded notes that are made as soon as possible after the initial observations; journal notes to record issues, ideas, difficulties etc. that arise during the field work; and a developing, tentative running record of ongoing analysis and interpretation" (Cohen *et al*, 2000, p.313). Such a systemised approach increases reliability (Cohen *et al*, 2000).

Written journals were freely accessible (on-line) to all co-participants, throughout the entire research process. Thus, co-participants had the opportunity to consider the views of other co-participants, even when they were not engaged in research together. When co-participants did meet, they consequently had more to discuss and they could negotiate meaning based on more informed insight (Hanrahan, 1998; Wells, 2011) (please refer to Appendix 6 for a selection of journal entries). In one sense, this was understandably ethical as co-participants were given freedom to express their own perspectives. However, this also afforded the opportunity to express negative opinions about colleagues, management and other stakeholders. Although any activity system will inevitably contain tensions and contradictions (Engeström, 1999) I believe individuals should be allowed to express concerns, as conflict is an inevitable and essential part of development. We only discussed concerns within the research group though, and no concern was made public until research publication. The ability to access multiple perspectives granted me the opportunity to corroborate data (Locke *et al*, 2013), increasing research validity (Ladkin, 2004)).

How I analysed data to make inferences regarding my research questions

Here, I explain how I analysed my research data. I also justify the process I used, which allows me to make inferences regarding my research questions (stated on page 85).

During Part 1(a), Part 1(b) and Part 2 research activity, all co-participants (including myself) reflected within written journals, providing narrative for analysis. I also obtained three audio recordings, each roughly one hour in duration, during Part 1(b) story groups. I transcribed these verbatim, providing further narratives for analysis. At the end of the research process, co-participants presented findings at a seminar at my University to discuss progress and our understanding of the research process. The presentation was video recorded so I was able to transcribe what was said and co-participants reflected on the presentation experience in their written journals.

Following this, a senior manager, who had heard about our activity, asked us to present our research at work, to a steering group dedicated to improving teaching and learning. We also wrote about this experience in our journals too. The transcribed discourse from the University-based presentation, and all journal entries offered data for analysis.

To start my analysis, I used NVivo; a computer software package designed to assist in the analysis of qualitative data. I used it to organise data, helping me recognise key themes and observations emerging from data. Once this was complete, I started to write up the action research story. Action research should be written as a story as the writing process can help the researcher make sense of research data (Cloake and Noad, 1991; Coghlan and Brannick, 2005; McNiff and Whitehead, 2006; 2009). The writing process is no simple undertaking however, as “speaking about experience is different from experiencing the experience itself” (McNiff and Whitehead, 2006, p.185). Coghlan and Brannick (2005) believe that the writing process should involve a series of steps, somewhat analogous to action research itself, involving “planning, acting, observing, reflection and re-planning” (Cloake and Noad, 1991, p.1). The initial draft should recount significant research events chronologically, and the researcher should then reflect to identify emergent themes, in relation to the events. As Coghlan and Brannick (2005) suggest, this process led to new insights, and understanding about what data is important and what is not.

Second-generation cultural-historical activity theory also supported my analysis. I now provide a brief commentary to justify my use of activity theory to support my analysis.

Second-generation cultural-historical activity theory and action research

Second-generation cultural-historical activity theory is an analytical conceptual tool (Engeström, 1999; Junor Clarke and Fournillier, 2012) that can be used as a framework (Feldman and Weiss, 2010; Kaptelinin *et al*, 1995; Stuart, 2011; 2012) (or

lens (Junor Clarke and Fournillier, 2012; Orland-Barak and Becher, 2011)) to inform insight into individual and collective activity, within any context (i.e. an ‘activity system’) (Chaiklin *et al*, 1999; Engeström, 1999; 1999a; 1999b; Kaptelinin *et al*, 1995).

This model proposes that available tools (artifacts) mediate the activity of a subject (an individual or group). As the subject is motivated to work toward the object of activity (leading to an outcome), across a period of time, the activity system and subject both create and reflect a unique history. In this model, the cultural and historical environment is depicted by the constructs of community, division of labour and rules. The community is comprised of others with an interest in the object of activity and labour is divided, according to the role of each individual within the community (affording power on an individual basis). The community, division of labour and rules (which can be implicit or explicit) govern activity (Engeström, 1999a; 1999b; Kaptelinin *et al*, 1995). This model is represented pictorially, immediately below, in Figure 1:

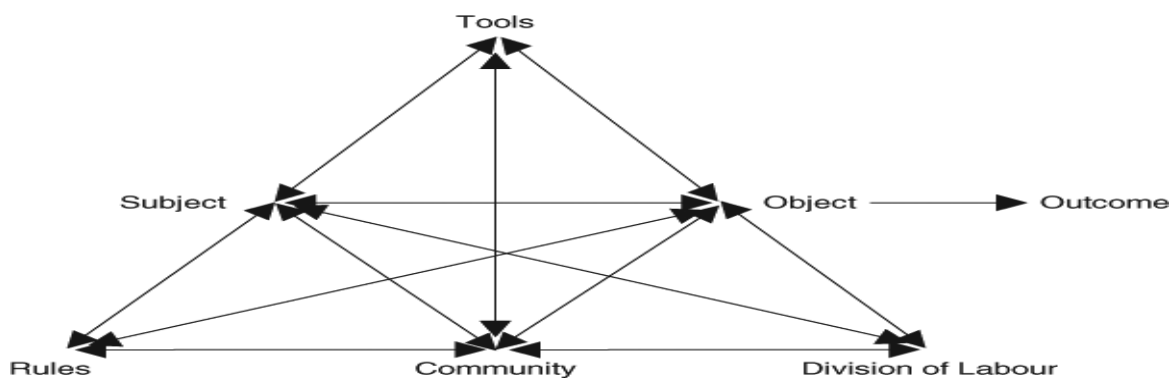


Figure 1: Second-generation activity system (Flavin, 2012)

An activity system is a collective, artifact-mediated and object-orientated system (Engeström, 1999a; 1999b; Stuart, 2012) that always contains contradictions (Feldman and Weiss, 2010) that influence the flow of activity. Any aspect within the activity system (e.g. rules, artifacts, subject) can conflict with i.e. contradict any

number of other aspects within the activity system. Contradictions account for “disruption, innovation, change, and development” (Stuart, 2012, p.443) within the activity system, including any to the subject. While this can help understand how contexts are historically and culturally defined, it can also explain how the individuals involved depend on each other, how their activity conflicts, and wider issues of power etc. It can be used to reflect on how identity changes in activity and how activity undergoes expansive cycles (Engeström, 1999; 1999a; 1999b; Kaptelinin *et al*, 1995; Stuart, 2011; 2012).

Like action research, activity theory is underpinned by objectivist ontology and subjectivist epistemology (Chaiklin *et al*, 1999; Morrow and Brown, 1994). Although activity theory and action research commonly assume that i) knowledge develops in action (Junor Clarke and Fournillier, 2012; Somekh and Nissen, 2011; Wells, 2011); and ii) activity is dialectically mediated and cannot be separated from the context in which it occurs (Engeström, 1999a; Junor Clarke and Fournillier, 2012; Wells, 2011; Yamagata-Lynch and Haudenschild, 2009) they are used to analyse different aspects of human behaviour. While action research ‘zooms in’ to consider meaning making in recursive cycles, second-generation activity theory analyses the broader collective activity system (Engeström, 1999) i.e. it ‘zooms out’ “to display connections and tensions within these processes, considering the wider social and cultural contexts that are grounded in the history of that particular professional practice” (Orland-Barak and Becher, 2011, p.116).

Activity theory is practically very useful to me, as it provides the opportunity to consider activity, with a greater appreciation of context, the objectives of activity, outcomes and the tensions that occur driving change, during the recursive action research process (Feldman and Weiss, 2010; Junor Clarke and Fournillier, 2012; Orland-Barak and Becher, 2011; Stuart, 2011; 2012). In chapter 4, I employ activity theory practically to help me analyse my research data.

Conclusion

In this chapter, I have explored my beliefs and worldview. Like Hanrahan (1998), I have embarked on a journey from the 'technical/ experimental' to the 'practical/ interpretive' to the 'emancipatory/ action research'. I perceive my current beliefs and worldview have developed in relation to the EdD curriculum and the beliefs and influence of my EdD teachers. However, they have matured through my own systematic critique of a wide range of academic perspectives. Although Bernstein (1974) can be taken to suggest my beliefs have developed through a form of social control, they are now grounded in (at least a greater degree of) academic rigour.

Although I support the emancipatory ideals and the worldview that underpin participatory action research, I ultimately adopt this methodology as I believe it affords the opportunity to develop the critical reflective skills of all participants, as well as their reflexivity as 'introspective andragogues' (Ingram, 2014). I understand that it might be very difficult to realise this in practice but, given my understanding of how learning occurs, I must endeavour to establish a powerful teaching community of practice, as, from this perspective, it seems the logical solution to teacher development, post-deregulation.

I suggest participatory action research has the potential to facilitate the sufficient conditions to establish a powerful teaching community of practice but this will only occur if co-participants volunteer, because they find the idea sufficiently appealing - because they are aligned (Winbourne, 2008) or predisposed to participate. In my research, I provided a framework for research that we used to guide our activity, as I hoped this activity would come to constitute a professional development community of practice. The research aim provided the initial abstraction, and I drip-fed theory and understanding from the world of teacher training to fuel the development of a powerful teaching community of practice. Co-participants then worked together in collaborative activity, in communicative space, negotiating/ abstracting together. The opportunity to reflect in face-to-face contact and through written medium was provided.

In the next chapter I tell our research story, showing the recursive research process, as activity and time unfolded i.e. across Part 1(a), Part 1(b), Part 2, and when post-research activity had finished. I explain how I gained access to the research site and authorisation to approach and recruit co-participants. Writing this story enables me to consider my data in relation to my research questions (page 85). I conclude Chapter 4 with an argument for the validity of my research.

Although I write this thesis alone, as this participatory action research is an integral part of my doctoral studies, supplementing other finished work, my co-participants (who have been main actors in this story (McNiff and Whitehead, 2009)) have helped me write Chapter 4. In the telling, I portray my own developing understanding of how my research data helped me make inferences in regard to my research questions.

In Chapter 5, I discuss my findings and conclusions and relate them back to the literature and research that I have reviewed in chapters 1 to 3.

Chapter 4: The participatory action research story

Introduction

This chapter tells the action research story and why I believe this research is valid. The beginning focuses on how I gained access to the research site and authorisation to approach and recruit participants¹. I tell of the recruitment process, and when and how I introduced the concept of communities of practice to my participants. I tell how my participants' (and my own) understanding of communities of practice grew throughout the research process². Our story details how participants initially worked together to identify communities of practice influencing their own identities as teachers. As we moved on to engage in lesson study, we used our understanding of communities of practice to consider our own identities as teachers in practice. I tell how lesson study activity, as I had hoped it would, helped to constitute a professional development community of practice. Our story includes reference to unexpected research activity when participants delivered presentations at work and university. Writing this story allows me to consider my data in relation to my research questions (page 85) and to consider the validity of my research.

¹ Although I realise the term 'participant' is associated with technical or practical action research (Armstrong & Moore, 2004; Hanrahan, 1998; Kemmis, 2007; Ladkin, 2004), I refer to my co-participants throughout this chapter as participants, as it supports a free-flowing writing style.

² To verify my understanding, my participants read and discussed revised drafts of this chapter with me, which I amended in light of their suggestions. I endeavour to incorporate their voice, as they meant to be understood. My participants' developing understanding of communities of practice is reflected in their written journal entries and (audio-recorded) language. In this chapter, I use many direct quotes taken from participants' written journals and the transcripts I compiled from audio recordings. I reproduce such notes, within my main text, as they were made, verbatim. I sometime include my own comments [*italicised and underlined within brackets*] within text to clarify meaning, but I do not alter the original text.

The beginning: gaining support and initial enthusiasm

Ethical approval was granted by the London South Bank University Research Ethics Committee before I began research (Appendix 1). To minimise time and expense my research was conducted on one college campus. Before starting, I obtained consent from my principal college gatekeeper (direct senior manager). The letter sent to my direct senior manager, requesting consent and response received, is included as Appendix 2. This letter authorised me to approach product managers responsible for instructors, at the research campus, who I would approach to participate, if consent was granted. I have included the letter sent to product managers, requesting consent, and their response as Appendix 3.

I intended to recruit three participants at the beginning, as I felt a community of practice was more likely to form in a small group, where negotiation and agreement is more probable. I also believed it would keep the research manageable for all involved (Ladkin, 2004). I asked all instructors (teachers) based at the research campus to voluntarily participate; all are male, their ages range from thirty to sixty-five years. At this time, fifteen instructors were based at the research campus. This consisted of eleven Access department teachers (although 'access' relates to a number of specialisms (see page 9), all access instructors at the research campus specialise in scaffolding) and four from the Construction department, including: two roof, slate and tiling (roofing) teachers; one flooring teacher; and one road and street works teacher.

I wanted to promote my research and assess enthusiasm for my project so I talked to all teachers, individually. At this initial stage, I wanted to recruit enthusiastic teachers, as I hoped they would accept ownership for the project and then work with me throughout the research, encouraging subsequent recruitment. To reinforce the clarity of my message and aims, I issued *Part 1(a) Recruitment letter* (Appendix 4) and *Participant Information Sheet (Part 1(a))* (Appendix 5)³. I discussed my

³ All recruitment letters distributed during Part 1(a) (Appendix 5), Part 1(b) and Part 2 detailed what participation would entail, clearly and transparently. I hoped, as Bell and Gilbert (1996) suggest, that this

interpretation of what a community of practice is with each potential participant at this point; I only provided a very basic understanding (reflecting my writing on page 33)⁴ as I did not want to portray myself and my research aims as overly academic. I wanted to retain a practical focus. While none had previously heard of this concept, some probed me for additional information; others dismissed my aims.

Teachers who offered consent first, joined me in research. Four instructors displayed great enthusiasm and, as I did not want to discourage enthusiasm, I recruited all four: Ben; Billy; John and Steven⁵. Figure 2 (below) indicates their specialisms, teaching experience and qualifications, at this time. As I do not need to worry about my own anonymity, I refer to myself using my own first name, throughout this chapter.

would enable teachers to perceive my proposal as a challenge, not a problem. I asked participants to retain recruitment letters so we could refer back to them, during the research process, when and if required.

⁴ Bernstein's (1990; 1999) concept of recontextualisation suggests my co-participants' understanding of the theory I related here, and importantly, my co-participants' subsequent efforts to apply this theory to their own practice, could be problematic. Bernstein suggests the meaning of theory will change as it delocates and relocates between agents and contexts. Although my co-participants and I most probably did perceive this theory and how it could (or even should) be applied to teaching practice differently, at the start of the research process, our understanding developed together as research progressed. Central to this chapter, is the story of how we arrived at a common understanding of theory, within our research group.

⁵ To retain anonymity, all names given to participants are fictitious.

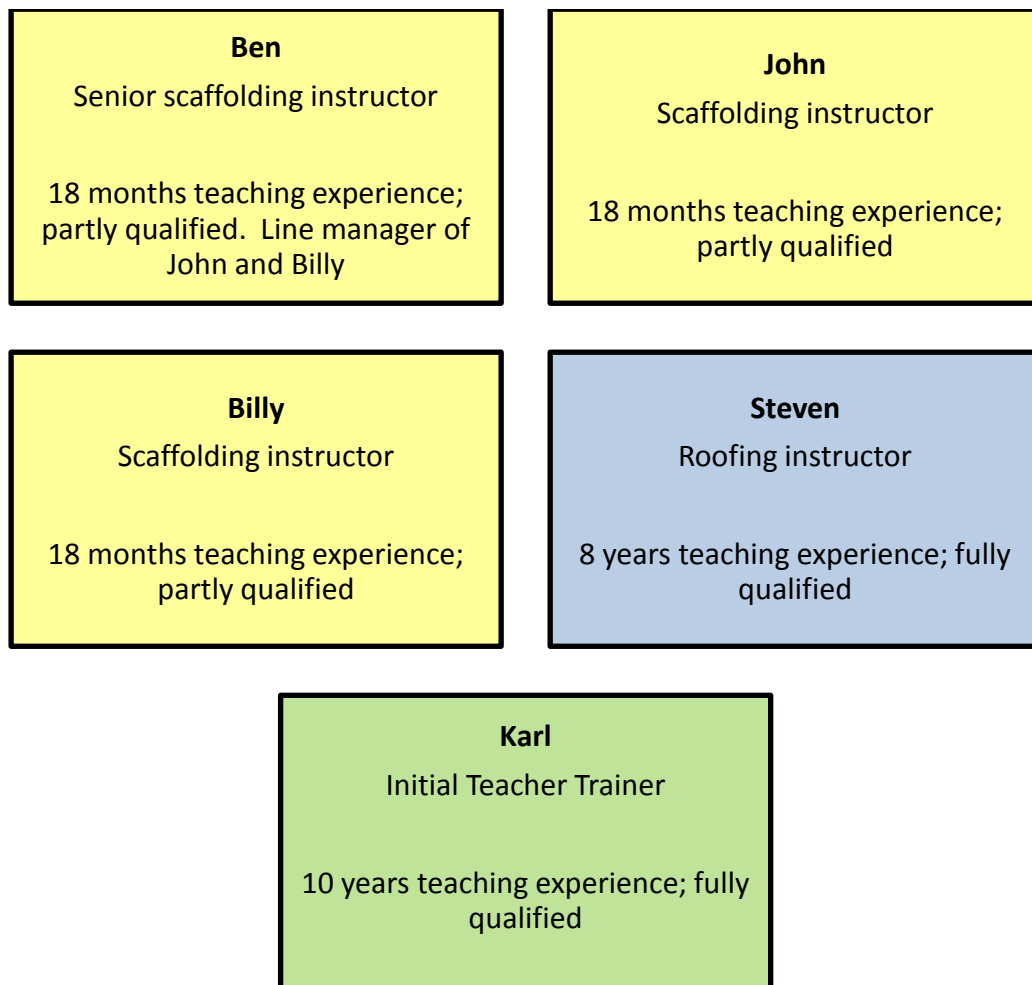


Figure 2: Initial participants; specialisms, experience, responsibilities and qualifications

Working with communities of practice

The first five sessions were devoted to understanding the idea of, and identifying, communities of practice bearing upon instructor professional identity, through observation. During these sessions, research activity plus the journal writing process (see Appendix 6 for a selection of journals) supported my participants' interpretations of what a community of practice is (and therefore how learning occurs) and helped us think about how they might be identified. My participants agree with my interpretation of their developing understanding in activity (and my record of research activity). I had in no way forced their understanding (for good examples see page 114 or 123) – very different to the compulsion associated with

formal initial teacher training. I now relate our story and how my participants' understanding developed.

In the following section I illustrate our activity in sessions one to five, in a roughly chronological order, although I consider data obtained later when I believe it supports understanding. When I do use data obtained later to support understanding, I highlight when it was obtained, to retain clarity.

Session one

As session one started, participants agreed the best place to start looking for communities of practice was in vocational training areas, where learners undertake actual vocational trade practice. John was due to teach such a trades session the next morning so we decided to observe John's teaching practice and interactions then.

We discussed the possibility of observing classroom teaching due to take place in the afternoon, but we agreed classroom teaching too frequently involved a non-interactive style of teaching, heavily reliant on PowerPoint presentation and encouraging passivity. I believed it might be difficult to start trying to identify communities of practice in this environment, as they might be hard to see; my participants accepted my opinion. We also realised we would need to discuss our thoughts during observation (at this stage), but this would be too disruptive in classroom setting. Such discussion would not pose a problem in practical training areas, which are, in any case, very noisy.

As vocational training areas increase risk to health and safety, we wore industry standard full personal protective equipment, as normal procedure, on every occasion we observed within vocational training areas. We observed⁶ teaching practice

⁶ All artifacts (e.g. notes made in observation, reflective journals etc.) produced by participants during the research process were treated confidentially and sensitively. I retained all handmade field notes and lesson

openly (as opposed to covertly) only in the role of researcher and did not participate in practice. When participants taught (regardless of setting), we observed from a distance, minimising disruption and intrusion, helping retain the 'naturalness of the setting'⁷ (Cohen *et al*, 2000).

No participant, at this time, made any reference to communities of practice in their written journal.

Session two

During session two, we observed Billy's vocational teaching practice. I had previously written and shared my session one journal entry with my participants but none of them had made a journal entry, in reply. As such, I decided to enter into a discussion with my participants, during a break, on what a 'community of practice' meant. I asked participants to reconsider the community of practice observation criteria (as illustrated on *Participant Information Sheet (Part 1(a))* (Appendix 9)). My participants then made tentative offerings for the rest of the group to discuss. Billy started by discussing his membership in a possible community of practice outside work, where he had learnt to use predictive text on his mobile phone, with friends. This inspired Steven to discuss his possible membership in a community of practice with his roofing learners. He went on to write about this:

"I in turn talked of how one of my students showed myself and the rest of the class an easier method of cutting interlocking tiles into a dry valley. The class all thought that this method was a very good way of marking tiles to be cut... I have adopted this method as one of the ones to show future classes" (Steven; 29/04/13).

plans when we were not engaged in research. All artifacts created on-line were stored in encrypted virtual space, freely accessible to all participants, on their own works computers.

⁷ I intentionally exclude reference to ecological validity here. I do this as others such as Heikkinen *et al* (2007) (which I use to consider validity later on, in the subsection titled 'Validity of this data' (page 89, onward)) argue that concepts such as ecological validity are constructed on positivistic principles. Given my ontological and epistemological beliefs, illustrated in chapter 3 (page 51), and discussed in relation to validity (on page 89), I believe the notion of 'naturalness', as Cohen *et al* (2000) phrase it, is more fitting.

Unfortunately, Steven made no more journal entries so it is difficult to speculate on this possible community of practice.

