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# **A case study of a school science department: a site for workplace learning?**

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**Doctorate in Education (EdD)**

**Open University**

**3<sup>rd</sup> July 2017**



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And finally Mum and Caroline.

## Glossary

<b>BCS</b>	The Chartered Institute for IT (formerly British Computer Society)
<b>Beginning teachers or Early Career Teacher</b>	to include those who are pre-service, trainee or student teachers and newly qualified teachers (NQTs)
<b>COP</b>	Community of practice
<b>COP-beginning teacher</b>	to mean Community of Practice of those involved in the Initial or Beginning Teacher Training
<b>CPD</b>	Continuing Professional Development
<b>DFE</b>	Department for Education
<b>GCSE</b>	General Certificate of Secondary Education (16+)
<b>HEI</b>	Higher Education Institution
<b>HOD</b>	Head of Department
<b>IMA</b>	Institute of Mathematics and it Applications
<b>INSET</b>	In-service training
<b>IOP</b>	Institute of Physics
<b>ISA</b>	Investigative Skills Assignments - GCSE
<b>ITE</b>	Initial teacher <i>education</i>
<b>ITT</b>	Initial teacher <i>training</i> (preferred in this study)
<b>NCTL</b>	National College for Teaching and Leadership
<b>NOS</b>	Nature of science
<b>NQT</b>	Newly Qualified Teacher
<b>Ofsted</b>	Office for Standards in Education
<b>PCK</b>	Pedagogical content knowledge
<b>PGCE</b>	Post Graduate Certificate in Education
<b>Professional tutor</b>	to mean ITTCo (initial teacher training coordinator). School based role.
<b>PSA</b>	Practical Skills Assessment – post 16
<b>RSC</b>	Royal Society of Chemistry
<b>SCK</b>	Subject content knowledge
<b>SD</b>	School Direct
<b>Study</b>	used to mean research project, investigation, EdD
<b>UMS</b>	Uniform Mark Scale
<b>WBL</b>	Work-based learning

## Abstract

This descriptive and illuminative case study of one science department in a successful, urban, secondary school in the south of England considers the science department as a site of workplace learning and the experience of beginning teachers in this context. Policy change in initial teacher training (ITT) has given schools a major role in the recruitment of trainees and emphasized the schools' role in their training. Additionally, there continue to be significant challenges to recruit science specialist teachers despite substantial bursaries.

For the purposes of this study, a community of practice of those involved with ITT and beginning teachers was defined: this included six teachers, three beginning teachers, one technician and the University tutor from the higher education institution. Interviews, focus groups, and mentor meetings, field observation notes and scrutiny of relevant documents were used to construct a rich description of the sociocultural milieu.

Two interpretivist approaches were used: an inductive phenomenological study of the lived experiences and a deductive approach using a conceptual framework developed from theories of workplace learning.

Findings show that there is considerable tension in the mentor's professional life; the role and the learning needs of the mentors were poorly understood; the 'community of practice – Beginning teachers' was not as originally perceived because the mentors were not engaged in a joint endeavour; the perceived value of accountability measures for ITT, Ofsted and performativity measures affected the learning environment for the beginning

teachers and there is a dissonance between the values and practices of the workplace learning culture. This has been explored through the lenses of balkanization (Hargreaves and Macmillan, 1992), addictive presentism (Hargreaves, 2010) and Hodkinson and Hodkinson's model of an expansive/restrictive workplace for teachers (2005).

This study may be of interest to those in teacher education and involved with recruitment and retention of science teachers.

Key words: ITT, teacher training, resilience, workplace learning, addictive presentism

## 1 Introduction

This thesis, based on a case study of a science department, explores how those involved in training teachers create a culture to support those learning how to teach. The study is located in a specific time of policy change including School Direct, academisation and changes to the Ofsted (Office for Standards in Education) inspection regime. The purpose is to develop a rich case description of a science department as a site for workplace learning for beginning science teachers. I will show that there is considerable tension in the mentor's professional life; the role and the learning needs of the mentors were poorly understood; the 'community of practice – Beginning teachers' was not as originally perceived because the mentors were not engaged in a joint endeavour; the perceived value of accountability measures for ITT, Ofsted and performativity measures affected the learning environment for the beginning teachers and there is a dissonance between the values and practices of the workplace learning culture.

### 1.1 Structure of the thesis

In this chapter I explain the context including my motivation for this study and the location of the study, Birchbrook School. Chapter 2 is the literature review of the research, professional literature and government publications that show the theoretical and policy frameworks and how my study is relevant to those in science teacher training, whether school or HEI based. Through this review I demonstrate the gap in the literature that this thesis addresses. Chapter 3, Methodology, demonstrates that a case study approach is appropriate for a study of this type and that it is a descriptive or illuminative case study that describes in detail how one successful secondary science department attempts to provide a learning environment to support trainee science teachers. The findings in Chapter 4 are drawn from the extensive data collected; it was important to be selective

and to address the research questions while providing a rich description of the case; I have been explicit where I have excluded data. Chapter 5 is an analysis of the findings and a discussion in the light of the literature and theoretical framework. Chapter 6 includes what has been illuminated by the study and conclusions to inform policy, theory and the practice of science teacher training in the current time. This chapter includes further potential research questions that are raised by this study.