John made two journal entries. While his first (01/05/13) made no reference to communities of practice, the second (29/04/13) did, but only in response to Billy's journal (29/04/13). Billy and John later disclosed they were inspired by each other's journals; as Billy wrote, John was inspired to write and vice versa. In his journal (29/04/13), Billy reflected on communities of practice, though his understanding was less informed than in the subsequent entries he made. In his second session journal entry, Billy briefly, but insightfully, drew analogy between communities of practice and bubbles:

"My initial thoughts on the subject of communities of practice (COP) were along the lines of how, in my role as a new instructor, do I currently partake? And I saw this as a series of interlocking bubbles, small individual bubbles overlapping our associates, family and peers forming larger bubbles that overlap with other peoples bubble groups much like cells forming just a small part of one organ that will eventually become part of a much larger creature. Information and experiences shared amongst each cell so that a collective learning experience could be had" (Billy; 29/04/13).

Billy's understanding was still shaky at this time in relation to what it would become (explored further on); his other written reflections for session two, although exploratory, were rudimentary. Two quotes from Billy's journal entry (29/04/13) reflect his belief, at this time, that interaction inevitably constitutes a community of practice. Billy wrote,

"Another example of where I can engage in the shadowing⁸ COP is during rest times and lunch breaks. At this time instructors we can swap experiences and ideas with each other" (Billy; 29/04/13).

⁸ The access product manager requires new access instructors, as part of their induction, to follow (shadow) an allocated experienced instructor. During this time, they observe the teaching style and practice of the experienced instructor on courses offered. New instructors are not allowed to teach any course until they have 'shadowed' it. This offers a limited opportunity to develop with others in informal context.

And again:

“A major contribution to our students COP is the support that they receive from their employers. If they are given time, and are put to work with more experienced workers then they will develop further and become competent” (Billy; 29/04/13).

John’s journal (29/04/13), made reference to ‘communities of learning’, an attempt to enter in to our discussion on communities of practice, where he considered different communication channels between scaffolding communities:

“Ideas are exchanged on site, while in the canteen or after work over a pint and because sites usually have large numbers of scaffolders, ideas and beliefs are exchanged very easily. Three fastest ways of communication: 1 Email. 2 Telephone. 3 Tell a scaffolder. This concentration of scaffolders then allows for quick and easy expansion of ideas, hence Community of Learning within the scaffolding environment” (John; 29/04/13).

Here, Billy’s response to my initial question had evoked a chain of developing understanding.

During session two, I discovered Ben, John and Billy were in the habit of making PowerPoint presentations, supporting classroom delivery (of theory and legislation), with other scaffolding instructors at the research campus, collaboratively and shared. In this possible ‘PowerPoint’ community of practice, which I discussed with my participants (during and after data collection), Ben, John and Billy were newcomers; the old-timers were more established instructors. Ben, John and Billy discussed occasions when instructors had developed PowerPoint presentations. While some incorporated new technical guidance on scaffolding, or health and safety, most were simply amended with better quality pictures or animations. The resource would pass between instructors at the research site, electronically, for discussion and amendment; instructors would make changes dependent upon experience and

scaffolding specialism⁹. The resource would then be used and trialled in training. Through our discussions it became evident that this PowerPoint making activity was not shown to the Technical committee¹⁰: it would be considered subversive by the access product manager and Technical committee members. Although the access product manager decreed all training resources should initially be sanctioned by the Technical committee before use, this group did not submit their developed classroom resources as many submitted resources had been rejected. The group continued to make and use classroom resources regardless. They believed the Technical committee had vetoed many resources because they were more favourable to instructors from other campuses¹¹. Ben, John and Billy defended their activity and artifacts developed emotionally (in discussion only), arguing Technical committee members had no right to comment on their resources as they had insufficient experience in their own particular scaffolding specialisms. It is interesting to note that no participant included any trace of this activity in his writing; it remained covert.

I later discovered, during session four, that Edward was also a member of this PowerPoint community of practice. I quoted Edward in my 4th journal (23/05/13), who said:

⁹ Scaffolding is practiced within different arenas, including petrochemical and nuclear sites, construction sites and in settings designed for commercial or domestic purposes. As aspects of these settings differ, scaffolding practice differs between settings. For example, scaffolding on petrochemical sites often necessitates working within confined spaces, while working on domestic properties does not, necessitating greater interaction with the public. Health and safety requirements often differ between contexts. While some scaffolders specialise in working within a particular setting, others gain experience across a number of different settings.

¹⁰ The Technical committee is an in-house working group, comprised of a number of managerially selected access senior instructors and instructors (the majority are based at other campuses, not the research campus). Access management dictate that any instructor or senior instructor of the Access department, who designs a new resource, must submit it to the Technical committee for approval. If approval is granted the resource is distributed for use; if it is not, it cannot be used in its current state. The Technical committee's decision is based on their own experience, understanding of learning and National Access and Scaffolding Confederation (NASC) guidelines. "The NASC is recognised as the national trade body for access and scaffolding in the UK, producing a wide range of industry guidance for scaffolding contractors, their operatives and their clients" (NASC, 2014). The NASC work closely with the Health and Safety Executive; their work promotes health and safety within the UK access and scaffolding industry. The NASC dictate the areas of access and scaffolding covered within the teaching curriculum, they also prescribe safest teaching practice within practical training areas. They do not dictate exactly how to teach in practical training areas or classrooms.

¹¹ I would like to make clear that this possible community of practice acted against the access product manager and Technical committee, not the NASC.

“When you develop something and it gets ‘knocked back’ you get compassionate [sic] about it, you get defensive”.

Winbourne and Watson’s (1998) criteria, lead me to believe this collaborative activity constituted a community of practice. While participants found their identity, as new teachers, within this practice, there was a social structure allowing participants to position themselves as apprentices and masters. All participants were engaged in the same activity, toward a common purpose, with shared behaviours, values and tool-use. In addition though, I believe emotion played a key role in this community of practice. Members displayed emotion when expressing shared values, defining who they were and were not. Billy, John and I believe that breaking the rules helped connect these instructors and shaped their identity as new instructors at this point in their development.

I have analysed this situation, using activity theory (Figure 3, page 111), displaying how I believe this activity was framed, while Ben, John and Billy developed/ ‘found their feet’, as new teachers. I return to consider how lesson study developed the teaching practice of my participants. Session two observations developed John’s and Billy’s interpretations of communities of practice greatly. I review data that lead us to this conclusion (see below).

Session three

By session three, John was first to perceive a possible fleeting community of practice within Steven’s training area. Although John did not use the term, ‘community of practice’ in his journal entry, he did in discussion. John described this collaborative activity, in writing:

“Steven’s learners were engaged on individual assignments, on individual roofing rigs. The surprise came when they all, without fail, congregated around one individual. This learner had been shown, one to one by

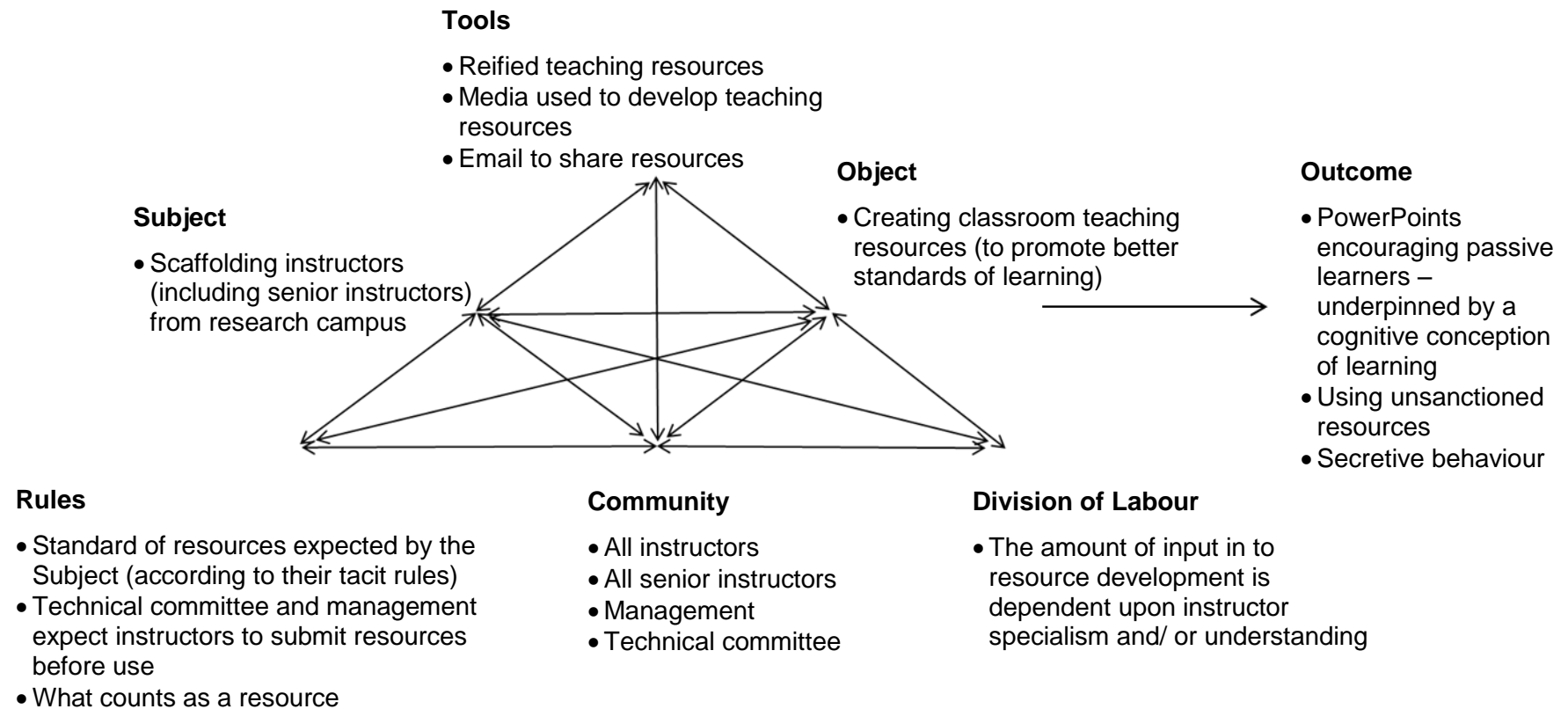


Figure 3: A second-generation activity theory analysis of the development of classroom teaching resources by scaffolding teachers, during time devoted to sessions devoted to identifying communities of practice

Steven how to use a roofing fixing new to all the learners. Keen to know how to use this item they all learnt from their peer” (John; 09/05/13).

Billy and I agreed with John’s interpretation. Each of Steven’s students engaged in roofing alone on structures designed for training purposes (rigs), positioned close to the ground, enabling students to practise roofing skills safely. Steven delivered instructions to all learners but they struggled with the new skill. Steven let them work alone, learning in practice. One learner asked for Steven’s help, which he provided, while other students worked alone. At the end of the lesson, Steven conversed with another instructor, giving students opportunity to collaborate. We observers saw that all students gathered around the one student who had received the additional support from Steven, asking questions, requesting support. Learners then supported each other, in informal small groups. While the ‘expert’ (Winbourne, 2008) learner, in this context, may have been a master within this possible fleeting community of practice it was equally plausible that he felt coerced to help. Insufficient information is available to comment further.

Observers agreed in discussion that Steven’s learners gained much from this experience but Steven was unaware of his learners’ collaboration at the time (I later discussed this with him). Billy, John and I believed our observation here provided possible insight into a community of practice, which developed in response to Steven’s approach to teaching, where learners were instructed to work autonomously. We also agreed our observation provided insight into how teachers might plan for learning.

Later on in session three, participants decided it would be useful to observe Steven’s classroom teaching practice. However, John and Billy were called away unexpectedly, so I observed on my own, silently. Ironically, unlike scaffolding classroom teaching practice, Steven’s classroom teaching practice promoted collaboration and interaction. At this point, I hoped Steven would contribute greatly to my research, as it progressed; I believed Steven (roofer), Ben, Billy and John (scaffolders) had much to learn from each other. The prospect of such collaboration

gave me hope to believe that participatory action research might have the potential to become an activity to promote professional development.

During these first three sessions, I sensed a simmering tension between Steven and the scaffolding teachers (particularly Ben). When alone, Steven told me stories of conflict between scaffolders and roofers, where both parties had sabotaged the work of the other when not present on site. I did not think much of this at the time, as we progressed well. However, this kind of discord later aggravated personal tension between Steven and Ben (see page 123), causing Steven to leave our research group.

Billy, John and Ben were friends before research started; during these sessions, I became friends with all three. I have always maintained a good working relationship with Steven. Although Steven was initially enthusiastic, his engagement declined as a result of conflict (present before research commenced) with Ben. Like Ben, Steven also found it difficult to participate due to heavy and unpredictable workload. Finally, the conflict between Ben and Steven became too much for Steven to tolerate, and he unfortunately participated very little from this point on. We therefore had little opportunity to compare scaffolding and roofing teaching specialisms, from then on.

Session four

Edward requested to join us (Edward's line manager is Ben). Figure 4 (below) indicates Edward's specialism, teaching experience and qualification:

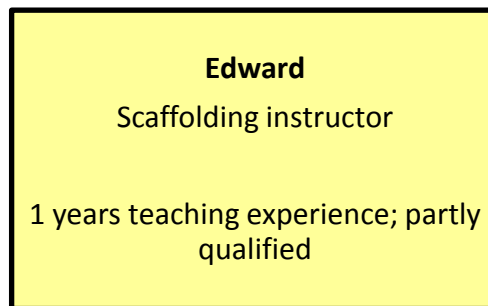


Figure 4: Participants now joining us, specialism, experience and qualification

As Billy's and John's understanding developed, they took increasing ownership over the project. Billy proposed a name¹² ($T=PR/2$) for our research, displaying, I think, an impressive understanding of what a community of practice is, drawing deep analogy between communities of practice and bubbles. We used this as basis for discussion.

By session four, Billy and John had started to assume an increasingly proactive role, guiding observation and discussion. Although Ben could seldom attend because of managerial obligations, he reorganised the teaching schedule so John and Billy had time to participate. Looking back, this necessitated a lot of work from Ben, for which I am eternally grateful. At this point, Ben started to read journal entries and Billy, John and I (as a group) discussed them with him in spare time. John and Billy engaged with great enthusiasm and always with good humour; Edward engaged but remained very much on the periphery.

During session four, participants observed Edward's teaching practice inside the shed. As we observed, we became increasingly certain we were witnessing a

¹² $T=PR/2$ (Laplace's equation) describes the properties governing the surface tension of a spherical bubble, where: T = surface tension; P = internal pressure; R = radius of bubble. Billy found it useful to consider these qualities in regard to a community of practice. He considered the size (radius) of a community of practice, in relation to conflict and tensions i) experienced within the community of practice and ii) exerted on the community of practice by others outside the group.

scaffolding learning community of practice, mirroring aspects of actual scaffolding practice. We considered Winbourne and Watson's (1998) criteria, which strengthened our certainty. I now describe this scaffolding learning community of practice, in relation to Winbourne and Watson's (1998) criteria.

Edward grouped learners in threes to engage in scaffolding activity; within these groups (gangs), he allocated learners different roles, reflecting the hierarchy/pecking-order in scaffolding. Billy discussed this hierarchy:

“When we work onsite, in scaffolding gangs, we tend to have a hierarchy that is also built on a ranking system. More often than not a gang will typically consist of three workers; a Leading-hand normally the most experienced of the workers, usually (but not always) this will be the older of the gang, if you like- the master craftsman, the next ranking worker will be the Second-fixer. The Second-fixer will be anything from an improver (apprentice) to a more experienced worker. Perhaps the Leading-hand and the Second-fixer have worked together for a number of years and they are both of similar ability but the Leading-hand will just be the one that deals with management and clients etc. The Second-fixer is normally quite able to step, naturally, into the role of Leading-hand when needed. The lowest ranking worker in the scaffold gang is the Labourer. The Labourer's role is basically to fetch and carry materials. Sometimes the Labourer will be another scaffolder. Sometimes there will be two Second-fixers and no Labourer; the two Second-fixers will often take turns to do the Labourer's role within the gang. It is normal for the Leading-hand to have started his career as a Labourer and likewise it is normal for the Labourer to aspire to become a Leading-hand. “Serving your time” as a Labourer is often seen as a rite of passage to becoming a fully-fledged scaffolder” (Billy; 23/05/13).

During training, Edward used this understanding, emulating this social structure where apprentices and masters could learn from one another, finding their identity (Winbourne and Watson, 1998) within the activity. Billy explained this has an additional benefit as:

“We can use the established hierarchy with our learners to assist us while they are in the training areas. By nominating persons to be in charge of the gangs, we can leave the more experienced learners to look after their

gangs allowing us to focus, temporarily on individuals within the class who may be in need of our attention” (Billy; 23/05/13).

In Edward’s training session, each group of three consisted of a Leading-hand, a Second-fixer and a Labourer. While the Leading-hand normally deals with stakeholders in actual scaffolding practice, the Leading-hand in Edward’s class (responsible for the quality of the gang’s work) was answerable to the teacher. The Leading-hand allocated workload to other gang members. When Edward realised a gang were engaging in poor practice, he approached the Leading-hand only, to remark on necessary improvements. The Leading-hand had to address the problem.

Edward, John and Billy explained this teaching style was not exclusively Edward’s alone (looking back I realise Billy used this approach during session two as well); all scaffolding teachers taught in this manner, within the shed (Billy and John agree). I have observed these aspects of scaffolding teaching practice, on countless occasions, in my job role. While I now make these aspects explicit, they have most probably been an implicit part of scaffolding teaching practice for a long time. Although these features are part of everyday teaching practice I believe they reflect a scaffolding learning community of practice. I now provide more data that leads me to this interpretation.

Teachers allocated roles according to experience and/ or attitude and subsequent re-grouping, during following sessions, was determined by achievement or attitude (learners had opportunity to swap roles):

“Sometimes it may become necessary to split an already established group if perhaps I note a threat of dominance in order to curb unwanted behaviour. Groups can be set so that the existing experience can be shared about to aid peer learning” (Billy; 29/04/13).

Here, while teachers use this approach to promote harmonious learner working relationships, they also use this approach to control the strength of gangs relative to each other:

“The instructor would alter the makeup of the groups so that there would not be one group stronger than the others” (John; 29/04/13).

Edward said *“learners need to find their way and rise up the order”* (my journal; 23/05/13). John said, *“As learners develop over time, they want to replace (surpass) the old timers – it’s ‘like the law of the jungle”* (my journal; 23/05/13); even trying to surpass teachers through finding error in knowledge or judgement. John, Billy and Ben likened teaching to building a *“scaffolding family”* (my journal; 09/05/13). This scaffolding learning community of practice is characterised by learning to adopt the language and stories (using humour or shock for effect) of old-timers i.e. the teacher and experienced students present:

“Experienced scaffolders...talk different, they know all the stories but what really matters is their scaffolding skills” (John; 29/04/13).

Given the demanding physical nature of scaffolding and monotony involved, learners used humour (banter) as a *“release mechanism”* (Billy; in discussion) and to support each other. To an outsider, banter might seem antagonistic, even hostile, but I came to realise just how emotionally supportive it was. John said (in discussion), *“The language is hard, but you get used to it. It’s the way we are”*. John and Billy agreed in discussion with my interpretation of emotional support.

John and Billy observed how newcomers mimic old-timers’ movements (the way experienced scaffolders move around each other and interact with scaffolding materials), becoming more efficient. In the process of becoming a master scaffolder, newcomers need to become fast and accurate. Billy had previously written about this but I had not associated it with any community of practice:

“It is interesting to note the existing hierarchy that forms in a class as the students assess each other on their personal speed and not necessarily accuracy. The slower students often attempt to emulate their faster peers. This is useful COP when what are being emulated are not only fast but acceptable skills and methods” (Billy; 29/04/13).

This provides data to suggest all participants saw themselves as engaged in essentially the same purposeful activity (Winbourne and Watson, 1998). John and Billy also noticed that newcomers learn to copy how old-timers wear their tools: “*Experienced scaffolders wear their gear different*” (John 29/04/13). Billy (16/05/14) has recently taken photographs, adding commentary, illustrating differences:

“Subject A: the Novice



Points to note; nice new gear:

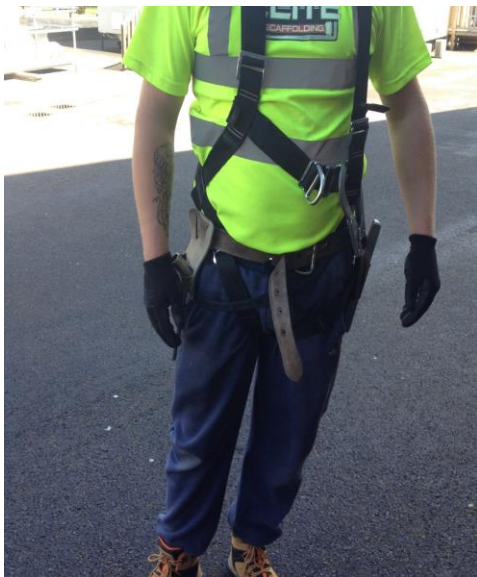
- *Spanner*: although accessible and easy to hand, it is tucked behind the safety harness.
- *Belt*: worn high around the front of the stomach, a cause of discomfort when bending regularly etc.
- *Spirit level*: here we see it tucked right around the back, it needs to be readily available.



On the left, we have another novice. We can see the age and quality of his belt kit, all stiff and new. This denotes his “freshness”.

This apprentice scaffolder, however, has observed where on the belt kit experienced scaffolders wear their tools and has attempted to emulate them by having them positioned for ease of access (if a little too high as our first subject did).

Subject B: the Gunslinger [experienced scaffolder]



Points to note; age-worn gear:

- *Spanner*: accessible and top is level with the hand much like a gunslinger (it is not uncommon for scaffolders to refer to their tools as “their guns” for that reason).
- *Belt*: the belt is worn low around the waist, preventing discomfort when regularly having to bend etc. and also dropping the spanner and level to height where they are naturally at hand level.

- *Spirit level*: here we see at the front or side so that it too is readily available” (Billy; 16/05/14).

We observed shared ways of behaving, language and tool-use (Winbourne and Watson, 1998). To depict the multiple facets of the scaffolding learning community of practice simply, I present them in Diagram 1 (page 121).