The names of the school and the participants are all pseudonyms.

## 1.2 The context

This section includes my own context as well as the school and policy at the time of the study.

I have explored, in depth, the learning environment for trainee or newly qualified teachers (NQTs) of a science department following over 20 years as a science teacher, including Head of Department in two very different schools, before moving into science teacher education. As a consequence of my time in schools, I believe that science departments are worthy of in-depth investigation because of continuing challenging recruitment and retention issues described below. This study aims to explore the context within which trainee teachers, NQTs and their mentors are working. A timely reason for this study is the shift in teacher training policy to emphasize the role of schools and include the School Direct (SD) route (NCTL, 2013b) – where schools have a devolved responsibility for the recruitment and training of trainee teachers, with the expectation that the trainee will take up employment within the training school or within the group of schools working together as a training alliance. The findings of this study are pertinent to those working in

this new landscape of teacher education.

A description of the policy context follows which includes a number of acronyms which I will list here and also include in the glossary:

- DFE is the government Department for Education;
- NCTL is the National College for Teaching and Leadership which is an executive agency for the DFE that awards Qualified Teacher Status;
- Ofsted is the Office for Standards in Education, Children’s Services and Skills and is a non-ministerial government department reporting to the DFE and has a statutory role in inspecting provision;
- ITT is initial teacher training and ITE is initial teacher education. Both are used in the literature and I tend to choose ITT.

The Ofsted framework for inspection of Initial Teacher Training (ITT) in England states the “key purpose of teaching and learning observations is to evaluate the quality of NQTs’/former trainees’ teaching and training, and their contribution to the learning of children/pupils/learners” (Ofsted, 2015a, p. 21). The Ofsted school inspection handbook states that the inspection team will make a judgment of the “quality of teaching, learning and assessment” (Ofsted, 2015c, p. 37). Further, Ofsted clarify that it “does not expect to see any specific frequency, type or volume of marking and feedback” and “does not grade individual lessons. It does not expect schools to use the Ofsted evaluation schedule to grade teaching or individual lessons” (Ofsted, 2015b, pp. 1-2).

Data suggest that the state of recruitment and retention of science teachers in 2013-15, the time period of this study, was not promising. A report commissioned by the Science



Learning Centres completed by Edcoms (2010) states that 40% of a sample of 304 surveyed science teachers had seriously considered leaving science teaching in the last three years. Recruitment of physics trainees to ITT routes in September 2013 showed a shortfall of 430 against a target of 990 (57% target). There was a total shortfall of 400 science teachers out of a target of 2550 thus achieving 84.3% target (NCTL, 2013a). To put this into context, the total target for secondary ITT was 13,360; 12,300 trainee teachers were recruited (92% target) with mathematics achieving 78% and computer science 63% target. Recruitment of mathematics and physics teachers was of real concern for the United Kingdom Education Select Committee (2013) when it met. In 2016, Howson, an ex-government advisor on teacher supply, expressed his concerns that a recruitment crisis was building after teacher recruitment targets were abandoned by the DFE through publishing a blog (Howson, 2016) and a database of teacher job vacancies in schools (Howson et al., 2016).

### 1.2.1 Addressing the STEM recruitment challenge.

In 2007, the Royal Society published an in-depth report about the science and mathematics teaching workforce which included the statement:

“Governmental statistics do not capture fully the acute problems faced by schools and colleges in maintaining a strong science and mathematics teaching workforce (p 10)”

The trend continues (DFE, 2016b) although it is acknowledged that it is not unique to England or just to recent years. However, figures in a statistical release by the Department for Education (DFE, 2013b) show that a high proportion of science lessons are taught by teachers with a science qualification post A-level (91.6% compared to 76.9% mathematics for years 7-13).

The current policy position regarding science teachers indicates that physics and chemistry are considered priority recruitment subjects with physics supported by bursaries up to £30,000, chemistry, computing and mathematics to £25,000 (NCTL, 2015a) and the potential for enhanced scholarships from subject associations (BCS, 2016; IMA, 2016; IOP, 2016; RSC, 2016). Alongside this policy move of offering significant bursaries an additional route for ITT of School Direct was implemented where the key element “that more ITT is led by schools” (DFE, 2011c, p. 3) and “... [it] is a school-driven model of ITT and the NCTL would expect that the models of training developed should reflect the leading role of the school” (NCTL, 2013b, para 116). The direction of policy change from the Department for Education continues to be to devolve responsibility for recruitment of teachers to schools (DFE, 2016a). The school in this study was involved in a School Direct alliance and I was initially interested to explore whether a “school driven model of ITT” may have an impact on the learning environment for those completing their practical teaching placement there.