John and I agreed that even Billy copied the movements and stories of an experienced scaffolding teacher on occasion, confirmed by Billy’s journal (03/05/13):

“Edward was telling the learners that scaffolding has been around almost as long as man, he stated that, in his opinion, when the first cave man, while painting his cave walls, placed a branch across two boulders so that he could reach further up the wall, he invented scaffolding so therefore it has been around a very long time indeed. This is an amusing little story is one that I shall use in the future leading into how far we have come etc.”

Looking back, Billy and I agree (in informal discussion) there were signs here of two intersecting communities of practice: the scaffolding learning community of practice, described above, where newcomers learn to become scaffolders in training; and a scaffolding teacher development community of practice, where master scaffolders become scaffolding teachers. This all involved learners of one teacher (learners within different classes rarely interacted), and multiple teachers on occasion, who moved freely within the shed, feeding off each other’s presence and understanding (later spilling over into recreation areas, on occasion), frequently through humour. Ben, Billy, John and I all agreed that the notion of the master scaffolder is still very central to the scaffolding teachers’ sense of self (I consider this in greater depth on page 174).

At the end of session four, John, Billy and I agreed the scaffolding learning community of practice and the scaffolding teacher development community of



Diagram 1: The multiple facets of the scaffolding learning community of practice

practice offered a bridge to establishing a professional development community of practice. At this stage in the research, we agreed that scaffolding teaching in the shed was a very collaborative activity, starkly contrasting to scaffolding teaching in the classroom. While scaffolding teacher stories, humour and experience often promoted respect and initial engagement within the classroom most learners normally disengaged quickly in the classroom. We agreed that at this point, development hinged on the ability to retain information in classrooms. Teachers were relying too heavily on teacher talk, imparting facts students were expected to memorise for consequent recall. This was very different to learning within the shed, where learning occurred through scaffolding activity.

We realised that instructors focussed on relaying meaning and facts to learners within the shed, while only facts (with little or no meaning) were offered within the classroom. Billy, John and I discussed this with Ben, believing we could now use this understanding to go on to develop a 'scaffolding family' (including learners and teacher(s)) within the classroom. We hoped we could make classroom teaching just as dynamic and interactive as teaching in the shed. As we engaged in the observation process, Billy's and John's understanding of learning changed. At this time, Ben, John and Billy believed the main barrier to building a scaffolding learning community of practice was the Technical committee.

Session five

I observed Billy teach with John in the scaffolding shed and the classroom, confirming our understanding of the distinctive nature of teaching in these two contexts. During session five I talked about Vai and Gola tailoring and Yucatan Midwifery communities of practice (examples used by Lave and Wenger, 1991), facilitating deeper discussion on the characteristics of communities of practice (now related). This resonated with my colleagues in powerful ways, as hoped and expected.

John then discussed (although this doesn't feature in his writing) how learning to become a scaffolder, was like learning to become an apprentice tailor (Lave and Wenger, 1991): learning to 'become' through reverse curriculum, starting with small relatively easy 'finishing' jobs, in periphery, moving on to more difficult practice, until mastery, when a more holistic understanding is realised. This suggests John was using his new understanding of communities of practice to gain a better appreciation of his own teaching practice. I discussed this later with Billy and John, who agreed completely.

A teaching moment

Like Winbourne (2008), I video recorded participant contributions to a teaching session that I delivered. Two instructors who were not research participants (one scaffolding teacher (Rory¹³), and one teacher of road and street works (Peter)), plus John, Ben and Steven were present during this session. A flooring instructor was also present at the very start of the workshop but he was called away unexpectedly soon after it started.

After the session, as I watched the video, I identified what seemed a promising 'teaching moment' that participants later watched together¹⁴. Although Steven attended the workshop he did not help us analyse data obtained from the teaching moment. He took no further part in research, after the workshop. The teaching moment was a snapshot of practice, focusing on my following teaching objective:

Learners will identify how they can use collaborative teaching techniques to improve their classroom practice

¹³ To retain anonymity, all non-participant names are fictitious.

¹⁴ Although Billy could not attend my teaching session, due to sudden unexpected work commitments, he did participate in the final analysis of the teaching moment.

As participants watched the video we considered what a community of practice is, and the criteria we might use to identify one. I hoped this would encourage discussion, developing our understanding of communities of practice, and help us identify communities of practice influencing participant identities. Although we did not identify any new community of practice, activity provided insight into those already identified. John did not want me to formally video participants' thoughts on this activity so I did not video-record our discussion. Instead, participants agreed to discuss the teaching moment then reflect in written journals.

I present extracts from these journals in Appendix 7, showing how these related to events during the teaching moment. My participants have corroborated and supported my interpretation of this data. The video showed how, during the teaching moment, I had given my students five laminated worksheets, each detailing a specific collaborative teaching technique (see Appendix 7). I asked them to read the information provided on the worksheets and consider how they could use each technique to improve their own classroom practice. All learners were initially sat around one table and were free to work independently, or in groups of their choice.

The journal entries relating to the teaching moment, and the subsequent discussions I have had with my participants, offer a new perspective on the conflict between Steven and Ben and how this impacted upon the participatory action research process. It provided insight into co-participants' developing understanding of the idea of a community of practice and into possible barriers and bridges when building a community of practice, during lesson study activity.

Appendix 7 indicates that at the beginning of the teaching moment, scaffolding teachers (participants and non-participants) grouped themselves away from others, on one side of the table:

“The participants immediately appear to seek out some common ground within the group i.e. the scaffolders on one side [of a table] and the roofers¹⁵ on another” (Billy; 12/07/13).

Then,

“Within minutes, one member [Steven] of the workshop actually leaves the main group [sits at a different table] to consider the task privately and sets a precedent for another participant [the road and street works teacher] to follow soon after” (Billy; 12/07/13).

The scaffolders, outnumbering other teachers, discussed thoughts but did not note these down as requested. The other students engaged but more independently, using resources provided. Billy and John believe this reflected the social nature of actual scaffolding practice and the relatively solitary nature of roofing practice (Steven is a roofer, recall):

“Scaffolders are by the very nature of their work more used to working as part of a group or even a group of groups on any one contract where as a roofer is perhaps more likely to be a more used to working alone or with a regular buddy” (Billy; 12/07/13).

Steven wrote copious notes but was detached and reluctant to share thoughts; he did only when pressed:

“Steven who has, for the most part, been silent throughout is asked for his input. He is seen referring to the notes that he has been making, these notes are quite intensive and, had it not been for the prompt, would likely not have been shared” (Billy; 12/07/13).

Steven left the workshop before I brought it to close. I was initially unsure why Steven left the group. While John (12/07/13) believed it was because Steven had a good understanding of the subject matter, Billy wrote,

¹⁵ Billy mistakes the road and street works teacher for a roofing teacher here.

“The scaffolding element seems to dominate the session and this could perhaps be the reason that the roofer left the workshop” (Billy; 12/07/13).

I later discussed this interpretation with Billy, Ben and John. They believed the discord between Steven and Ben reflected a historical conflict between construction disciplines. Billy, Ben and John explained others dismiss scaffolders as unskilled workers, as opposed to other trades e.g. roofing, a highly skilled occupation. Participants gave examples of conflict between trades on construction sites. While Ben believed this led Steven to think that he was more important than Ben, Steven said he could no longer participate as he disliked Ben. I have since discussed this situation with Steven, who said he did not like Ben at this time, as Ben continually *“belittled him”* in front of work colleagues. I then talked this through with Ben, who was upset Stephen saw it this way. Ben left the college soon after data collection, for personal reasons; he was happy that he had, by the time of leaving, *“built quite a nice relationship with Steven”* (Ben; 21/05/14).

A possible barrier, then, to establishing a professional development community of practice that crosses trade boundaries, is the personally perceived significance of historically entrenched divisions between different construction disciplines (between roofing and scaffolding, in this example). These still exist and influence participant identity.

These conclusions made me consider what a professional development community of practice might look like in my workplace. The rift between Steven and Ben had put off Steven from participation but it had not stopped Steven from participating with John and Billy (other scaffolders). Nevertheless, this still makes me consider whether perceived differences in identity can influence participation; division might prove insurmountable for some. At this stage in my research, I believe participatory action research can become a vehicle for professional development, in my context, but the aim/ activity must bond participants more greatly than discord repels.

Shared stories

In chapter 3 (page 91), I outlined my hopes for believing that story groups could help us identify communities of practice influencing participant teacher identities. I shared these hopes and ideas with potential participants as part of the recruitment process¹⁶. Ben, Billy, John and I now attempted to recruit instructors, who had not yet participated, to join us in three, one-hour long story group sessions held at the research campus. We were able to recruit two more participants. Figure 5 (below) indicates the specialisms of all teachers involved in story group sessions, teaching experience and qualification:

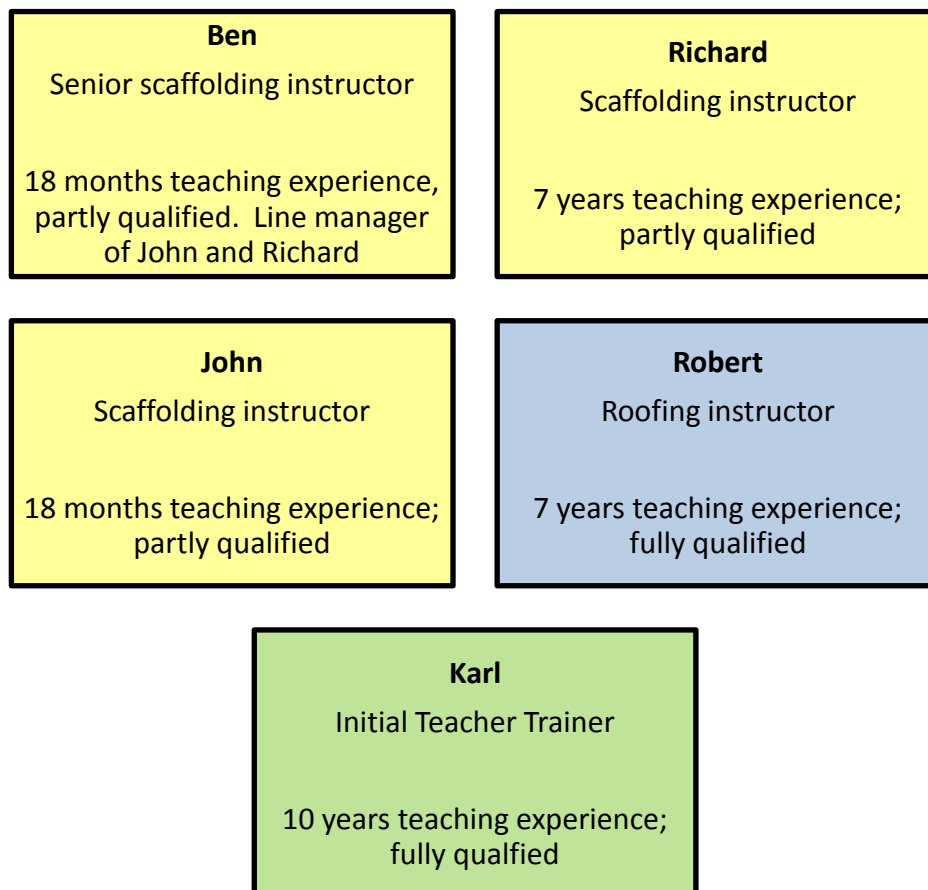


Figure 5: Participants involved¹⁷ in story group sessions, their specialisms, experience, responsibilities and qualifications

¹⁶ I explained story groups could help us identify communities of practice influencing participant teacher identities, in discussion and in all recruitment letters distributed during Part 1(a) (Appendix 5) and Part 1(b).

¹⁷ Billy supported recruitment but was on holiday during sessions devoted to story groups. He is therefore omitted from Figure 5. Edward could not join us either, during sessions devoted to story groups, as he was called to work at a different campus, during this time.

First, Richard explained he had been negative about my research but the enthusiasm of Billy, John and Ben encouraged him to participate. As work commitments posed a barrier to participation during sessions devoted to identifying communities of practice, we agreed to run story groups, early before work.

Although story groups failed to illuminate other possible communities of practice, Ben's quote provides insight into interactions between scaffolding teachers and learners and teachers learning from each other:

"Yeah, so when I taught, I changed the people around, so you had some less experienced with some more experienced, as Richard does. And I actually see this young lad because he was struggling earlier in the week...erm... and I said just take your time. And, it was nice that the group was doing this peer learning, helping him out, and I spoke to him yesterday at lunch time, and he was sitting there with a little grin on his face all by himself. And I said how's it going, and he said I think I've got it, I think I've got it....Excellent!" (Ben)

Here, Ben may have learned from Richard in mastery, providing a connection between the scaffolding learning community of practice and the scaffolding teacher development community of practice. This experience, perhaps Ben's involvement with research activity so far and the following discussion appears to have encouraged Ben (as a manager) to alter teaching practice at the research campus:

Ben: In the Access department, I, we, or the people before me have tried to move those groups around¹⁸. When they return, the apprentices this is, so they get different learning experiences from different instructors. Because people teach in different ways, or may have different ways of doing things practically, with the spanners, the fittings, the tubes. However, I think it's nicer to build that relationship.

Robert: Yep

¹⁸ Scaffolding students (i.e. my learners' learners) attend on a block release basis, for two weeks at a time, for a total of eleven weeks, with a concluding week devoted to final assessment, spread across two years. They therefore attend six blocks of teaching. Ben was responsible for timetabling, allocating teacher workload. Historically, a different teacher would be allocated to each block and so six different teachers could teach on any one course. In roofing, the same teacher retains the same learners throughout their entire course.

Ben: Between one and one and that again comes with Richard's group, that he's had this week and he's said, you know I've really made a bond with these lads. I've missed a couple of days with them. Is there any chance I can keep them? So I can change the plan around... So can I ask a question for John and Richard: Do you both think that the apprentice groups that we've got currently running – that if you land with them you should be the people who continue with them all the way through? I think we should try, as a department, the best we can to...

Richard: I think we can

Ben: Keep our learners with the same instructors, yeah?

While Ben's awareness of the power of building relationships forms here, Richard clearly understands the power of building relationships,

Richard: Well the thing is, it's that mentoring, that bonding and understanding their needs and everything else, and understanding... Look, no one likes change.

Robert: Especially a learner.

John: That's right, yeah.

This story group (and perhaps previous story groups) elicited these discussions and conclusions and inspired Ben to consider changing working practices so teachers could retain the same group of learners, across their course, providing opportunity to build relationships. However, as Ben left his job soon after data collection, he had no opportunity to see this through and change practice. Nevertheless, I believe this indicates Ben's growing awareness, framed in terms of community of practice, of what participants were setting out to achieve.

I analysed story group transcripts using NVivo, to identify main themes in the data. I now consider my understanding of these themes, under subheadings below. I discuss data in the order it was obtained.

- *Alpha-males*

During the first two story groups, participants related stories where alpha-male teachers dominated other teachers at the research campus. This focus emerged as John, Richard and Robert discussed the problems associated with developing as a teacher, at work:

Robert: It takes a while sometimes [to develop as a teacher] because they [other teachers] can be jealous of you, wary of you.

If established alpha-male teachers feel threatened by new teachers, they use their position to gain and maintain dominance. I did not introduce the term 'alpha-male' during story groups; my participants used this term a great deal from the start of story groups, with, what seemed, a shared understanding of what 'alpha-male' meant.

Stories included:

Richard: I always promised myself that if any new instructor just started, I would not let them go through what I went through. For the first six months here, I nearly jacked it in every day, I was that frustrated and it was daunting to come in here.

Karl: Because of alpha-male teachers?

Richard: Yeah, I came through that gate, and on a Monday morning, at 44 years of age I felt like a little boy at a new school and then I thought, right, I'll buddy up with somebody and it was very much like...there...[putting right arm out, with hand up]

Karl: At arm's length [confirming Richard body language for the audio recording]

Richard: So where's the information? You'll get it when I'm ready. It's like... oh right, OK, you were firmly put in your place; you were the bottom of the rung.

Here, Richard explains an alpha-male teacher withheld information so he could not develop capably during shadowing (confirmed by Richard, in informal discussion after I collected this data). The experienced teacher provided material he wanted to, when he wanted to, retaining power over Richard. John offered explanation,

John: They put Richard down there as they've got that much experience in this environment. So they've put him down there at the bottom of the ladder and he's got to work his way up. That's exactly how it was out on sites. When you went on to site as a new boy you was kept down at the bottom.

Karl: Isn't that just a natural thing?

John: It's a scaffolders' thing [with certainty]

Billy later agreed. John believed alpha-male scaffolding teachers had previously learnt this form of dominating behaviour as scaffolders, suggesting alpha males are a possible barrier to building a professional development community of practice.

After story group two, participants agreed, in informal discussion, that some members of the Technical committee are alpha males. On my probing, Ben and John realised their own understanding of the Technical committee had formed through hearsay; they had never submitted resources themselves. At this point, Ben, John and I wondered whether the committee actually posed a barrier, as formerly believed (page 122). Ben, Billy and John's perception of the Technical committee had already influenced their teaching practice though, as it was a force that helped form the PowerPoint community of practice.

Richard explained how he used his understanding of alpha-male scaffolders in the “dog-eat-dog” world of scaffolding, within training:

Richard: You base out [a scaffolding practice] and make a mistake. And you carry on, and they [learners] say hold up, well, that’s wrong. And you go oh, alright, so you’ve noticed that then?

Here, Richard made an intentional mistake so his students could find fault, developing their understanding; Ben and John approved. However, for this to work, participants agreed teachers must have established legitimate respect. We agreed insight into the competitive world of scaffolding could prove useful during lesson study activity. By story group three, Richard was identifying with my research, using the notion of ‘families’ and ‘bubbles’ to refer to learning; a notion first introduced by Billy in his second session journal entry (page 107).

- *Emotional support*

During story groups, participants related stories about jokes that were made at others’ expense. Here are examples, from story group two:

“I remember when I was working in London, and there was a fella who used to wear a flat cap. That was the days before you had to wear a hard hat on site, and there was 40 men on the job but he just didn’t fit in and he was a strange fella. He was doing some Monoclicks and a gust of wind come and it lifted his hat off and we were about 200ft up in the air, and it’s just gone down into the side of the hoarding and all you heard was Noooooo!, as the hat was going down and everyone’s laughing because he’s like bald right. Trust me not, by the time it took him to get down a 200ft staircase, yeah, someone had shit in his hat” (Richard).

“And it’s like, where scaffolders have upset other scaffolders. I remember going back in and this geezer had just got back together with his Mrs. and she used to make him like a Thomas the tank engine lunchbox. The bloke was like twenty-eight years of age and he used to have sandwiches and she would put a love letter in there and in the end, in his own little world he was fantastic. He was; you could see he was blossoming as a person in

the first stages of a relationship and he come down one day at dinner time, opened his lunch box, with Thomas the tank engine and there was a turd in it. And the geezer just left site and he never came back. Because I think that was too much” (John).

In these examples, while laughter was used to repel those who “*don’t fit in*” (Richard), it conversely bonded those, who do.

Karl: So it can be personal?

Richard: It can be brutal

Robert: It can be very cutting, the best one is to ravage people in front of their friends – it’s a better joke then, isn’t it.

(Recall how Steven claimed Ben had “*belittled*” him, in front of work colleagues (page 126)).

John summed this up, stating “*Some of it’s barbaric*”. My participants envisaged this relayed a form of culturally defined acceptable humour:

John: The sense of humour of a scaffolder or someone in the construction industry is completely different to a sense of humour who works in an office because different things make us laugh. Doesn’t it?

Robert/ Richard: Yes,

Richard (story group 2 (and post-research discussion)) believed and participants agreed that people would only be accepted into construction if they could handle the jokes (banter) of others:

“They would laugh at you, and walk away, and after a while you would get a little bit used to it”

“A bit of banter – just take it like a man”

“He was never really accepted into the family because he couldn’t handle the banter, the criticism”

However, participants agreed it is the teacher’s role to make sure all learners ‘fit in’ (are included), even if they cannot abide banter. While my participants’ stories confirmed this understanding, in this example of Richard’s, the same culturally acceptable humour pervades:

“Richard: I had a fella who had a drawing, he was struggling with it. And I know he’s got dyslexia and to cut a long story short, he went to me, “well you know I’m dyslexic I can’t read” and I went “that’s fine I accept that and that’s why we broke it down on the board”. And he went, “yeah, but I’m dyslexic with numbers” and I said “I know that, that’s why we broke it down on the board”. And I went “well you’ve got a picture there”.... [pause]... and he went “well what do you mean, I tried to visualise the picture and I still haven’t got anything. I’ve got dyslexia with numbers and figures” and I said “well that’s fine” and I said “come over here”. So we went over there and sat down and I went “so what’s the problem here, well here you go, there’s a crayon. You either build the job like you wanted to do or you can sit there and colour it in. It’s entirely up to you.

Robert: Laughing – ooh, that was harsh, that was HARSH! [exclaimed loudly]

Richard: Now, in some quarters that might be deemed to be bullying. He started laughing, I went over to him and I said “look, you’ve got it round the wrong way”, fine – and that was that. But before that point he was nowhere. So sometimes, when someone is in that nowhere, he has hid behind the dyslexia, the numbers. But there’s a 3D drawing, so he should be able to visually see the drawing. He wasn’t physically near it, so he had to sit down and by having a laugh...he got back up and was able to...”

I am certain many would deem what Richard did unacceptable; even Robert believed it controversial. In the former examples, Billy and John agreed that laughter is a

cultural bond, and in the latter example Richard believed it afforded the necessary conditions for learning; illustrated again:

“You’re getting that sort of laughter and then they start buddying up (Richard; Story group 2)

“A little bit of banter, and he’s slowly come out of his shell” (Richard; Story group 3)

At the very least, these examples illustrate the importance of laughter in becoming a scaffolder. Here, I realised we could use laughter to promote the engagement of my learners’ learners, but we would need to negotiate ‘acceptable’ humour. Richard sometimes found himself caught between being a scaffolder and a teacher:

“So the boundaries...sometimes you get caught in the middle, yes, because they want us to teach this way and all be prim and proper, and it is the right way to teach but to get the point of view over to some of our learners...” (Richard)

This represents both a bridge and barrier to establishing a professional development community of practice, as some participants might be less predisposed to negotiate than others.

Everyone enjoyed participating, giving reason to believe participatory action research could provide the vehicle for professional development. We now considered how we could use this understanding as we engaged in lesson study activity.

Lesson study

Here I tell the story of how we engaged together in nine lesson study sessions. Relating this chronologically helps illuminate the successes and tensions we encountered and attempted to surmount as we progressed. Our story provides additional insight into the barriers and bridges to establishing a professional development community of practice. I hope to portray what a professional development community of practice, in initial teacher training, in Further Education looks like and the kinds of instructor identity produced in process.

We started lesson study sessions with a new recruitment drive. We were disappointed as we recruited no new participants and the workload of Robert unexpectedly increased so he could no longer participate. During the first lesson study session, participants agreed the all-encompassing aim was to develop their students' learning, in order to support their progress within industry, for the greater good of industry. Participants negotiated specific focuses, concentrating on one subject during sessions one to four, with a different focus during sessions five and six (I discuss lesson study session's seven to nine below). Figure 6 (below) indicates the specialisms of the teachers engaged in lesson study sessions one to six, teaching experience and qualification:

<p style="text-align: center;">Ben</p> <p style="text-align: center;">Senior scaffolding instructor</p> <p>18 months teaching experience, partly qualified. Line manager of John, Billy, Richard and Edward</p>	<p style="text-align: center;">Richard</p> <p style="text-align: center;">Scaffolding instructor</p> <p>7 years teaching experience; partly qualified</p>
<p style="text-align: center;">Edward</p> <p style="text-align: center;">Scaffolding instructor</p> <p>1 years teaching experience, partly qualified</p>	<p style="text-align: center;">John</p> <p style="text-align: center;">Scaffolding instructor</p> <p>18 months teaching experience; partly qualified</p>
<p style="text-align: center;">Billy</p> <p style="text-align: center;">Scaffolding instructor</p> <p>18 months teaching experience; partly qualified</p>	<p style="text-align: center;">Karl</p> <p style="text-align: center;">Initial Teacher Trainer</p> <p>10 years teaching experience; fully qualified</p>

Figure 6: Participants involved in lesson study sessions one to six, their specialisms, experience, responsibilities and qualifications

I now discuss the activity we engaged in during lesson study sessions one to six and how we made use of understanding from previous activity. I explain my developing understanding of my research questions, as I progress.

Lesson study sessions one to four

As session one started, I guided participants to discuss what we were setting out to achieve. From Billy's perspective (written in Billy's journal; 20/08/13):

“The aim of this project is to improve learning; it is commonly agreed that the best way for us to achieve this is that we develop ourselves and our resources”.

Richard and John proposed we should develop learning when dismantling (striking) scaffolding. We observed John and Edward teach, to consider current practice and potential changes. I guided participants, to “*consider the training from the point of view of the learners*” (Billy’s journal; 20/08/13).

I introduced discussion on different forms of assessment and the dangers of using one technique only. As we developed the lesson plan Billy, Edward, John and Ben wanted to create a set of questions that could be used to promote meaning making; I explained the need to consider literacy and jargon. Billy later reflected on this relative to current working practices (20/08/13):

“The wording of some of our questionnaires does not, always, take into consideration all the different learning abilities of our learners... For example; a foreign or academically challenged learner may well understand that ledger bracing should occur on every other pair of standards and at the ends, as the term every other is a term they might be accustomed to, whereas they may not, so readily, understand that ledger bracing should occur on alternative pair of standards and at the ends”.

Following session one, Billy and Edward worked without me, during non-scheduled activity. Billy attempted to develop questions but realised he had insufficient appreciation of literacy levels. We contacted the Essential Skills department (which teaches literacy), for further training and Billy subsequently developed questions himself for discussion. Edward developed his own lesson plan for later discussion, as he “*Tried to bring more of what I was taught on my PTLLS [initial teacher training programme] to life*”. At this point, I was unaware of the significance of this data (discussed on page 164).

Before session two, Billy updated questions, which led John and Ben to consider the importance of communication in scaffolding. During observation, Billy (28/08/13) decided to consider training...

“...from, as I perceived it might be, the perspective of a learner with a poorer understanding of the English language e.g. a foreign learner or perhaps a learner with a learning disability”.

Billy picked up on John’s developing awareness of the importance of literacy in training:

“John mentioned that it is important for the learners to have good communication while they dismantle the scaffold so that they did not inadvertently release anything that their teammate had already released at the other end resulting in a dropped tube or, even worse, a scaffold collapse. John explained that by the word communication, he meant talking to each other and listening to each other all the time”.

Billy more recently explained that he felt his focus on literacy gave him a specialism within our group, allowing him to develop others himself.

During session two, we continued to consider and develop the session plan; Edward’s lesson plan supported this process. I reiterated aspects of teacher training previously covered, as I believed they had not been sufficiently considered. Participants reconsidered assessment. Billy, John and Ben emphasised the importance of storytelling (illustrating learning from identifying communities of practice).

As we progressed, participants explained they would like to develop a video to use as a resource during classroom teaching practice. They would use this to develop their students’ understanding of scaffolding structures in preparation for subsequent scaffolding practice within the shed. Participants explained the video should portray dismantling best practice – although it was essential that meaning, not just facts, were conveyed. They believed the best way to achieve this was through humour,

story-telling (and so we discussed stories which might promote meaning) and discussion. As participant workload was due to impede collaboration, we met on a Saturday (a non-working day) so we would have sufficient time for video production. This represents a remarkable shift in behaviour as no instructor (to Billy's, John's, Robert's and my knowledge) has ever developed resources at work, outside of usual working hours, at the weekend. In our experience, most instructors are normally averse to working unsociable hours, even when paid.

During video production, participants incorporated understanding derived from our work on identifying communities of practice: humour was used to increase engagement. All participants had a very proactive and creative influence. As we progressed, I introduced discussion on Bloom's taxonomy (Bloom, 1956), as I believed the video should not be used to consider hands-on aspects of scaffolding practice only. This led participants to consider questions they could use to focus on more cognitive and affective elements of practice. Participants realised they should ask different levels and types of questions to learners, as their students watched the video.

During sessions two and three participants engaged with great enthusiasm. Billy (28/08/14) epitomised how much $T=PR/2$ was starting to mean to participants:

"I was overall pleased with today's meeting. It has demonstrated just how far and how well the project $T=PR/2$ is developing. Just being a part of the project has already enhanced my own personal development. In the short time we have been going and the handful of times that we have been able to get together, I believe that we can make a big difference to both our own continuous development as instructors, and also to the learning experience and the safety of our future learners".

While Ben believed the process had "*broken down barriers between people*", John thought it a great "*team-building*" exercise and Billy found it, "*enjoyable, productive and rewarding*":

“If we individually give all that we can offer and commit to the ideas of the project, sharing and sharing alike regardless of our perceived positioning in group hierarchy and individual goals. I believe, then, that we will each grow stronger from the input and experiences (within and without the group) of each other. At the same time it is important to observe that, like our learners, we each have differing levels of strengths and weaknesses that we bring and employ within T= PR/2” (Billy; 28/08/13).

We valued and respected our differences and the contributions we all made which is significant, given the ‘dog-eat-dog’ world of scaffolding that participants belong to. It was great to know Richard (02/09/13) now positively embraced participation:

“In the beginning of this project I was very reluctant to take part and very sceptical of what yourself, Ben, Billy and John were trying to achieve. I must say after being drawn to the idea of improving the department techniques in delivering training from a different angle and at the same time building better working relationships between instructors I have found the process very refreshing”.

John (28/08/2013) confirmed this,

“Richard is now taking a very active and constructive part in the activities we are undertaking”

Video production helped participants learn new ways of scaffolding from each other (Ben; 04/09/13; John; 31/08/13). We realised new teachers (fresh from industry) had as much to offer the lesson study process as experienced teachers. They brought new techniques (and technologies) that experienced teachers were unaware of. John delivered the new lesson during session four. We observed him use the video, pausing for discussion and story; Billy (16/09/13) was happy with the result:

“It was interesting to observe how the learners were keen to prove how good they were by spotting a few minor areas that could have been done more efficiently (the order of fitting removal, for instance). Brilliant!!!...”

John told one or two of his stories relating to past events when either he or his colleagues had been injured in the past, this was met by some good natured jeering and comments such as “look out lads, John’s going off again with yet another story”. I think this was just jovial banter as his stories had relevance to the consequences of getting it wrong and the learners were, in fact, genuinely interested”.

We considered how teaching might change afterwards but we were content with our work.

By the close of session four, Ben, Billy, John and I agreed we were active members within our own professional development community of practice. Billy, John and I felt we could infer more evidence of our professional development community of practice from Ben’s journal entry (03/10/13) made soon after session four. In this entry, Ben reflects the positivity we now felt about working collaboratively together,

“This will hopefully show others better ways of teaching practices and lead us (as I think it already has) to learn about each other a little more as well as build our team into something that is more functional, respectful, resourceful and just as we are trying to teach the learners to be, methodical in the way we teach”.

At this point we considered criteria for identifying communities of practice and we openly discussed these in relation to our activity. I found this activity very different from the identification process we engaged in before when we identified communities of practice of which I was not a member. Given my emotional attachment to our professional development community of practice, from the inside, my own membership seemed personally very obvious to me. In comparison, the earlier identification process, from the outside looking in was a much more academic pursuit. In the earlier research phase, before lesson study, I tried to identify communities of practice with participants, and so I was emotionally invested in my own academic pursuits. However, the levels of emotion associated with our own professional development community of practice were personally much higher. This has since led me to consider why my participants could not immediately identify their own membership within the PowerPoint community of practice and other scaffolding

related communities of practice identified. In retrospect, they could not, for two reasons. Firstly (and obviously), my participants could not identify a community of practice as they did not have a firm grasp of what a community of practice was; and secondly, it is difficult for anyone to identify their own membership in communities of practice as they are such an everyday occurrence. This suggests we (my participants and I) avoided the trap of seeing communities of practice everywhere (and so making the idea very weak).

I would say that at this time, Richard was a legitimate peripheral participant but as he had not been involved in my research from the start, he was less aware of the language we used to describe activity.

I felt like I was making theory relevant and useful. My participants had listened to my guidance and they had incorporated this understanding into the lesson plan, with positive effect:

"What I liked most about today's session was that the new lesson plan is far better than the existing one... The new lesson plan is much more in depth ... much more in practice with what we were taught on our PTLLS training" (Billy; 28/08/13).

Billy (16/09/2013) wrote, *"Karl said that we only have five sessions left. I hope that that will not be the end of what we are achieving here. I see so much potential"*. At this stage I was certain participatory action research could become a constitutive and characteristic activity for a sustainable professional development community of practice.

Sessions five and six

By now, Richard had read all journal entries, testament to his growing enthusiasm. *"Karl asked both John and Richard how we might take the project forward and what did we believe needed addressing"* (John; 02/10/13). Richard and John agreed we

should design a classroom session that develops learners' appreciation of basic structures used in scaffolding, ensuring structural integrity:

“As we had already made the video which demonstrated good erecting and bad dismantling practices, ideas were sought as to how we could progress the cube (tower) further and bring the learning into the classroom to engage the learners in the same manner as they become engaged when out in the shed” (John; 02/10/13).

We wondered whether we could encourage collaboration with alternative materials that students could use to make model scaffolding structures; perfect during learner induction, as physical risk is negated.

Richard and John chose the stories they would tell during the session and how we could incorporate competition (gangs of three could vie to create the strongest structure). We considered making a wall of fame, illustrating whose structure held the greatest weight.

As we progressed, I felt uncomfortable drip-feeding a great deal of theory and understanding from the world of teacher training as much now seemed redundant. I came to realise the extent to which teacher training is underpinned by cognitivist assumptions and I could not see how it could immediately benefit my learners engaging in their own practice. However, some theory was immediately useful. Discussing Maslow's hierarchy of needs (Maslow, 1943) and sustainable education supported progress, as it prompted reflection on the needs of my participants' learners in relation to their professional career and personal lives. As an example, participants considered the possible consequences of erecting unsafe scaffolding, that fails and collapses, from their learners' perspective. They considered how it might affect their learners' physiological wellbeing, their safety (security of employment and health), belonging (to friendship groups and family) and esteem (self-confidence and respect of others). My participants then recalled the stories they could use in training to reinforce awareness of unsafe practice.

At the end of session five, Ben invited me (surprisingly) to discuss progress with his product manager; he explained he had recently delivered a presentation commending the virtues of our research to the access product manager and senior instructors (most from other campuses). Ben then emailed (08/10/13) participants congratulating them on their success:

“Simply: I am loving this; the engagement from all is great and giving great feedback as well as an uplifting, positive feel to the XXXX camp”.

He explained we would attain greater success if we could develop a qualification from “*this type of training*” (Ben; 09/10/13); the product manager and other participants were privy to this communication. Richard did not appreciate Ben using this opportunity to serve his own interests, contradicting what we were setting out to achieve. Richard threatened to leave the research group if we continued on this path. I reassured Richard we would not develop a qualification for managerial purposes during research, and so Richard remained with us. The emotion Richard displayed here could be perceived as evidence of his membership in our professional development community of practice; he was clearly defensive over our activity. However, this makes me question why Ben attempted to bring in outside influence. Billy, John and I agree, in retrospect, that Richard’s actions were, at least in part, very likely a negative response to managerial influence¹⁹.

Participants met early in the college canteen for breakfast, before John delivered session six. Richard brought materials he believed would work well. Participants handled materials to consider how they could be used to promote meaning. Remarkably, other instructors, who had expressed no previous interest in our activity, informally joined us. While other instructors openly derided us, these same instructors who had ridiculed us returned to join us; by the end of breakfast some of their learners had even joined in. This was a significant experience, as we realised how useful this activity could become. Billy (04/10/13) expresses the enthusiasm this activity fostered:

¹⁹ Richard has since left his position, and is unavailable to comment.

"I walked into a busy atmosphere...they all appeared excited. They had, upon the table, in front of them several boxes of drinking straws and some bags containing coloured rubber bands. They were engaged in trying out differing methods using the rubber bands to attach the straws together simulating the joining of scaffold tubes together, they were doing what we scaffolders do best; building structures at the same time as overcoming challenges and obstacles and trying out new methods. I was initially struck by the involvement of all and the interest in those around or passing by. Indeed, I took a chair between John and Richard and while listening to Richard saying how he would use the straws to demonstrate the different forces applied when adding a load to varying scaffold components, I found myself reaching for a handful of straws and rubber bands and began busying myself in the construction of a simulated scaffold tower. Looking at the simple kit and the general buzz of the persons about me, together with the fact that I had been doing some private research to finding a similar product; it was immediately evident just how much potential this kit would have in front of a class of learners, they could build simple structures, see the effect of differing loading upon them. They could be encouraged, through trial and error, to develop best practice techniques. The learners would be able to see the effects and would be able to develop meaning. All this could take place within a safe environment without having to leave the classroom" (Billy; 04/10/13).

While John supported Billy's conclusion that activity could be used to develop meaning:

"It would also be possible to purposely introduce faults into a structure to encourage a structure failure...and then observe the results" (John; 02/10/13).

Richard (08/10/13) grasped the importance of this experience well:

"There was a buzz of life within the team/ group very positive atmosphere around the table of change. It was nice to see some of the old imbedded negative power cultures melting and embracing the group, innovation or people becoming a team? Onwards with trying to construct the cube out of straws with elastic bands".

Participants developed the lesson plan together. John delivered the lesson during session six, with great success; learners engaged just as ardently as they did in the shed. The lesson created a real buzz; John told stories to much laughter. The

competitive element was particularly effective as it helped motivate learners; the understanding of other students bolstered the experience.

I have completed another activity theory analysis (Figure 7, page 148), providing grounds to reflect on how lesson study altered participant teaching practice since the earlier stage of the research when we identified the PowerPoint community of practice. This comparison suggests an expansive cycle: participants now actively developed resources to promote proactive engagement and learning, in light of their newfound understanding of learning, of their learners' identities i.e. who they are (and who they are not) and what they are trying to become. Research activity had provided my participants with new tools:

- An explicit understanding of learning in communities of practice;
- The language used to express this understanding (adopted while finding their voice within our professional development community of practice);
- Teaching artifacts created during lesson study activity (very different from the artifacts developed by the PowerPoint community of practice, encouraging passivity);
- New means to develop new teaching resources;
- A greater awareness of other teachers, within other departments and how this influenced teaching.

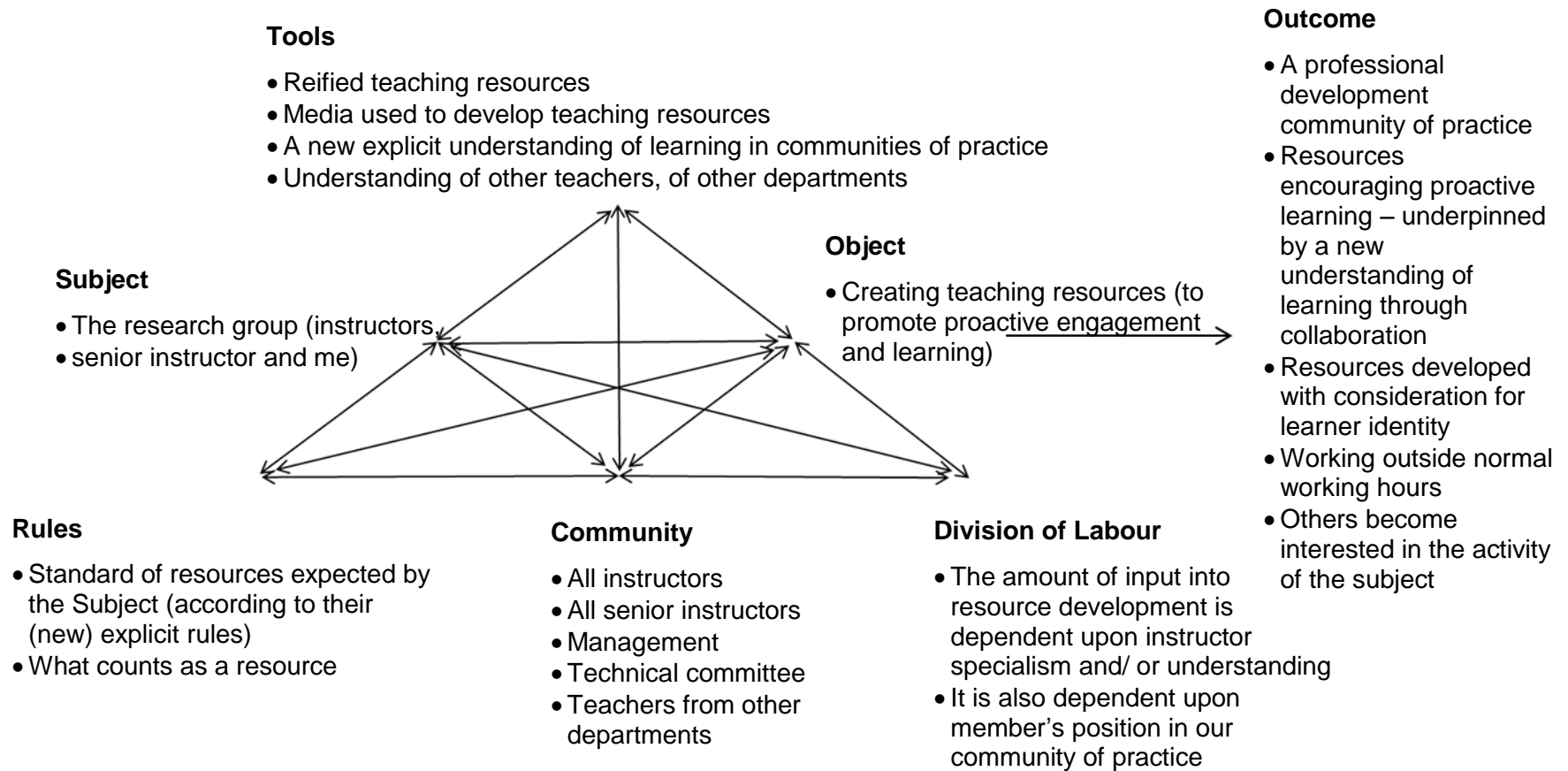


Figure 7: A second-generation activity theory analysis of the development of classroom teaching resources by scaffolding teachers, during time devoted to lesson study

This suggested lesson study, had offered a bridge to establish a professional development community of practice, supporting their learners' progress within industry, for the greater good of industry. Our community of practice was proactive, with members using their own initiative to develop more creative and inclusive forms of learning. I believe my participants were becoming critically reflective and reflexive, introspective andragogues (Ingram, 2014). Billy (04/10/13) provides data to support this perspective. When writing about the scaffolding model-making classroom activity, he indicates that John and Richard,

“both thought that it [is] a great idea to introduce competition to encourage a team to build a structure, using a set amount of given components, to discover which would hold the greater weight and perhaps even introducing a wall of fame into the canteen area. I can only endorse this idea as I am a great believer in that a little healthy competition will bring out the best in scaffolders”.

Here, Billy, John and Richard had all considered workshop scaffolding teaching practice, the importance of instilling meaning, not just facts when teaching, and what motivates scaffolders. This insight now underpinned their classroom teaching practice, in harmony with their master scaffolder identities. Billy (04/10/13) had also *“been doing some private research”* to find the most effective resources for the scaffolding model making classroom activity, as had Ben, John and Richard. They had all started to reflect on their habitual teaching practice, considering how it could improve in light of research and their own developing understanding of learning.

Billy explained (during the writing up process) that our activity had recently inspired him to submit the lesson plan created during sessions five and six to the Technical committee. He had also submitted a PowerPoint to accompany this session, working with a literacy specialist to check errors. The Technical committee had accepted the plan and resources with relish, and it was now used by all scaffolding teachers. John recently submitted the video too, also approved and distributed, suggesting the positive effects of participation are sustainable.

Sessions seven to nine

The work commitments of Ben, John, Richard and Edward increased dramatically, and they could no longer participate. However, Billy could, and Alan, Tom, William and George now joined us. All later confirmed in discussion that they were genuinely excited to join, as “*we’ll never move things on if we don’t try*” (George, 19/05/14). Figure 8 (below) indicates the specialisms of the teachers engaged in lesson study sessions seven to nine, and their teaching experience and qualification:

<p>Alan Senior scaffolding instructor</p> <p>8 years teaching experience, fully qualified. Line manager of Tom, William and George</p>	<p>Tom Scaffolding instructor</p> <p>3 years teaching experience, fully qualified</p>
<p>William Scaffolding instructor</p> <p>New to teaching, unqualified</p>	<p>George Scaffolding instructor</p> <p>New to teaching, unqualified</p>
<p>Billy Scaffolding instructor</p> <p>18 months teaching experience; partly qualified</p>	<p>Karl Initial Teacher Trainer</p> <p>10 years teaching experience; fully qualified</p>

Figure 8: Participants involved in lesson study sessions seven to nine, their specialisms, experience, responsibilities and qualifications

Participants met to discuss progress to date. Alan, Tom, William and George introduced a completely new group dynamic. At the start,

“We began to talk about our previous experience with developing aids to bring the community of practice that we have observed within the training area, into the classroom, so that we might enhance learning and install some meaning into the lesson” (Billy, 21/11/13).

Here, for the first time, Billy explicitly states his belief that communities of practice can span different arenas: in this example; the vocational training workshop and the classroom. This leads me to agree with Billy (21/11/13) when he goes on to write,

“It has become apparent to me that being a part of this project has helped my own understanding of the different ways that learners interact and learn”.

While this represents a considerable step forward in Billy’s development, I believe it is also very good evidence of the use of community of practice as a tool for planning for learning. It is of additional interest to note that Billy felt a great deal of resentment toward the newcomers, whom he considered outsiders (as I did):

“George began by challenging us with a few questions to stir us up, in his own words; playing the Devil’s advocate. What I realised from the offset was that I have become very defensive over the projects ideals and outcomes” (21/11/13).

He then reflects on this,

“Another of the new members had said earlier that he believed this to be “your” project, meaning the founder members of the group. (A very interesting point, exactly what are the perceptions of outsiders? And what, in deed, are their own motives for joining?)” (Billy; 21/11/13).

We decided to develop the lesson plan and resources produced during sessions five and six, in order to promote understanding of structural integrity in a more complex form of scaffolding structure (for more advanced learners). Alan had heard about our previous activity and brought his own scaffolding model materials; participants

manipulated and considered them, as previously, with equal enjoyment and engagement. We discussed assessment, lesson structure, grouping students, collaboration, and the importance of developing meaning not just facts.

Billy (21/11/13) said he did not like Alan's participation at this point. He perceived Alan as an alpha-male, dominating activity:

"Alan found it difficult to step down accepting equal positioning within the group. He positioned himself at the head of the table and on more than one occasion I noted that he would assume an air of dominance when conversation was engaged much like a new and challenging alpha male in the pack".

Alan read this before meeting for session eight; he did not appreciate Billy's views. I discussed this situation at length with Alan as I knew Billy meant no harm. Billy simply (although naively), discussed activity in the language we had grown to adopt, within our community of practice. Alan also discussed this with Billy:

"I spoke to Billy after reading his comments and apologised to him explaining that I had not intended to assume a dominant position and that the reason why I sat next to Karl was because I wanted to speak to him to try and get a grasp on what was going on and because that table was otherwise occupied. It struck me that quite a strong bond and hierarchy had formed within the group and that I may have been perceived by some as an outsider who may upset status quo" (Alan; 19/05/14).

Here, I believe the tension between Alan and Billy was less powerful than the conflict Steven and Ben experienced. While Alan resolved to continue, Steven left. Billy and I agreed (and Alan later confirmed; feeding back on my writing, 19/05/14) that Alan felt he should continue as it would benefit other participants; the majority were his staff, and our aims related to his position directly. Alan had previously displayed this sentiment:

“I think that the session went well today and that it was very obviously a very positive learning experience for the learners. It was also great to see so much buy in and interaction amongst the instructors” (Alan; 21/11/13).

Participants continued to develop the lesson plan during session eight; Billy discussed literacy and I supported participants to develop written questions, to promote meaning. Alan then delivered the classroom session to Billy’s learners, while Tom and I observed; Billy, George and William had unexpected pressing business and could not observe.

Tom, Alan and I agreed it was an excellent session (and learners expressed this too), promoting much collaboration, engagement, storytelling and laughter. As Alan finished teaching and the class dispersed, Billy met Alan’s learners as they left:

“As I was returning to the classroom I came upon one or two of the learners as they were having a break, they had just finished the scheduled lesson. They were clearly buzzing from the lesson and one group took great pleasure as they announced to me that their model had withstood the greatest weight test, which lead to some customary banter being exchanged. This banter alone is evidence of how socially the team are bonding and learning as a unit. I engaged them with questions about the lesson and it was clear to me that they had each gained a heightened understanding behind the principle forces acting upon a birdcage scaffold and the relevance of positioning the bracing correctly. I believe that the lesson had therefore been a great success as learners had learned and had enjoyed doing so”.

However, while Alan had used resources to promote awareness of meaning, he continually assessed his students’ ability to recall factual knowledge, confirming his cognitive/ traditional understanding of learning. We had not included this activity on the lesson plan. While Billy explained that scaffolders must be able to recall facts – an essential ability necessary to complete all scaffolding qualifications delivered in our college – Billy and I agreed that Alan appeared to use this approach to position himself, intentionally, as the expert, relative to his novice students in order to maintain his ‘alpha-male’ status. While this captured his students’ attention, I do not believe it promoted much learning. The rest of the session was excellent though.

At the end of session eight, Ben made a journal entry (29/11/13), Billy and I believe (in retrospect), to reassert his equal membership in our community of practice (in contrast to how Alan tried to dominate it). Here are some extracts:

"I have been thinking lots about the journey we have been on so far. Reflecting on others entries into this process as a senior for the college, I hope I have shown to be a level player within";

"The COP's we have shown and developed has helped to break down many barriers, particularly with the original group of T=PR/2 showing that teaching can happen regardless of experience within the profession. I think Karl has shown the group how to scaffold if you think back, Karl is the teacher for teachers, we are scaffolders, yet we have shown Karl ways to teach and he has shown the group how to scaffold? This circle of learning goes around and continues to";

"What is so nice is that this project has broken down some real dominant and influencing characters within the 'newbies', which can only help prove that this style of teaching, or 'Train the Trainer' actually works".

At the end of session eight, Billy (27/11/13) explained he had not previously intended to slight Alan. He explained the levelling effect of participation:

"I noted that although the afore-mentioned person [Alan] maintained, at times a dominant character, it was an unconscious decision bought about by the normal roll [sic] that said person has within the usual day to day activities at work. One other thing that I was struck by was that as the meeting, and also the day, unfolded then the person was able to, let us say, relax into a more informal character, thus becoming like any other member of the group where rank and outside hierarchy have little bearing. Perhaps it was this relaxed state of character that would lead to the delivery of what was an enjoyable lesson for the learners. This was, in my mind, an encouraging development proving that we can each maintain ownership of the project together with our own identities even while working on, perhaps, different subjects etc".

As session nine started, participants considered how the lesson could improve again. Billy and I happily recognised that Alan engaged with relaxed attitude, allowing others to take a leading role, not dictating activity. Billy was due to deliver

the amended session. Billy and I had discussed the influence of Alan's use of recall, as discussed immediately above (see page 153), with participants before Alan delivered the session and so all present thought Alan should deliver again (03/12/13). Alan said he would demand less recall from students.

All participants observed; the lesson was excellent. During this lesson, Alan attempted to develop his learners' understanding of the meaning associated with erecting scaffolding, much more than before:

"I found this to be a very exciting lesson. Once Alan got going, and began to enjoy himself as the learners became engaged, he changed from the alpha persona. Very encouraging" (Billy; 03/12/13).

Alan was quite courageous in this situation. He was prepared to take quite a few risks as he got involved, exposing himself to, and accepting, a fair bit of scrutiny and criticism; admirable given his position at work.

In retrospect, Billy and I wondered whether it would have been more appropriate if he had delivered the session and Alan observed. Alan would have then been well positioned to decide whether Billy's approach to teaching was more effective than his own. Observing Billy would have provided Alan opportunity to reflect on the master's activity. However, we believe it was more appropriate for Alan to teach here. Apprentices within the Vai and Gola tailor community studied by Lave and Wenger (1991) engaged in a 'reverse curriculum', and so like apprentice tailors, Alan had been offered the opportunity to learn through his own hands-on activity, effectively learning small aspects of our activity, in piecemeal fashion. Unlike an apprentice though, Alan was already accepted as an authority, an expert, qualified and experienced scaffolding teacher, only not in terms of our professional development community of practice. Billy, Alan and I were all engaged in the same activity, we just approached from different standpoints.

I was now convinced participatory action research had been the constitutive and characteristic activity for a professional development community of practice, but balancing the needs of individuals is no easy task.

Presenting our story at Work and University

After data collection some unexpected activity occurred. Participants were invited to discuss our research activity at work, with a member of the Senior Management Team and the Teaching and Learning Strategy group, dedicated to improving teaching and learning.

Billy, John, Ben and I attended. My participants took an active role, commending the worth of our activity. The senior manager explained that he appreciated the value of our research. He asked us to consider how we could expand activity across all campuses, to professionally develop the entire teacher set; he wanted to know how he could support the process. He stated the access Technical committee had acquired too much power and teachers should be trusted to create their own resources. This suggests the significant potential of using participatory action research, as a means of professional development.

I was also asked to present my research at University, as part of my EdD programme (09/12/2013). My supervisor suggested I might like to invite my participants to provide their interpretation. I thought this was a very good idea and so I invited all participants to attend. John, Billy and Ben used their personal holiday so they could come. They felt they should attend as it "*felt like the right thing to do*". I appreciated this greatly; although University was a very alien context for them they were eager to join in. From my perspective, we had become a solid group, with emotional ties.

Billy, Ben and John took an active role in planning the presentation; we discussed what they would talk about and in what order. During the presentation, Billy, Ben and John related their own part in the research process, and the value they attached to the research. On 21/11/13, Billy had written,

“It has become apparent to me that being a part of this project has helped my own understanding of the different ways that learners interact and learn. I have had an opportunity to put into practice some of the things learned during my PTLLS training [the first stage in Further Education teacher training qualifications (at that time)]. I feel that this project has allowed me to continue where the PTLLS training left off, like a physical full stop, and as a result I have been able to develop my own understandings, my own development and ability to see the consequences of differing resources and how we use them. It is probably for my peers to say, but, I truly believe that I have become a better teacher as a result of the perceptions I have developed about myself and the organisation in which I work from having been a part of T=PR/2”.

Before the EdD presentation, I had failed to appreciate the impact of formal teacher training on the research process and how much Ben, Billy and John had appreciated it. I had failed to see how Ben, Billy and John had made a link between formal learning and learning during the informal research process. This became very apparent to me during the presentation, though. Ben, Billy and John explained participation had inspired them to engage in further learning, both professionally and personally; they told their story enthusiastically and emotionally. Ben said,

“When I did my PTLLS and then got my certificate, I was actually quite emotional, and charged and choked up, you know. I’m a 14 stone, 6ft boxing scaffolder [all laughing] and I actually wanted to cry my eyes out to be honest. I felt so pleased and proud, and as this process has gone on at times, it has really brought that emotion out” (Ben, EdD presentation, 09/12/13).

Looking back, I realise formal qualification was just as important to me. During research, I engaged in my EdD, giving me the opportunity to bring theory to life: I had employed theories of situated cognition, activity theory and participatory action research for tangible benefit. I engaged my learners in theory and understanding

from the world of teacher training, in a very hands-on practical fashion. On page 138, I explained that at the end of lesson study session one, Edward developed his own lesson plan. He had made his own lesson plan as he believed it offered the opportunity to bring learning from his teacher training “*to life*”; and so formal qualification had been important to Edward also²⁰.

Billy, John and Ben finally emailed me to explain how much they enjoyed participation and how it had intensely developed both them as teachers, and their understanding of learning. I am now convinced participatory action research in the workplace was, and can become, a constitutive and characteristic activity for a professional development community of practice.

Validity

I am encouraged by the work of McNiff and Whitehead (2006) and McNiff (2013a) to appraise my own work, as I understand the context and constraints of my work, more than anyone else. There is debate however, over how the quality of action research should be assessed (Feldman, 1994; 2007; Heikkinen *et al*, 2007; 2012; McTaggart, 1998; Whitehead and McNiff, 2006). Given my ontological and epistemological beliefs (page 76), I agree with those (e.g. Feldman, 1994; 2007; Habermas, 1987; Heikkinen *et al*, 2007; McTaggart, 1998; Reason and Bradbury, 2001; Whitehead and McNiff, 2006) who believe quality should not be judged using traditional technicist notions of validity (and reliability), as it is meaningless to search for absolute truths. Instead, quality should be measured against alternative criteria. In this section, I choose to assess the worth of my research against the criteria proposed by Heikkinen *et al* (2007; 2012). While some aspects of Heikkinen *et al* (2012) are directly supported by Elliott (2013), I believe McNiff and Whitehead (2006), McTaggart (1998) and Reason and Bradbury (2001) support many fundamental assumptions underpinning the criteria proposed by Heikkinen *et al*

²⁰ Edward was unavailable to corroborate my story as he subsequently left his job/ our college. I had no means to contact him.

(2012). I now relate the five criteria/ principles (with defining aspects of these criteria), Heikkinen *et al* (2007; 2012) propose we use to judge “the quality of action research from a narrative point of view” (Heikkinen *et al*, 2007, p.5).

1. Principle of historical continuity:

- *“Analysis of the history of action:* how has the action evolved historically?
 - *Emplotment:* how logically and coherently does the narrative proceed?”
- (Heikkinen *et al*, 2012, p.8).

Heikkinen *et al* (2007; 2012) explain that action research should portray events, through logical and coherent narrative, as they evolved historically and McNiff and Whitehead (2006) support this approach. I have attempted to relate events, as they occurred within their socio-historical context, providing my interpretation of causal relations and intentions of actors (Heikkinen *et al*, 2007; 2012). Like McTaggart (1998), Heikkinen *et al* (2007; 2012) argue good participatory action research acknowledges the local and wider context.

I have tried to elucidate how research activity evolved logically and coherently, toward my increasingly informed understanding of my research questions.

2. Principle of reflexivity:

Heikkinen *et al* (2012, p.8) formulate their defining criteria of this principle:

- *“Subjective adequacy:* what is the nature of the researcher’s relationship with his/ her object of research?
- *Ontologic and epistemologic presumptions:* what are the researcher’s presumptions of knowledge and reality?
- *Transparency:* how does the researcher describe his/ her material and methods?” (Heikkinen *et al*, 2012, p.8).

I openly explored my own ontological and epistemological beliefs in chapter 3 (page 76). My beliefs underpin my approach to research and methods utilised, which I have explained transparently and in full (McNiff and Whitehead, 2006). My beliefs underpin the approach I adopted, as guide (open to learning and new ways of working), during data collection with participants. I did not try to represent myself as some form of distanced expert, more knowledgeable than my novice participants, as I did not believe this would help in any way. Instead, I explored with my learners, trying to remain open-minded, leaving gaps in my understanding transparent. Although my participants perceived me as an expert, I did not try to use this authority to gain any advantage.

I believe responsibility was shared equally and all had equal rights (Heikkinen *et al*, 2007; 2012; Ladkin, 2004; Reason and Bradbury, 2001), supporting our developing friendship. Heikkinen *et al* (2007; 2012) argue that validity increases when participants are supported equally, and I believe I achieved this. For example, Alan engaged in an 'apprenticeship' within our professional development community of practice, even though he was an 'old-hand' in the pre-existing scaffolding teaching practice. Billy, although a relative newcomer to teaching, was the master in this situation.

3. Principle of dialectics:

- *Dialogue*: how has the researcher's insight developed in dialogue with others?
- *Polyphony*: how does the report present different voices and interpretations?
- *Authenticity*: how authentic and genuine are the protagonists of the narrative?" (Heikkinen *et al*, 2012, p.8).

During the research process, my interpretation of the truth - my reality (Ladkin, 2004) - developed through dialogue with participants, in interaction (Heikkinen *et al*, 2012). After data collection, I wrote a first draft of our story, alone. In order to present a 'true' account of our experiences at the time, I asked participants (Alan, Ben, Billy,

John, Richard and Steven²¹) to read and comment on this draft, as I realise my interpretation is a “confining and constraining interpretive horizon” (Heikkinen *et al*, 2007, p.12). We then engaged in further discussion on the “truth” of this account (McNiff and Whitehead, 2006) (George, William and Tom had input at this stage too). This enabled me to portray my participants’ authentic voices, as they intended to be heard (McNiff and Whitehead, 2006). Billy said that reading chapter four, was like “*opening a photo album*”, a clear image of the activity we engaged in.

I write this story to inform my own practice, as the sole teacher educator in the research process; my interpretation of how data relate to my research questions is inevitably my own.

4. Principle of workability and ethics:

- *“Pragmatic quality:* how well does the research succeed in creating workable practices?
- *Criticality:* what kind of discussion does the research provoke?
- *Ethics:* how are ethical problems dealt with?
- *Empowerment:* does the research make people believe in their own capabilities and possibilities to act and thereby encourage new practices and actions?” (Heikkinen *et al*, 2012, p.8).

I consider the pragmatic qualities of my research on two levels: the organisational and individual. On an organisational level I think it is too early to state whether my research has had enduring consequences (Reason and Bradbury, 2001) but it has altered mind-sets enabling the possibility that it might have had. Ben sadly left his role after completing this research with me so could not alter practice at the local level (page 128), but senior management want me to develop all teachers across the whole college (page 156). These actions in themselves go some way to emancipating my students from ineffective habitual practice but there is clearly more work to do.

²¹ Edward resigned from post soon after data collection and was uncontactable.

On an individual level, data suggest my research has great utility (Feldman, 1994; Heikkinen *et al*, 2007; Ladkin, 2004; McNiff, 2013b; Reason and Bradbury, 2001). Participation (see page 147) crucially supported the development of a professional teacher identity and much improved teaching practice. Although the research process created inevitable conflict and tension between participants, I dealt with (ethical) problems as they emerged. I tried my best to support individual needs and I think I achieved this quite well as all participants, except Steven, continued their participation, even after conflict. In retrospect, I believe I was powerless to quell the conflict between Steven and Ben; their conflict was too entrenched. The research process freed participants from habitual ineffective practice (Kemmis, 2007; Morrow and Brown, 1994), previously suppressing development. I believe it supported learning, building my co-participants' confidence (McNiff, 2010), helping them "take more control of their lives" (McNiff, 2013a, p.102). Participant emails received after the University presentation, reflect their belief that participation was individually empowering:

"It has helped me to explore different techniques and engagement with the learners. I have, and I hope to continue enjoying this process" (Ben).

"Also like Billy, I believe it has helped me to develop as a person as well as a teacher" (John)

"I wish to thank each of you for being there on this journey to self-enlightenment" (Billy)

5. Principle of evocativeness:

- "Evocativeness: how well does the research narrative evoke mental images, memories or emotions related to the theme?" (Heikkinen *et al*, 2012, p.8).

Heikkinen *et al* (2007) argue that quality action research gets the reader to think about things differently; stimulating thought and emotion. Here, "science comes close to art. Research can also be evaluated based on the aesthetic experiences, feelings or emotions evoked by it" (Heikkinen *et al*, 2007, p.16). Emotion is a very

personal thing (Vygotsky, 1994), and if reason and emotion are inextricably linked (Mahn and John-Steiner, 2002) then readers will evaluate this for themselves, based on their own gut-feelings; in line with who they are - their own identity (Ingram, 2014).

Personally, this research, and my participation have been a very emotive experience. I read our research activity, recollected in this chapter, with great affection.

Conclusion

In this chapter, I related the story of our research. As I discussed data, I considered my developing interpretation of my research questions (page 85). I then focused on the validity of data obtained. I have shown how this process was consistent with my ontological and epistemological beliefs.

While our story illustrates real tensions within our community of practice and stories of tension between members of our community of practice and other non-members (e.g. Technical committee members), it also tells of a determination to change and improve practice in our college. Senior management provided initial consent to conduct this research and they now offer the opportunity to drive this practice forward across the whole college. The product managers who subsequently gave consent to engage their staff (my participants) in research are just as open to informed positive change. The instructors and senior instructors directly involved in my research displayed a real passion to improve practice too; as a teacher trainer, this gives me real hope.

The communities of practice influencing, or producing my participants' identities and practice were most effectively identified through participant observation. Our

understanding of these communities of practice was then refined by our use of the teaching moment and story groups. Our developing understanding provided a firm foundation to enter in to lesson study activity. During lesson study, participation helped constitute a powerful professional development community of practice. My own understanding of learning, as a teacher educator, altered during this process, helping me to see much initial teacher training content as redundant.

Billy, John and Ben recently agreed that it was no coincidence that those who started the research process were there at the end. Although lesson study has great potential, I believe, like Billy, these teachers are now better equipped as a result of their new conception of learning, based on theories of situated cognition, than others who engaged, during sessions devoted to lesson study alone:

“It is, I believe, no coincidence that the original members of T=PR/2 are the same members that have stuck it out for the foreseeable end. I believe that this is because for this project to work fully, all members need to be in at the beginning to experience rather than reading how we were and what we learned at the start” (Billy; 03/12/13).

In chapter two (page 30), I considered Štech’s (2008) work, where he suggests abstraction in formal contexts promotes great learning; while I agreed, I argued abstraction can occur, irrespective of context, depending on how conducive to learning the social environment is (Vygotsky, 1994). While Štech (2008) argues abstraction is a defining characteristic of formal educational contexts, my results suggest that abstracting in an informal context can provide just as good a bridge across contexts as does abstracting in a formal context. It is how students engage with abstracting led by the teacher that really matters, not where the process is physically located or the degree of formality of the educational context (I distinguish between the formal classroom and other informal contexts on page 27).

However, some participants greatly appreciated learning within a formal context, with success bringing great personal satisfaction. While the significance of formal education cannot be overlooked here, some of my students (for example, see page

11) do not value academic pursuits. This suggests teacher development, in my own field, would do well to include a blend of formal and informal education, as I did here. Data suggest my new approach is a good place to start as it supports the development of a positive and dedicated teacher identity; one that is critically reflective and reflexive in practice.

Our story supports Billy's (03/12/13) conclusion that "*all members need to be in at the beginning to experience rather than reading how we were and what we learned at the start*". This leads me to conclude that further attempts to establish professional development communities of practice might be fruitful if participants are initially given the opportunity to identify learning through observation and story-telling, preparing them for lesson study activity. This would not only support newcomers but old-timers as well, as newcomers bring with them the latest industry knowledge and practice. Journal writing appears to support this process well. This firmly suggests participatory action research can be a powerful tool for developing teachers.

Given my ontological and epistemological beliefs, I do not attempt to generalise conclusions to other contexts, as I do not proclaim to have unearthed some objective truth. However, I hope our story is illuminating, offering grounds for discussion (Habermas, 1987; Heikkinen *et al*, 2007; 2012).

In the next chapter I discuss our story in relation to my research questions using theory previously considered. I provide deeper discussion on the generalisability and validity of my findings, and draw together the whole research process.

Chapter 5: Discussion and conclusions

Introduction

In this final chapter, I discuss our story in relation to my research questions using theory previously considered. I look critically at my use of theory and even whether this particular theory was necessary at all. Following this, I discuss how my work represents a valid contribution to knowledge. I move on to discuss the limitations of my research, how my research could improve, if I were to repeat it, and state my final conclusions.

I initially discuss our story in relation to my research questions and theory previously considered. I explore the process of identifying communities of practice and the difficulties associated with this activity. I then illuminate the barriers and bridges to establishing a professional development community of practice, informing my understanding of construction teacher identity. Subsequent consideration of the benefits of participation provides the foundations to discuss means to support construction teacher professional development post-deregulation. This leads to discussion on the problematical concept of dual-professionalism. Following this, I question whether my use of theories of situated cognition and communities of practice has been sufficient for my research, and indeed, whether it was necessary at all. That is, that, without such a perspective, could I conduct, or would I have even thought of such research activity. After this, I consider my contribution to knowledge and why I believe my findings are valid. I then consider the limitations of my research and the changes I would make if I could repeat it. I finally conclude, questioning whether my approach to professional development is sustainable, and in what part success was due to me alone. As a member of our professional development community of practice, I discuss the effects of participation on my own identity, my learning as a teacher educator.

Identifying communities of practice

During research, participants discussed membership in communities of practice that might possibly have influenced their identity as teachers; I initially brought the PowerPoint community of practice to their attention, considering community of practice criteria (Winbourne and Watson, 1998) with them. Although they agreed their activity could signify a community of practice, my participants had had little chance to form their own understanding of communities of practice by this time. My participants' opinions may have been influenced by my perceived authority. However, I am more confident of the scaffolding learning community of practice. "Truth' becomes manifest only in [negotiated] attempts at 'telling-truth'" (Kemmis, 2007, p.121); and we did identify this 'scaffolding family' together.

It is difficult to see how we could have identified the scaffolding learning community of practice other than through direct observation. Winbourne and Watson's (1998) observation criteria supported my participants' understanding of how learning occurred and they agreed emotional support held this 'scaffolding family' together, in activity. I do not claim the emotion we observed verifies my new criterion:

- ❖ All members within the community have an emotional investment to the object of the constituent activity of the community.

However, it is an intriguing possibility, as emotion was certainly palpable in the PowerPoint community of practice and scaffolding learning community of practice. Although I identified the intersecting (Winbourne, 2008) scaffolding teacher development community of practice, through the action research writing process alone, my participants corroborated this possibility as I wrote chapter 4 with their support.

During the lesson study activity (see page 142), we used criteria to decide that we were, indeed, part of our own professional development community of practice.

However, identifying the community of practice, from inside, rather from outside looking in, was personally much easier; my own membership was patently obvious to me.

Barriers, bridges and construction teacher identity

The barriers and bridges identified in our story enrich my understanding of construction teacher identity greatly. Barriers include the significance teachers attach to discord between different construction disciplines, a rivalry probably exacerbated in college departmental division. Following Bourdieu (1987), one could argue that the meaning my students attach to this rivalry has emerged as a result of delineated institution, separating the self from others outside the cultural habitus. Alternatively, identity may develop in relation to the labels we attribute to ourselves and those which are attributed to us (Gee, 2000), *roofer* or *scaffolder* for example, in local discourse. I believe our story supports the theory that identity does form uniquely, in relation to membership within a multiplicity of intersecting communities of practice (Winbourne, 2008) and our figured worlds (Holland *et al*, 1998). I doubt the rivalry between Steven and Ben was based on inter-trade rivalry alone, otherwise Steven would have experienced conflict with John and Billy too. The rivalry between Steven and Ben must be more personal; perhaps Steven and Ben used the historical division between trades, as a means to distance themselves further from each other, using labels to reinforce who they are and who they are not. However, this still suggests some teachers may harbour an insurmountable prejudice against teachers of other trades.

While the aim bonded participants during the lesson study process, I believe laughter and stories acted as a bridge, bonding participants further. However, in other instances, laughter and stories could distance others from the group. This suggests membership within a community of practice is not solely dependent upon whether we are aligned (Winbourne, 2008) to participate, it is also dependent on whether the

brokers, who have the power to introduce us to the new community (Cobb *et al*, 2003; Wenger, 1998; 2000) are aligned (Winbourne, 2008) to our participation; whether potential brokers view the outsider as someone who could, even should, legitimately enter as a newcomer in legitimate peripheral participation (although brokers might support membership with risk (Giddens, 1991; Mahn and John-Steiner, 2002)). Perhaps Ben felt Steven should not be allowed to join in. I believe this argument supports the theory that emotion and learning are inextricably linked (Mahn and John-Steiner, 2002). While emotion can form resilient bonds between people, it can present a formidable barrier to outsiders vying for membership.

Benefits of participation

The two activity systems presented on page 111 and 148, depict how research activity influenced participant teaching practice, learning and identity. The first activity system depicts subversive (see page 109) subjects working surreptitiously, following the directions of others, while finding their feet as teachers. While my colleagues had their students' best interests at heart, this routine activity merely led to the reproduction of artifacts with no real sustained impact. As we worked together, participants realised that their figured world of the Technical committee, and the alpha males residing within, had influenced their PowerPoint-making activity. And so conversely, our professional development community of practice altered my participants' figured worlds. The second activity system enables a comparison to the first, illustrating an expansive cycle, where participants' new conception of learning provided new tools, empowering them to create alternative types of innovative teaching artifact, inspiring proactive learning, in tune with their new teacher identity and their learners' identities and needs (Butler and Schnellert, 2012). To achieve this, my participants looked for support from outside our research group and we also worked outside usual hours - both proactive, positive steps. Effectively, research activity set participants free from habitual ineffective practice (Kemmis, 2007; Morrow and Brown, 1994). Following research, John and Billy submitted resources to the Technical committee, suggesting the positive effects of participation are sustainable.

Ben's more recent activity supports this too: he has now left our college to start his own training company. On reading a draft of this chapter, Ben replied,

"I have been delivering training myself, I have engaged every learner at every level of experience and used what we have learnt to engage my learners which has ended in better outcomes for the learner/s and helped me develop as a teacher/trainer. I give people the chance to develop their own COP's with just a little encouragement rather than me really being the Alpha male!"

I have since contacted Ben (by telephone) to explore what he meant by giving "people the chance to develop their own COP's". He explained that he now gives his learners the opportunity to discuss and explore subject matter for themselves, in class, rather than delivering "one-way lectures" based on "death-by-PowerPoint". He groups learners in class mirroring workshop practice, according to experience, giving them opportunity to explore subject matter, while guiding them. While he still considers himself an alpha-male (email received 21/11/2014), he tries to listen more (also in other aspects of working life) and lets the learners take the lead. Although Ben has endeavoured to apply his understanding to his new teaching practice, he has had to work without us – our professional development community of practice. Without observing Ben's new practice, it is difficult to comment further. It certainly sounds more interesting than "death-by-PowerPoint" though.

As participants worked together, journal entries and discussions illustrated an evolving understanding of communities of practice, binding us in activity, with shared language. I believe our activity, boosted participant self-esteem and confidence (supporting Beck and Kosnik (2001)), promoting critical reflectivity and reflexivity (Craig, 2004; Hopkins, 2000; Morrell, 2003; O'Sullivan, 2007), as introspective andragogues (Ingram, 2014). My participants' teaching practice was finally underpinned by a critical praxis and a "prudent understanding of what should be done in practical situations" (Carr and Kemmis, 1986, p.132) (phronesis). Teaching had become productive, rational, just and satisfying for those involved, supporting learner progress within industry, for the greater good of industry.

Supporting construction teacher professional development

Gaining the support of management and alpha-males

Our story supports the theory that identity develops in relation to powerful local discourse (Gee, 2000; Holland *et al*, 1998); and data illustrate alpha-males and management influence this discourse, in our place of work. The managerial motives of Ben and Alan were both a bridge and barrier to establishing a professional development community of practice. While Ben and Alan allowed time to participate they also attempted to exert some controlling influence. Although it is difficult to assert alpha-males represent anything but a barrier (Haas, 1972; Lave and Wenger, 1991), alpha-males and management must be given opportunity to learn (as Ben and Alan did). My approach to professional development inspired alpha-males and management to engage in activity democratically, improving group relations (Boaler, 2000a; Thomas *et al*, 1998). In response to my writing of this chapter, Ben confirmed the levelling effects of participation,

“On reading your work, it has made me think about myself a great deal. Where we talked of people/ persons being 'dominant alpha males'....I am one of these, it is at times frustrating for me to not take the lead and give others a chance, something which I see within the writing I had improve on as time went on”.

As my research suggests management is a substantial bridge and barrier to establishing a professional development community of practice, their role in supporting professional development must not be underestimated. During the research process, participants found it difficult to work together, as they were often summoned to work elsewhere unexpectedly. While Ben and Alan tried to allow others time to participate, it was not always possible. A professional development community of practice will only develop if management (at an organisational level above the equivalent of Ben and Alan) provides development time. Although participants in my research gave freely of their own time to develop their practice, I would not want to rely on

that again, as I believe instructors should be given time to develop, in the normal working day. It would be unfair if instructors were unable to develop practice in their own free time because they had family or other important commitments, for example. Those with more responsibility would have less chance to develop and I believe everyone should have equal chance, as without an equal chance, a community of practice might not develop.

Time must be allocated to this informal teacher development practice, as it is for formal teacher development programmes. Management would also need to grant me time for this activity. Our discussions with senior management suggest this is a real possibility but I imagine I would need to further convince them of the power of my new approach to teacher development.

Blending formal and informal approaches to professional development

I believe participatory action research can become a constitutive and characteristic activity for a professional development community of practice. It is the teacher's role to provide the initial idea i.e. the initial abstraction (see page 82 for a full and detailed account). The teacher can then support co-participants as they engage in the collaborative process, negotiating together democratically.

Ben suggested we should devise a qualification out of this informal means of professional development, debated during work and EdD presentation. On page 38, I explained literature had led me to believe a community of practice will only develop if learners are offered unfolding opportunities for practice, creating a potential learning (as opposed to teaching) curriculum. Qualification inevitably evokes the development and policing of normative standards, stifling the possibilities of a learning curriculum (Wenger, 1998). In accord with my criticism of Lerman (1998a) (see page 32), participants should only engage on a purely voluntary basis and qualifications associated with the teaching role might compound feelings of coercion.

If this form of professional development activity is going to work, if I am going to engage the entire teaching set, then my participants and I should be afforded the opportunity to recruit teachers because they feel inspired to engage, because they feel it is the right thing to do (Ingram, 2014), as it accords with their own identity. Using McNiff's (2012, p.142) words, "The kinds of transformation I am speaking about can happen only when people engage of their own free will".

My research suggests an effective means to support construction teacher professional development, given deregulation, is through a blend of formal qualification and informal professional development. While this in itself is not new, my coherent and consistent approach allows for the power of abstraction to develop individual mental processes (Štech, 2008) and enculturation into the wider situative context (Lave and Wenger, 1991).

On page 14, I explained that some of my students can be very resistant to formal training. Some of these same students participated in my research, if only peripherally, but they were inspired to engage by the growing enthusiasm of other participants, our egalitarian approach and results. We could therefore initially engage newcomers with my informal approach, motivating and inspiring them to go on to embark on teacher training qualifications, delivered in the formal classroom. I now believe theory and understanding congruent with theories of situated cognition are of great value. While masters can support the development of newcomers, newcomers (straight from industry) will offer new ideas and industry knowledge: a sustainable approach.

I have more recently discussed the informal approach with Billy and John. We now believe this approach should not rely on lesson study alone. Billy and John developed a sophisticated understanding of learning, as a result of attempting to identify communities of practice, supporting subsequent lesson study activity. My approach to learning would incorporate observation to identify learning in communities of practice, and story groups to develop understanding further (my participants did not learn much from the teaching moment). This would provide

learners with a good understanding of learning before they tried to promote learning themselves.

Given the physical distance between college campuses, John, Billy and possibly Alan could play key roles in developing communities of practice across other campuses; they would become brokers (Wenger, 1998; 2000). While these communities of practice should be given the opportunity to interact and therefore intersect, as they could then learn from one another, they should all primarily aim to positively promote my learners' learning and serve the greater good of the construction industry.

The problem with the concept of dual-professionalism

In chapter one, I quoted Viskovic and Robson (2001, p.221), who state, "the process by which they [vocational teachers] move from one occupation to another, and develop (or fail to develop) new identities as teachers is complex and not well understood". I am drawn to what Richard said,

"So the boundaries...sometimes you get caught in the middle, yes, because they want us to teach this way and all be prim and proper, and it is the right way to teach but to get the point of view over to some of our learners..." (Story group 2).

In chapter four (page 120) participants agreed that the notion of the master scaffolder is still very central to the scaffolding teachers' sense of self. This is a key observation as this argument resonates through all forms of education; for example, I could question whether the notion of the master mathematician is central to the mathematics teachers' sense of self. In Richard's quote (above), Richard is caught between the worlds of scaffolding and education. While Richard knew he should teach according to expected standards, he felt he could only achieve inclusion as a master scaffolder, and so the notion of the master scaffolder was still central to Richard's identity at work.

Robson (1998, p.597) writes,

“In making this transition from one workplace to another, the mature but novice FE teacher can experience stress of various kinds and more is involved than the simple acquisition of new skills and knowledge. Existing occupational identities may be threatened by such changes, and existing cultural practices and discourses may be inappropriate for the new professional context. Resistance may take a variety of forms, including humour, and the transition is unlikely to be successful without opportunities for reflection and for the transformation of existing perspectives....Teacher training might, of course, offer such opportunities, but without it, the more likely outcome is the persistence of the first occupational identity within the new vocational environment – exactly as we see it in most FE departments”.

Robson (1998) assumes it is the vocational teacher’s responsibility to change, so her/ his identity comes into alignment with the academic context. As a vocational master, Richard must now subsume the attributes of the master teacher into his identity i.e. he must attain a dual-professionalism (Institute for Learning, 2011). However, Billy, John, Richard and I recently agreed that Richard is placed in an impossible position, as certain attributes of mastery in scaffolding and mastery in teaching seem irreconcilable. If Richard works as a master teacher, without ‘inappropriate’ language, stories and perhaps behaviour, he could not encourage the development of a “scaffolding family”. If Richard censured his master scaffolder identity, for the sake of education/ management, he would paradoxically lose legitimacy and learning would diminish, to the detriment of his learners and industry. The majority of Richard’s students have links to the actual world of scaffolding; they understand the characteristics of a master scaffolder. It is difficult to see how the world of education and scaffolding can come together compatibly, in the sense that Robson (1998) anticipates. It would be interesting to consider how this relates to other teaching contexts.

Placed in this position, I believe it is not surprising Richard retained the familiar (tried and tested) master scaffolder identity. I previously cited Viskovic and Robson (2001) (supported by Bathmaker and Avis (2005)) who argue some vocational teachers would rather affiliate with the familiar past industrial identity, in marginality (Maclure,

2001; Wenger, 1998), than join any new community of practice associated with teaching. My novel approach to professional development has not only inspired teachers who have historically remained in marginality, it has also supported them in bridging the vocational–academic divide. As this divide closes they would be well positioned to help consider how the master scaffolder – teacher paradox could be reconciled.

Using theory to establish and underpin my research process

Reflecting back over my research process, as a whole, it was not linear or straightforward. As I read about theories of situated cognition and communities of practice, I tried to untangle the different perspectives on offer, to make sense of them in relation to my own practice, as a teacher educator. Considering all of this in relation to different ontological and epistemological perspectives, helped me clarify the most applicable approach to research, in tune with my own values.

Stepping back now helps me realise that without theories of situated cognition and communities of practice, I could not have conducted, or even thought of, such research activity. The theory that I read helped establish my own conceptual framework, underpinning my methodological approach, the research framework and the manner in which I guided us to work together on a more personal level. I believe I used theory well, as ultimately, my data suggest participants were empowered by and learned from the research experience.

My contribution to knowledge and the validity of my claim

In my research, I have demonstrated that theories of situated cognition can be successfully applied to frame coherent and consistent planning for learning in a

vocational teaching and learning context, supporting the development of (in my opinion) great construction teachers. My research has established that teacher educators do not have to solely rely on conventional development practices (underpinned by cognitivist theories of learning) but can instead make practical use of theories of situated cognition. I believe my work provides a valuable contribution to knowledge as it allows others, with different backgrounds and experiences, to consider how they can make use of the conceptual tools I have used in my research to their own contexts. My work is generalisable in the sense that others can learn from what I have achieved here.

I believe this claim is justified, as I am confident in the validity of my findings from my own personal perspective; my confidence is bolstered, as I have established the validity of my findings with the support of my peers, supervisors and other academics (McNiff, 2012; 2013a).

In Chapter 4, I considered the validity of my research in relation to the criteria proposed by Heikkinen *et al* (2007; 2012), from a “narrative point of view” (Heikkinen *et al*, 2007, p.5), rather than judging the quality of my work against traditional technicist notions of validity (and reliability). Judging my own work in this way, using my own chosen criteria, is justified by McNiff (2012; 2013a), and it has led me to believe my findings are valid, from my own personal perspective. This approach accords with my own worldview as I believe it is meaningless to search for absolute truths (Feldman, 1994; 2007; Habermas, 1987; Heikkinen *et al*, 2007; McTaggart, 1998; Reason and Bradbury, 2001; Whitehead and McNiff, 2006).

I understand that “we are all liable to self-delusion” (McNiff, 2013a, p.137) and that my interpretation is inevitably a “confining and constraining interpretive horizon” (Heikkinen *et al*, 2007, p.12). So, as research progressed, I asked my peers and supervisors to consider and feedback on my interpretation of my data, my writing, and the assumptions that underpin my work (McNiff, 2013a). And I believe this supports my belief that I am trying to live by the terms in which I believe (McNiff, 2002). As the data collection process unfolded, I discussed my interpretation of data

with my co-participants and supervisors, which developed my own understanding in process. Following this, my co-participants read and discussed revised drafts of Chapter 4 with me, which I amended in light of their suggestions until they agreed that I had incorporated their voice, as they meant to be heard (McNiff and Whitehead, 2006). We knew we had completed this part of our activity when we could agree that our story reflected a clear image of it.

During the EdD seminar at the University my co-participants spoke openly and emotionally about this research; they defended its worth, and praised it for its egalitarian approach and how much it had empowered them. Other EdD students, who are also my peers, and academics who attended the EdD presentation commented on the worth of my research and the positive impact it was clearly having on my co-participants' lives. I also believe my findings are validated academically (McNiff, 2013a), in the sense that my supervisors have constantly reiterated the value of my research, and they believe it now demonstrates appropriate academic rigour at doctorate level (McNiff, 2013a). They have supported my interpretations and understanding as research progressed. Ultimately, my supervisors urged me to submit my work for final academic validation (McNiff, 2012; 2013a) and I have full faith in their judgement as Peter Winbourne and Sue Adler are both consummate experienced professionals.

Overall, I believe I can claim my work offers an original contribution to knowledge and that this claim is valid. From my personal perspective my research is valid, but I have also established its validity through the support of my peers, academics, and appropriate literature (McNiff, 2012; 2013a).

Limitations of my research

If the opportunity arose, I would run this research at an alternative campus, where a greater variety of construction specialisms are delivered, providing insight into a wider cross-section of my students' identities and practices.

It would also be useful to recruit members of the Technical committee and other levels of management, providing alternative perspectives. The ability to consider the beliefs of others located outside our college, such as the employers of my learners' learners, and other stakeholders would have been useful too.

In my research, my students were my co-participants; their students however, were more akin to subjects. If I were to extend this research, I think it would be useful to draw my learners' students further into the process, making them co-participants; they have a vested interest in their own development, so I think this was an opportunity missed.

Conclusion

In this chapter I have told our story in terms of my research questions and theory previously considered. I moved on to question whether my use of theory was sufficient for my research, and indeed, whether it was necessary at all. I then considered my contribution to knowledge and why I believe my claim is valid. I considered the limitations of my research and the changes I would make if I could repeat it. I now provide my final conclusions, questioning whether my approach to professional development is sustainable, and in what part success was due to me alone. I also discuss the effects of participation on my own identity.

I must question whether and in what part success was due to me alone. I do not believe I possess any particular qualities ensuring success; I was certainly well aligned to engage in this activity as my upbringing (perezhivaniya (Vygotsky, 1994)) has made me respectful of master crafts and trades people. My approach is a bottom-up non-managerialist attempt to engage my students in their own development. Central to this approach is a wholehearted fascination to listen and engage on an equal standing. I believe my participants respected my egalitarian approach, engaging fully, in turn. If another teacher trainer was to secure my position, I believe they could continue to play a key role in the professional development community of practice. Although they might have many years' experience developing teachers, they would nevertheless, be newcomers themselves. I believe the community of practice would be sustainable but only if the teacher trainer respected construction teachers for their skills, experience and individuality. It would also require the ability to work democratically, affording masters and apprentices equal status, within the professional development community of practice. In regard to theory, my successor would need to put some thought into how teacher training theory can be drip-fed directly into practice, informally, and he or she would need a sound understanding of what a community of practice is. Reading for my thesis has led me to conclude that many academics have misinterpreted the idea of community of practice. In much of the more peripheral literature, communities of practice are conflated with communities per se, or working groups, assuming communities of practice occur whenever people band together, making the idea very weak. My successor should be careful not to fall into this trap. A sound understanding of the idea of community of practice would support attempts to build and nurture a community of practice; reading my thesis would provide a good starting point.

I must question what I have learned and how I have changed. Theories of situated cognition have offered insight into how teachers develop, how values become ingrained (Lave and Wenger, 1991; Viskovic and Robson, 2001) and how a teacher's sense of self can become isomorphic with a teacher identity (Woods and Jeffrey, 2002). I now have an informed understanding of how great teachers are made in process (Lave and Wenger, 1991; Lave, 1996; Wenger, 1998). While I

have helped some of my participants bridge the vocational-academic divide, I have gained a much greater appreciation of the vocational aspect of this divide than before.

As our story progressed, I questioned the usefulness of some teacher training theory, theory underpinned by an orthodox conception of learning. Looking back, like the teacher discussed on page 39, I could not find a way to integrate such 'knowledge' into my 'teaching'. As such, my negative feelings harboured toward 'orthodox theory' may have resulted from my own frustration, at not being able to use this theory effectively. Adler (1998, p.166) might say that I had limited "insight into its history and inner workings, its possibilities and limits". Perhaps greater experience delivering my new approach to professional development, outside of the usual formal classroom setting, attempting to link theory directly to practice, will bring greater insight.

I now feel ready to roll out the approach I have developed here across our whole college, because it feels like the right thing to do – in tune with my 'gut-feeling': who I am; my own identity (Ingram, 2014).

Appendices

Appendix 1: Ethical approval from LSBU Research Ethics Committee

**London South Bank
University**

Direct line: 020-7815 6024
E-mail: upadhyan@lsbu.ac.uk
Ref: UREC 1303

Mr. Karl Kenneth Durrant



Thursday, April 18, 2013

Dear Karl,

Re: Exploring learning in practice to inform construction teacher professional development post deregulation.

Thank you for submitting this proposal and for your response to the reviewers' comments.

I am pleased to inform you that Full Chair's Approval has been given by Chair on behalf of the University Research Ethics Committee.

I wish you every success with your research.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Noopur'.

Noopur Upadhyay

Assistant, LSBU Research Ethics Committee

cc:

Prof Joan Curzio, Chair, LSBU Research Ethics Committee

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Appendix 2: Letter requesting consent, sent to senior management and reply received, accepting my proposal.

Dear xxxx,

As you know, I am currently enrolled upon the Professional Doctorate in Education (EdD) at London South Bank University. I am writing to you, in the hope that you will grant me consent to focus my final dissertation on the improvement of our current teacher development practice. Deregulation in September 2013 will bring radical changes to initial teacher training (ITT) and my research looks to develop a new means of teacher development, post deregulation, in our college that could either support new qualifications (if any remain mandatory) or could solely replace them. It will hopefully provide a means to professionally develop new and existing instructors, and in a way that is personally meaningful and engaging to them and not officially or managerially coerced.

To achieve this, I am looking to run an instructor-led action research project at xxxx, between April and December 2013. The research would be conducted in two halves (Parts). I have detailed exactly what these will entail below, and have included information on safeguarding and ethics and the potential benefits that participation will hopefully bring. I would be very grateful if you would consider my proposal and let me know your decision. A GANNT chart detailing research activity and a timetable is attached.

If you grant approval, I will initially approach the product managers who are responsible for the instructors at xxxx. If I obtain their consent, I will look to recruit instructors from xxxxx to collaborate in a joint project, to consider and develop practice with me, in a bottom-up approach rather than through the current top-down policy of obligatory qualification. Deregulation will effectively free us from this approach, affording the chance to develop a more engaging alternative method that we might take forward across the whole college post-research.

Part 1: Exploring instructor communities of practice (April – August 2013)

I will initially look to recruit three instructors at the start of Part 1. They will participate with me to consider and develop practice throughout the whole project and I hope their engagement increases levels of participation as the research progresses. Any instructor participants, who do take part in this research, will only take part during free time and participation will be strictly voluntary. They could withdraw themselves at any time from the research process.

Part 1 is exploratory in nature as it will initially consider the ways and means our instructors develop their own teaching practice, outside of my classroom. It will consider their understanding of and experiences with learning in both formal and informal contexts. It will consider the 'communities of practice' that they are involved in, outside of my classroom, both within college and outside that might impact on their practice as teachers.

To attain this understanding we will initially co-observe the teaching practice of co-participants only, in classrooms, vocational training areas and wider college practice. Co-participants will make a joint decision on what practice and who it might be best to observe. Full PPE will be worn when required, observations will be made at a safe distance and we will not disrupt teaching practice in any way. When we observe co-participants in other non-teaching wider-practice settings, we will do this as informally as possible, discussing observable practice and their part in interactions with others when alone in our group.

I would need to be based at the campus in question, during weeks that are designated for observation, for 1 day per week (please see attached GANNT chart for exact timetable). We will observe as much as possible, depending on instructor spare time, throughout these designated days.

As we progress all co-participants will keep an ongoing written journal that will detail their observations made in situ, expanded notes that are made after initial observations, and notes on any issues, ideas, difficulties etc. that arise in the process. It will also include a developing, tentative running record of ongoing analysis and interpretation. We will consider our thoughts, as we progress together.

To gain even better insight into instructor communities of practice I then propose to run a single workshop (most probably CPD) that co-participants and other instructors attend, at xxxx. I will video this workshop, focusing on one snapshot of a particular teaching moment. After the workshop, I will play the video back to co-participants and we should then be in a better position to consider the communities of practice that they are currently part of. The initial observations of practice should help contextualise this teaching moment. We will write observations and reflections of this activity within our journals, and these should develop as we progress.

After this, co-participants will attempt to recruit more instructors i.e. more co-participants from xxxxx, but again, participation will be strictly voluntary. We will look to recruit as many instructors as possible, seeking to gain further momentum and engagement for our project. Stories have been considered the cornerstone of identity so I propose co-participants hold story groups, where we verbally relate stories to each other. Building on understanding derived from previous activity, we will relate our experiences with learning, and in particular learning to develop as a teacher. We will talk on our past and current experiences with formal and informal learning and future aspirations and it might be most helpful if we consider this in relation to practices, space, time, bodies, social relationships and life courses. We will seek to uncover and explore instructor communities of practice, as the ongoing theme throughout Part 1.

Stories will be audio recorded for our subsequent analysis and to assert whether there are any recurring themes emerging from the narrative. I will transfer the audio recording to co-participants work laptops, and we will listen to these recordings in our spare time to consider repeated themes or explanations that might give insight into

instructor communities of practice. We will then talk on our analysis and subsequent reflections on our story groups, recounted in reflective journals, in subsequent meetings.

We will hold one story group every other week, and each would last 60 minutes. We will hold these in instructor spare time. Please see GANNT chart for dates of story group meetings.

Part 2: Developing teaching development practice (August – December 2013)

The main focus of Part 2 is to employ understanding gathered in Part 1 regarding instructor communities of practice to develop collaborative ways of working that will aid teacher development, in less formal and perhaps more productive ways.

Co-participants will start Part 2 with another recruitment drive to attract further instructor voluntary support and we will attempt to recruit as many co-participants as possible. I hope co-participant engagement might help inspire support to the point where we would have now recruited all instructors from xxxxx – or at least the vast majority.

Building on understanding derived from Part 1, I propose we develop/ structure collaborative learning tasks that promote engagement and learning opportunities, which initiate within my classroom but extend past this space into co-participant training environments and possibly wider college practice. As before, we will need to settle any health and safety implications first, ensuring safe practice before commencement. The social organisation for collaborative learning will be decided upon by co-participants but tasks will allow instructors to function as 'experts' in the practice in which they participate and this will hopefully inspire engagement. I will guide the development of any resources that aid instructor activity and I can also support co-participant practice through my workshops, on their request.

I would need to be based at the campus in question, during weeks that were designated for Part 2 activity for 1 day per week (again, please see GANNT chart). I will use as much time during these days as possible to support instructor activity, during the time they could devote to developing practice.

This will effectively move teacher education in to the hands of the instructors, while I facilitate their activity and support the process. Rather than officially enforced ITT qualifications, development activities will arise out of direct necessity, as perceived by the instructors themselves. Development activities will become highly relevant to the practice of the instructors involved, and it is hoped that this will inspire high levels of engagement and learning.

As we move forward during Part 2, we will informally co-observe participants in their everyday settings (using the same process adopted in Part 1) (please refer to

GANNT chart). We will also continue to use our reflective journals, as this should help us consider whether there are any noticeable changes in language and practice. We will observe, and continue with our reflective journals, analysing possible change as we progress.

On project completion, after write up in March 2014, I will issue electronic copies of the research to you, the product managers who gave consent and to all co-participants.

Safe-guarding

This study has been approved by the London South Bank University Research Ethics Committee. All names including the name of our college and all those involved will remain totally anonymous. All data will be treated with the upmost sensitivity and respect and all data would be stored, utilised and destroyed in line with the Universities very robust data protection procedure. If you would like clarification on any of this, please feel free to contact my supervisor. The correspondence details are as follows:

Peter Winbourne, Department of Education, London South Bank University, 103 Borough Road, LONDON, SE1 0AA. Telephone: +44 (0)20 7815 7452; email: winboupc@lsbu.ac.uk; Fax: +44 (0)20 7815 8160.

The potential benefits to our college

I am certain that this project will benefit our instructors and college as a whole; I fully believe this a very worthwhile cause and endeavour. I believe it will greatly benefit our college and provide an excellent means of teacher professional development post-deregulation.

This project is intended to enlighten my professional practice as a teacher educator, and also that of the other participating teachers. If successful it might be possible to widen the scope of this project to all campuses/ the entire college but this will need further consideration and approval post-research. It is hoped that participation will develop instructor teaching practice.

Thank you very much for taking time to read this and for considering my request. If you have any questions, please get back to me; I look forward to your reply.

Kind regards,
Karl

The response I received (via email) from my direct senior manager

Fri 22/02/2013 09:15

To: Karl;

From: xxxx

Sent: 22 February 2013 08:10

To: Karl

Cc: xxxx

Subject: RE: Doctorate proposal

Hi Karl,

I am happy to support this and wish you luck!

Kind regards

xxxx

Appendix 3: Letter requesting consent, sent to two product managers and replies received, accepting my proposal.

Dear xxxx,

I am currently enrolled upon the Professional Doctorate in Education (EdD) at London South Bank University and am now moving in to the final dissertation stage. I am writing to you in the hope you will grant me consent to approach the instructors under your remit at xxxx; I am looking to seek their co-participation within my research. I have received consent to conduct this research in our college and to approach you from my own manager.

My final dissertation focuses on the improvement of teacher development practice at xxxx. As you know, deregulation will most probably end the mandatory need to attain initial teacher training (ITT) qualifications in September 2013, and my research looks to develop a new means of teacher development, post deregulation, in our college that could either support new qualifications (if any do remain mandatory) or could solely replace them. It will hopefully provide a means to professionally develop new and existing instructors, and in a way that is personally meaningful and engaging to them and not officially or managerially coerced.

To achieve this, I am looking to run an instructor-led action research project at xxxx, between April and December 2013. The research would be conducted in two halves (Parts). I have detailed exactly what these will entail below, and have included information on safeguarding and ethics and the potential benefits that participation will hopefully bring. I would be very grateful if you would consider my proposal and let me know your decision. A GANNT chart detailing research activity and a timetable is attached.

If you grant approval, I will initially approach the instructors from your department at xxxxx to collaborate in an instructor-led project, to consider and develop practice with me, in a bottom-up approach rather than through the current top-down policy of obligatory qualification. Deregulation will effectively afford the chance to develop an alternative method of teacher development that we might take forward across the whole college post-research. I am hoping this approach would facilitate high levels of learning and engagement.

For information, I am also looking to gain consent from the other product managers responsible for their instructors at xxxx, to try and gain the participation of instructors from other departments as well.

Part 1: Exploring instructor communities of practice (April – August 2013)

I will initially look to recruit three instructors (regardless of department) at the start of Part 1. They will participate with me to consider and develop practice throughout the whole project and I hope their engagement might increase levels of participation as the research progresses. Any instructor participants, who do take part in this

research, will only take part during free time and participation will be strictly voluntary. They could withdraw themselves at any time from the research process.

Part 1 is exploratory in nature as it will initially consider the ways and means our instructors develop their own teaching practice, outside of my classroom. It will consider their understanding of and experiences with learning in both formal and informal contexts. It will consider the 'communities of practice' that they are involved in, outside of my classroom, both within college and outside that impact on their practice as teachers.

To attain this understanding we will initially co-observe the teaching practice of co-participants only, in classrooms, vocational training areas and wider college practice. Co-participants will make a joint decision on what practice and who it might be best to observe. Full PPE will be worn when required, observations will be made at a safe distance and we will not disrupt teaching practice in any way. When we observed co-participants in other non-teaching wider-practice settings, we will do this as informally as possible, discussing observable practice and their part in interactions with others when alone in our group.

I will be based at the campus in question, during weeks that are designated for observation, for 1 day per week (please see attached GANNT chart for exact timetable). We will observe as much as possible, depending on instructor spare time, throughout these designated days.

As we progress all co-participants will keep an ongoing written journal that will detail their observations made in situ, expanded notes that are made after initial observations, and notes on any issues, ideas, difficulties etc. that arise in the process. It will also include a developing, tentative running record of ongoing analysis and interpretation. We will consider our thoughts, as we progress together.

To gain even better insight into instructor communities of practice I then propose to run a single workshop (most probably CPD) that co-participants and other instructors attend, at xxxx. I will video this workshop, focusing on one snapshot of a particular teaching moment. After the workshop, I will play the video of this moment back to co-participants and we should then be in a better position to consider the communities of practice that they are currently part of. The initial observations of practice should help contextualise this teaching moment. We will write observations and reflections of this activity within our journals, and these should develop as we progress.

After this, co-participants will attempt to recruit more instructors i.e. more co-participants from xxxx, but again, participation will be strictly voluntary. We will look to recruit as many instructors as possible, seeking to gain further momentum and engagement for our project. Stories have been considered the cornerstone of identity so I propose co-participants hold story groups, where we verbally relate

stories to each other. Building on understanding derived from previous activity, we will relate our experiences with learning, and in particular learning to develop as a teacher. We will talk on our past and current experiences with formal and informal learning and future aspirations and it might be most helpful if we consider this in relation to practices, space, time, bodies, social relationships and life courses. We will seek to uncover and explore instructor CoP, as the ongoing theme throughout Part 1.

Stories will be audio recorded for our subsequent analysis and to assert whether there are any recurring themes emerging from the narrative. I will transfer the audio recording to co-participants work laptops, and we will listen to these recordings in our spare time to consider repeated themes or explanations that might give insight into the instructor communities of practice. We will then talk on our analysis and subsequent reflections on our story groups, recounted in reflective journals, in subsequent meetings.

We will hold one story group every other week, and each will last 60 minutes. We will hold these in instructor spare time. Please see GANNT chart for dates of story group meetings.

Part 2: Developing teaching development practice (August – December 2013)

The main focus of Part 2 is to employ understanding gathered in Part 1 regarding instructor communities of practice to develop collaborative ways of working that will aid teacher development, in less formal and perhaps more productive ways.

Co-participants will start Part 2 with another recruitment drive to attract further instructor voluntary support and we will attempt to recruit as many co-participants as possible. I hope co-participant engagement might help inspire support to the point where we would have now recruited all instructors from xxxx – or at least the vast majority.

Building on understanding derived from Part 1, I propose we develop/ structure collaborative learning tasks that promote engagement and learning opportunities, which initiate within my classroom but extend past this space into co-participant training environments and possibly wider college practice. As before, we will need to settle any health and safety implications first, ensuring safe practice before commencement. The social organisation for collaborative learning will be decided upon by co-participants but tasks will allow instructors to function as 'experts' in the practice in which they participate and this will hopefully inspire engagement. I will guide the development of any resources that aid instructor activity and I can also support co-participant practice through my workshops, on their request.

I will be based at the campus in question, during weeks that are designated for Part 2 activity for 1 day per week (again, please refer to GANNT chart). I will use as

much time during these days as possible to support instructor activity, during the time they could devote to developing practice.

This project will effectively move teacher education in to the hands of the instructors, while I facilitate their activity and support the process. Rather than officially enforced ITT qualifications, development activities will arise out of direct necessity, as perceived by the instructors themselves. Development activities will become highly relevant to the practice of the instructors involved, and it is hoped this will inspire high levels of engagement and learning.

As we move forward during Part 2, we will informally co-observe participants in their everyday settings (using the same process adopted in Part 1) (please refer to GANNT chart). We will also continue to use our reflective journals, as this should help us consider whether there are any noticeable changes in language and practice. We will observe, and continue with our reflective journals, analysing possible change as we progress.

On project completion, after write up in March 2014, I will issue electronic copies of the research to you and to all co-participants.

Safe-guarding

This study has been approved by the London South Bank University Research Ethics Committee. All names including the name of our college and all those involved will remain totally anonymous. All data will be treated with the upmost sensitivity and respect and all data will be stored, utilised and destroyed in line with the Universities very robust data protection procedure. If you would like clarification on any of this, please feel free to contact my supervisor. The correspondence details are as follows:

Peter Winbourne, Department of Education, London South Bank University, 103 Borough Road, LONDON, SE1 0AA. Telephone: +44 (0)20 7815 7452; email: winboupc@lsbu.ac.uk; Fax: +44 (0)20 7815 8160.

The potential benefits to our college

I am certain that this project will benefit our instructors, your department and the college as a whole; I fully believe this a very worthwhile cause and endeavour. I believe it will greatly benefit our college and provide an excellent means of teacher professional development post deregulation.

This project is intended to enlighten my professional practice as a teacher educator, and also that of the other participating teachers. If successful it might be possible to widen the scope of this project to all campuses/ the entire college but this will need

further consideration and approval post-research. It is hoped that participation will develop instructor teaching practice.

Thank you very much for taking time to read this and for considering my request. If you have any questions, please get back to me; I look forward to your reply.

Kind regards,
Karl

The response I received (via email) from product manager (1)

Fri 26/02/2013 17:27

To: Karl;

From: xxxx

Sent: 8 March 2013 17:27

To: Karl

Cc: xxxx

Subject: RE: Doctorate proposal

Thanks for sharing this with me Karl.

It is very comprehensive and persuasive. Please feel free to contact my staff.

Good luck

xxxx

The response I received (via email) from product manager (2)

Fri 08/03/2013 13:09

To: Karl;

From: xxxx

Sent: 8 March 2013 13:09

To: Karl

Cc: xxxx

Subject: RE: Doctorate proposal

Hi Karl

Apologies for the delay but it has needed time to read thoroughly. I am supportive of your proposal. The outcomes will be of interest to all at xxxx and I hope wider within education.

Thanks.

xxxx

Appendix 4: Part 1(a) Recruitment letter

Dear Colleague,

I am writing in order to invite you to join me in an instructor led project that is meant to:

- Provide a means to professionally develop new and existing instructors at xxxx, and in a way that is personally meaningful and engaging to you and not officially or managerially coerced
- Develop the engagement and professionalism of all instructors (new and already in position) at xxxx
- Develop your own teaching practice and reflective skills, which in turn will hopefully develop your learners own learning and skills
- Help lead the college forward, providing the Senior Management Team with insight in to how we might forge a new and exciting means of professional develop post-deregulation

The research will run at xxxx, between April and December 2013 and will be conducted in two halves (Parts). I am certain that this project will benefit you, your campus, department and the college as a whole; I fully believe this a very worthwhile cause and endeavour.

I am undertaking this research as part of my doctorate in education at London South Bank University. This project is intended to enlighten my professional practice as a teacher educator. If successful it might be possible to widen the scope of this project to all campuses but the final agreement on this will need to be sought from senior management.

Thank you very much for taking time to read this and for considering my request. You will find a participant information sheet and a GANNT chart attached that provides more detail on this project but if you have any questions, please get back to me; I look forward to your reply. If you are interested, please contact me by email: xxxx or by phone: xxxx.

Many thanks,

Karl

Appendix 5: Participant Information Sheet Part 1(a)

Research title: Exploring learning in practice to support construction teacher professional development post deregulation – Part 1(a)

Addressed to: Construction teachers

Dear

I am looking to run an instructor-led project to improve teacher development practices at xxxx; this letter is a personal invitation to join me in this research. The project will run between April 2013 and December 2013 and will be conducted in two halves (Parts). I have detailed exactly what these will entail below, and exactly what your participation will entail. I have also included information on safeguarding and ethics, I would be very grateful if you consider my proposal and let me know your decision.

I have permission from my manager and your product manager to approach you to request your participation but please do understand that if you choose not to participate it will not affect your working relationship with me or any aspect of your employment. I have enclosed a GANNT chart that timetables the research activities we would involve ourselves in together during the course of this project.

The project is designed to develop a system of professional development that is led by you in order to empower you. It is very much hoped that your participation will develop your own teaching practice and the teaching practice of other instructors based at xxxx. If effective, it might replace or support initial teacher training qualifications (if any do remain mandatory) post-deregulation. It is not currently known whether formal ITT qualifications will remain mandatory but if they do, this system would support instructors who undertake them in the future. It would also support your own development. If we do develop an alternative and effective means for professional development at xxxx it is possible that we (or I) might subsequently attempt to employ this technique across the whole college/ every campus. However, the decision to do this would ultimately be left to the discretion of senior management.

Although I have initially decided on the goals of this research and the means by which we might achieve these goals all co-participants will make decisions on the projects direction as we progress. The project is split in to two Parts:

Part 1: Exploring instructor Communities of Practice (April – August 2013)

Part 1 is exploratory in nature as it will initially consider the ways and means instructors develop their own teaching practice, outside of my classroom: It will consider your understanding of and experiences with learning in both formal and informal contexts. It will consider the 'communities of practice' that you are involved in, outside of my classroom, both within college and outside that impact on your practice as instructors.

It is said that communities of practice (CoP) are difficult to discover. However, the following six criteria have been produced, which have been used to define a CoP (i.e. if these are all reflected/ observed in practice, the practice can be defined as a community of practice):

1. *Participants, through their participation in the practice, create and find their identity within that practice (and so continue the process of creating and finding their more public identity);*
2. *There has to be some social structure which allows participants to be positioned on an apprentice/ master scale;*
3. *The community has a purpose;*
4. *There are shared ways of behaving, language, habits, values, and tool-use;*
5. *The practice is constituted by the participants;*
6. *All participants see themselves as engaged essentially in the same activity”.*

We could just accept these criteria at face value, to propose the existence of CoP but I suggest we consider these criteria as we progress, using them as a means to aid discussion.

At the start of Part 1, we will collaborate to observe co-participant practice, the practice we do observe will be decided upon by all co-participants democratically; we will make a joint decision on the co-participant(s) we observe, what practice we observe and when. I will be based at xxxx, during weeks that are designated for observation, for 1 day per week (please see attached GANNT chart for exact timetable). The amount we observe during these designated days will depend upon your levels of spare time. As we progress we will keep ongoing reflective journals throughout the whole project to consider our interpretations of these observations and whether any communities of practice exist.

As we move on to consider our thoughts on any communities of practice that might influence your teaching practice, I will deliver an ITT or CPD workshop that you and other instructors would attend. I will video record this practice and subsequently examine the video contents for a particular snapshot where my teaching objectives were particularly clear. We will then watch this together and discuss how this might provide insight in to any communities of practice that you are part of.

After this, we will attempt to recruit more instructors i.e. more co-participants from xxxx, but again, their participation would be strictly voluntary. We will look to recruit as many instructors as possible, seeking to gain further momentum and engagement with the aims of our project. Stories have been considered the cornerstone of identity so I propose co-participants hold story groups, where we verbally relate stories to each other. Building on understanding derived from this activity, we will relate our experiences with learning, and we will particularly focus on our experiences of learning to develop as a teacher. We will talk on our past and current

experiences with formal and informal learning and future aspirations and it might be most helpful if we consider this in relation to practices, space, time, bodies, social relationships and life courses. We will seek to uncover and explore instructor communities of practice, as the ongoing theme throughout Part 1 and we will develop our thoughts within our journals as we progress. Stories will be audio recorded for our subsequent analysis and to assert whether there are any recurring themes emerging from the narrative. I will transfer the audio recording to our works computers, and we will listen to these recordings in our spare time to consider repeated themes or explanations that might give insight into your communities of practice. We will then talk on our analysis and subsequent reflections on our story groups, recounted in reflective journals, in subsequent meetings.

We will hold one story group every other week, and each will last 60 minutes. We will hold these during your spare time. Please see GANNT chart for dates of story group meetings.

Part 2: Developing teaching development practice (August – December 2013)

The main focus of Part 2 is to employ understanding gathered in Part 1 regarding instructor communities of practice to develop collaborative ways of working that will aid teacher development, in less formal and perhaps more productive ways. All co-participants will decide on the how this might be best achieved but the main intention here is to develop a powerful teaching community of practice that truly addresses the development needs of instructors through a procedure that better suits your needs.

We will start Part 2 with another recruitment drive to attract further instructor voluntary support and we will attempt to recruit as many co-participants as possible. I hope your engagement might help inspire support to the point where we will recruit all instructors from xxxx – or at least the vast majority.

It is essential that everyone involved feels free to express their views and everyone will be equally respected and listened to during this project. It would be great if we all bear this in mind as the project goes on. We must remember that every instructor is unique and each offers a different level of understanding. I see this as a very valuable asset as everyone offers a different perspective. I am certain that we can achieve the aim of this project if we all work together.

The GANNT chart that I have issued you with details weeks set aside for project work; the weeks that I will be able to attend xxxx. The exact days that we actually chose to run the project on will be decided by the whole group, so any work we do undertake will not clash with your teaching responsibilities. We can work out the best days and times for everyone as the project moves on. Full PPE will be worn at all times, when working together in vocational training areas.

Building on understanding derived from Part 1, I propose we develop/ structure collaborative learning tasks that promote co-participant engagement and learning opportunities, which initiate within my classroom but extend past this space into your training environments and possibly wider college practice. As before, we will need to settle any health and safety implications first, ensuring safe practice before commencement. The social organisation for collaborative learning tasks will be a collaborative decision but tasks will allow you to support the practice of other participating instructors. I suggest we start by video recording co-participant teaching practice and then watching these videos of practice. We will decide how this might be best achieved together but this might help develop teaching practice as we watch and learn together. You might already have better ideas on how this might be achieved, or you might start to develop them as we progress but we can all learn together. Co-participants could go on to plan lessons and deliver them together, subsequently observing, reflecting, revising and repeating the process for refinement.

I will guide the development of any resources that will aid your development and I can also design workshops to support your practice, on your request.

I will be based at xxxx, during weeks that are designated for Part 2 activity for 1 day per week (again, please see GANNT chart). I will use as much time during these days as possible to support your activity, during the time you can devote to developing practice.

This will effectively move teacher education in to your hands, while I facilitate your activity and support the process. Rather than officially enforced ITT qualifications, development activities will arise out of direct necessity, as perceived by you. Development activities will become highly relevant to your practice.

As we move forward during Part 2, we will informally co-observe participants in their everyday settings (using the same process adopted in Part 1) (please refer to attached GANNT chart). We will also continue to use our reflective journals, as this should help us consider whether there are any noticeable changes in instructor language and practice. We will observe, and continue with our reflective journals, analysing possible change as we progress. We will agree what can be observed and also when and how it can be observed; and this is essential as it will maintain equality.

So what's in it for me?

I am enrolled on the Professional Doctorate in Education (EdD) at London South Bank University and am running this project as part of my studies. On project completion, I will complete the write up of this research in March 2014. I will issue electronic copies of the research to all co-participants.

Safe-guarding

All aspects of this research have been approved by the London South Bank University ethics committee. All names including the name of our college and all those involved will remain totally anonymous. All data will be treated with the upmost sensitivity and respect and all data would be stored, utilised and destroyed in line with the Universities very robust data protection procedure. All data will be anonymous: that is; no one will ever know that you had taken part or that you had done or said anything.

I will need access to the raw data until such time as my dissertation is accepted and any papers are published from it. I will store all data electronically on my home laptop and will keep an electronic duplicate copy on a memory stick until this time.

If you would like clarification on any of this, please feel free to contact my supervisor. The correspondence details are as follows:

Peter Winbourne, Department of Education, London South Bank University, 103 Borough Road, LONDON, SE1 0AA. Telephone: +44 (0)20 7815 7452; email: winboupc@lsbu.ac.uk; Fax: +44 (0)20 7815 8160.

However, if you do have an issue you have been unable to resolve with the research team, please contact the Chair of the University Research Ethics Committee at ethics@lsbu.ac.uk.

The potential benefits

I am certain that this project will benefit you, xxxx, your department and the college as a whole; I fully believe this a very worthwhile cause and endeavour. I believe it will provide an excellent means of teacher professional development post-deregulation. This project is intended to enlighten my professional practice as a teacher educator, and also that of all participating instructors. If successful it might be possible to widen the scope of this project to all campuses but the final agreement on this will need to be sought from senior management.

Thank you very much for taking time to read this and for considering my request. If you have any questions, please get back to me; I look forward to your reply. If you are interested, please contact me by email: xxxx or by phone: xxxx.

Thank you,

Karl

Appendix 6: A selection of participant journal entries

Journal entry made by Billy; 4th observation, Part 1a

Date: 23/05/2013

T=PR/2

Observation and Discussion About Hierarchy Within Our Classes and Our Own Teaching Environment

I arrived later than the remainder of our unnamed project members, due to commitments at xxxx, to find the rest of the team in the Haki shed training area. Karl and John were in discussion with Ben. Ben was teaching and assessing his class as they erected scaffold towers. They were discussing hierarchy within the class. I commented that I regularly observe hierarchical behaviour in my own learners and likened it to pack behaviour. I notice that the top end of the hierarchy will often begin to form as early as during the icebreaker, older or more experienced learners gaining the respect of their peers. Usually the top tier doesn't change much. The middle tier typically consists of learners who will gain "rank" by attempting to impress either or both instructor and their higher ranking peers. The remainder are often made up of the quiet, the shy and the less experienced or less able learners. These ranks can also be determined by popularity so a lower ranking learner can gain a higher ranking position by perhaps being humorous, even if his work or work experience alone gains him little respect. This was evident to some degree while we were having our discussion within the Haki training area, as one of Ben's scaffolders was observed by Karl, throwing something at another gang member each time that Ben turned his back.

We can use the established hierarchy within our learners to assist us while they are in the training areas. By nominating persons to be in charge of the gangs, we can leave the more experienced learners to look after their gangs allowing us to focus, temporarily on individuals within the class who may be in need of our attention.

When we work onsite, in scaffolding gangs, we tend to have a hierarchy that is also built on a ranking system. More often than not a gang will typically consist of three workers; a leading hand normally the most experienced of the workers, usually (but not always) this will be the older of the gang, if you like- *the master craftsman*, the next ranking worker will be the second fixer. The second fixer will be anything from an improver (apprentice) to a more experienced worker perhaps the leading hand and the second fixer have worked together for a number of years and they are both of similar ability but the leading hand will just be the one that deals with management and clients etc. The second fixer is normally quite able to step, naturally, into the role of leading hand when needed. The lowest ranking worker in the scaffold gang is the labourer. The labourer's role is basically to fetch and carry materials. Sometimes the

labourer will be another scaffolder. Sometimes there will be two second fixers and no labourer; the two second fixers will often take turns to do the labourer's role within the gang. It is normal for the leading hand to have started his career as a labourer and likewise it is normal for the labourer to aspire to become a leading hand. "Serving your time" as a labourer is often seen as a rite of passage to becoming a *fully-fledged scaffolder*.

At xxxx we find a similar hierarchy; we join as *the new boys* and begin at the bottom of the hierarchy. Soon and after the appropriate training we begin to first shadow other instructors (we have now reverted from being the masters of our specialism, within the industry, to being, once more, the apprentice). Then after meeting further training criteria such as PTLLS etc. and on completion of our shadowing, we move up the ranking to become instructors of youth induction groups, kind of like being *broken in* or *being bloodied*. Our next step up the hierarchical ranking is to be delivering part 1a and part 1b scaffold courses. Then it's upwards through; part 1 adult, part 2a and 2b groups, adult part 2 before eventually delivering the advanced scaffolding courses. Thus as you deliver more advanced courses; so your hierarchical status grows. However we will always remain *the new boys* until such time that some fresh recruits are employed to replace those that leave.

Journal entry made by John; 3rd observation, Part 1a

Date: 09/05/2013

Observing Billy over at xxxx yesterday it became evident in the class prior to venturing out into the shed that the experiences and passion of the instructor, plays an enormous positive role in engaging the learners.

I had not given this any thought before, although I use my own experiences and beliefs to educate my learners and I have seen Billy adopt the same tactics, but on reflection I don't feel it is a deliberate method of teaching by ourselves, just a reflex learnt from our tutors during our learning.

I have three unique areas relating to my previous working life as a scaffolder that I like to use, each with completely different outcomes from comic too painful to fear and realism.

The comic element was while loading an artic trailer with 21ft tubing from a gantry scaffolding, the very last tube placed in front of the fifth wheel just behind the trailers head board was the straw that broke the camel's back. The weight of the tube caused the trailer to pivot on its fifth wheel resulting in the rear wheels of the trailer being raised off the ground by some 15 ft. This happened while the trailer was surrounded by executive motor vehicles. No tube fell over and no damage was caused.

I use this incident to highlight how momentary lapses in thought can lead to catastrophic problems.

The second was while I was surveying a roof saddle scaffold. I placed a scaffold board on the existing roof to protect the roofing tiles from damage. While climbing down back on to the scaffold my momentum caused me to brush the bolt on the hand rail fitting, this ripped my jeans and tore my knee open, which resulted in me needing ten stiches. (I then show them photos of the injury being cleaned and treated by the doctor).

This incident is used by me to highlight how easy it is to have momentary lapses in concentration which then result in pain and discomfort.

The third is regarding my charge hand falling 40ft through a board that snapped because it was defective.

Used to strengthen the need for each individual to inspect their materials prior to use.

I share these incidents with my learners for two reasons.

1 to show my learners no one is exempt from accidents.

2 to highlight how innocent actions can have catastrophic results.

It is strange how humour and horseplay are common amongst scaffolders. My wife used to comment on how scaffolders were always clowning around and having a good time while at work.(she used to work in a site canteen, so witnessed this many times). It had not crossed her mind that these actions might be a release mechanism for scaffolders.

So when I returned to observe Steven with his roofing students, I was looking to see if they used the same or similar traits. The down side here though was Steven's learners were engaged on individual assignments, on individual roofing rigs. The surprise came when they all, without fail, congregated around one individual. This learner had been shown, one to one by Steven how to use a roofing fixing new to all the learners. Keen to know how to use this item they all learnt from their peer. Much like scaffolding within the shed.

Journal entry made by Billy; 6th lesson study session, Part 2

Date: 04/10/2013

T=PR/2

Meeting at xxxx to discuss use of the new lesson plan and aids to developing a basic understanding behind the physical principles of scaffolding structures.

When I arrived at xxxx there were no other members of the project around so I found a quiet room, set up my laptop and got on with some other work. About an hour or so later I received a phone call from John stating that they were all over in the canteen and that I should go on over. I packed up my laptop, put it away in the car and headed on over to the canteen expecting to find the others sitting around drinking hot beverages, tucking into bacon rolls and generally just passing time in light conversation and friendly banter while waiting for the last of us to turn up. It was my perception that once we were all watered and fed that we would retire to some pre-designated room to begin discussing our project matters. I was wrong.

I walked into a busy atmosphere; John was indeed waiting for my arrival together with Karl, Richard, Edward and a couple of contract instructors that are not part of the project group. They all appeared excited. They had, upon the table, in front of them several boxes of drinking straws and some bags containing coloured rubber bands. They were engaged in trying out differing methods using the rubber bands to attach the straws together simulating the joining of scaffold tubes together, they were doing what we scaffolders do best; building structures at the same time as overcoming challenges and obstacles and trying out new methods. I was initially struck by the involvement of all and the interest in those around or passing by. Indeed, I took a chair between John and Richard and while listening to Richard saying how he would use the straws to demonstrate the different forces applied when adding a load to varying scaffold components, I found myself reaching for a handful of straws and rubber bands and began busying myself in the construction of a simulated scaffold tower. Looking at the simple kit and the general buzz of the persons about me, together with the fact that I had been doing some private research to finding a similar product; it was immediately evident just how much potential this kit would have in front of a class of learners, they could build simple structures, see the effect of differing loading upon them. They could be encouraged, through trial and error, to develop best practice techniques. The learners would be able to see the effects and would be able to develop meaning. All this could take place within a safe environment without having to leave the classroom. While I was contemplating the varying uses for this basic learning aid within my own and also other individual's classes, Karl produced a template for a lesson plan for the very same lesson that was already forming in my own mind and I believe in the mind of the majority of instructors around the table. Bingo! In Richard's words, the wheels and the suitcase were coming together.

Edward, Richard and John had classes to attend to and had to leave us for a while. It was evident that all appeared reluctant to leave as they each felt that they had a lot to input into what was happening here. (I may be wrong here, if so I apologise guys.)

Karl and I remained behind to talk about the equipment and, perhaps, any alternatives that might be available. As well as taking advantage to sample some of the local wares. While we sat there discussing, another instructor (one that is often considered by others as somewhat negative in his attitudes, especially where new ideas are concerned) asked what was going on. When we told him what we were doing, he offered up his own model scaffold kit. This is an opportunity for others to become involved that we might have missed had we been secluded in some private classroom somewhere. A point that Richard was to make later on his return, commenting how having a more open environment to our sessions could attract outside interest and input, and thus; furthering our community of learning. Throughout our time in the canteen there was another contract instructor that would come over and make a few comments in jest dismissing what he was observing as either irrelevant or a load of old rubbish, however, the same instructor was to return eventually when it was quieter and take a genuine interest in what we were really up to. Perhaps this was an example of that stereotypical scaffolder; that when he is in a large group he is far more likely to act Jack the lad in front of his peers but when he is in a smaller group and feels less that he has to prove his Jack the lad personality then he is more likely to lower the façade and show his other, and perhaps, more private persona.

Later I was invited to look at a model scaffold kit that Ben had rescued from the skip. The discarded kit was excellent and is one that, with a few tweaks, I could use as the next stage of the aforementioned lesson. The straw kit is a most excellent aid as it will demonstrate the forces applied and it will show failure of a component without damaging anything more expensive than a drinking straw. John and Richard both thought that it is a great idea to introduce competition to encourage a team to build a structure, using a set amount of given components, to discover which would hold the greater weight and perhaps even introducing a wall of fame into the canteen area. I can only endorse this idea as I am a great believer in that a little healthy competition will bring out the best in a team.

Journal entry made by Ben; 8th lesson study session, Part 2

Date: 28/11/2013

T=PR/2

Reflection of my observations for last journal entry.

I have been thinking lots about the journey we have been on so far. Reflecting on others entries into this process as a senior for the college, I hope I have shown to be a level player within. Reading the last entry from Billy has made me think further; does many a year within certain professions, organisations, industries or hierarchy always make you the best person to decide what is best for the future and or learning abilities, aims, objectives and outcomes?

My answer would be no, the COP's we have shown and developed has helped to break down many barriers, particularly with the original group of T=PR/2 showing that teaching can happen regardless of experience within the profession. I think Karl has shown the group how to scaffold if you think back, Karl is the teacher for teachers, we are scaffolders, yet we have shown Karl ways to teach and he has shown the group how to scaffold? This circle of learning goes around and continues to.

On reflection, I hope I can be more of a part of this in the future. I do not believe I have been able to fully commit at times, which upon reading back some of the journal entries has left me somewhat disappointed. I feel there is no reason for this not to continue further and develop as a group for the future with Karl.

What is so nice is that this project has broken down some real dominant and influencing characters within the 'newbies', which can only help prove that this style of teaching, or 'Train the Trainer' actually works.

I too look forward to seeing the outcomes and experiencing what Billy has said in his journal (Billy Journal – 24th November 2013). It can only help us all be more reflective on our own persona which will lead to better COP's regardless of our own *social* or *professional* standing within the community.

Appendix 7: The teaching moment and written journal entries

<i>Time on video</i>	<i>Event on video</i>	<i>Journal entry made</i>
0.00	<p>I explain the teaching objective, asking students to move to the table where the first collaborative teaching technique laminate is</p> <p>I ask students to read this first worksheet and reflect on how they can apply this collaborative technique in their classroom practice</p>	<p><i>“The participants immediately appear to seek out some common ground within the group i.e. the scaffolders on one side <u>[of a table]</u> and the roofers on another²²” (Billy; 12/07/13).</i></p>
0.45	Learners read the first laminated worksheet	
1.59	Ben discusses how he might apply this new technique in his teaching practice – all others remain quiet	
2.40	Steven discusses how he already applies this technique in his teaching practice – all others remain quiet	
3.18	Peter agrees this is a good technique, explaining how he already applies it in his teaching	

²² As indicated previously: Billy mistakes the road and street works teacher for a roofing teacher here

3.33	John considers how this could be used in his classroom	
4.06	I hand out the other four types of collaborative technique and ask them to reflect on these and then write their thoughts down	
4.30	John moves to work on another table	<p><i>“I removed myself from the main table to gain some room at an empty table, this to JC appeared to be someone distancing themselves from the group, but was my way of gaining space” (John; 12/07/13).</i></p>
4.45	Steven and Peter move to work on another table – separate from all others	<p><i>“Within minutes, one member [<u>Steven</u>] of the workshop actually leaves the main group [<u>sits at a different table</u>] to consider the task privately and sets a precedent for another participant [<u>the road and street works teacher</u>] to follow soon after” (Billy; 12/07/13).</i></p> <p><i>“Steven and then Peter left the group, leaving just us scaffolders behind. Karl asked us why. I think Steven and Peter knew the subject” (John; 12/07/13).</i></p>
5.30	Ben discusses how he uses another technique with the group	

6.00	John returns to work with the other scaffolders (Peter and Steven still work together, on another table)	
6.49	John and Ben discuss how they could use one technique in class	
8.00	<p>Rory joins in this discussion – the scaffolders discuss different ways these techniques could be applied to practice</p> <p>All others remain quiet, working individually</p>	
10.00	<p>I notice Steven has written a lot, while all others have written very little. I ask Steven whether he could apply these techniques in his classroom</p> <p>Steven discusses his thoughts on how he uses these techniques already</p>	<p><i>“Steven who has, for the most part, been silent throughout is asked for his input. He is seen referring to the notes that he has been making, these notes are quite intensive and, had it not been for the prompt, would likely not have been shared” (Billy; 12/07/13).</i></p> <p><i>“Scaffolders are by the very nature of their work more used to working as part of a group or even a group of groups on any one contract where as a roofer is perhaps more likely to be a more used to working</i></p>

		<i>alone or with a regular buddy” (Billy; 12/07/13).</i>
10.48	I ask Peter whether he could apply these techniques in his classroom and he explains how he already uses some of these techniques	
11.28	Steven explains other ways he could use these techniques	
11.48	Ben explains other ways he could use these techniques and discusses these with Rory and John. The scaffolders start completing their forms, reflecting their thoughts	
12.10	Ben tries to explain his thoughts to Steven	My observation: Steven ignores Ben
11.49	Steven discusses his thoughts with me	
14.00	Ben, John and Rory all discuss other ways to apply collaborative techniques	
16.57	Steven leaves the class unexpectedly	<i>“The scaffolding element seems to dominate the session and this could perhaps be the reason that the roofer left the workshop” (Billy; 12/07/13).</i>

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