### 1.2.2 Recent education policy

The education policies of the coalition government (Conservative and Liberal Democrat) were being enacted during the data collection phase of this study, October 2013 to July 2015. Michael Gove was Secretary of State for Education and was described by Gillard as a “man in a hurry” (2016) because of the speed that he created and rushed the Academies Act through parliament. The Academies Act (DFE, 2010) made it easier for state schools to opt out of LEA control to become independent state funded academies. The subsequent Education Act 2011 (DFE, 2011a) gave the Secretary of State for Education powers to discontinue a maintained school; an Ofsted inspection judgment that finds the quality of educational provision to be less than ‘Good’ may trigger such a decision to force the school to therefore become an academy. The Coalition government also introduced free schools, university technical colleges (UTCs) and studio schools (DFE, 2015). These policy changes affect the school that is the site of this study because it is situated in an area where there is

competition for pupils; it has recently moved from a 'Satisfactory' to a 'Good' Ofsted rating and remains under local authority control while two free schools and a UTC have been established locally.

### 1.2.3 Teacher training policy

The Education Act 2011 also included changes to ITT. In England, it is a requirement that a trainee teacher is a graduate and gains Qualified Teacher Status (QTS) following a period of training, which is typically one year at secondary level (NCTL, 2014). This training is provided by a school and an accredited provider with many schools working in partnership with Higher Education Institutions (HEI). Many trainee teachers also gain a Post Graduate Certificate in Education, at Masters level, which will be accredited by the HEI.

The approach to training of teachers is a contested area (Ball, 2013; Ellis and McNicholl, 2015; Furlong, 2005, 2013; Hammersley, 1997; Hargreaves, 1996) with debate about the roles of the HEI and the school in the training, and the importance of educational research compared to school-based practice. Recent policy changes offering increased diversity of routes into teaching and more school led provision are argued by Childs (2013) to be the culmination nearly 30 years of policy change since 1979. This is explored further in the literature review.

The introduction of teaching standards and Ofsted inspection for ITT in the Teaching and Higher Education Act (DFEE, 1998) ensured all providers of teacher training offered similar training. Childs (2013), building on Furlong (2005) argues that these New Labour policies, originally developed by the previous conservative government, led to "a flattening", or lack of variation, of the provision for those entering the profession of teaching.

This study focuses on a science department as the workplace where trainee teachers are first immersed, as participants, in the professional practice of teaching science. The science department is one of the sites where trainee teachers learn how to teach and how to become teachers; the other is the education department of the University that works in partnership with the school and awards the Post Graduate Certificate of Education (PGCE) or recommends Qualified Teacher Status (QTS). A significant part of the learning of teachers is through doing the job and being immersed in the context, culture and practices, experiencing the role for which they are training as a novice.

### 1.3 The School

The school has been a long-standing and very successful partnership school for Initial Teacher Training. It is committed to providing the school experiences required during the one year of training prior to employment as an NQT. The training is provided by both the school and the HEI. The school provides a practical placement opportunity, some training activities, a subject specific mentor to provide specialist support and a professional tutor who oversees the school based training within the school; the HEI provides subject specific training and general professional studies, a University tutor and specialist academic staff for each subject and professional studies. The trainee teacher is supported by the University tutor whilst in school through regular contact and school visits including a lesson observation each term.

Birchbrook School is a mixed, 11-19 comprehensive in a large town in the south east of England. It is not an academy (i.e. a state school, funded directly by the DFE); it remains a community school funded by the local authority. The local authority had established a School Direct alliance comprising most secondary schools and, at the time of the study, it

had an allocation of teacher training places in a variety of subjects; it had chosen the HEI where I worked as a teacher educator to be a leading (but not the only) provider of training. The school was familiar to me as a regular partnership school, offering school placements for trainee teachers, and it typically hosted science trainees.

All data were collected over a two-year period starting October 2013 to July 2015; three trainee science teachers, Paula, Sally and Victoria, joined the department in the autumn term 2013 and one, Victoria, chose to withdraw early in the autumn term. The two remaining trainees were recruited to NQT jobs in the science department in early December just after the school had a successful Ofsted inspection, receiving a grading of 'Good'. All were recruited via School Direct allocation, followed the PGCE route and were paying university fees of £9,000. In the second year, one trainee, Jo, joined the department. She was recruited by the HEI, again paying £9,000 fees, and placed in the school; she was also recruited by the school as an NQT. Denise, was mentor for all trainees and NQTs had a different mentor. The training year is September to early July and autumn 2013 was the first term of implementation of School Direct.

In summary, the participants were the two beginning teachers, Paula and Sally, who started their training via the SD route, one trainee teacher, Jo, recruited through mainstream PGCE, the science trainee mentor, Denise, the Head of Department (HOD), Liz, who was also the NQT mentor to Paula, Christine, NQT mentor to Sally, Kathy, the Professional Tutor and Tasha, the Deputy Head with responsibility for ITT. Denise the mentor was also successfully trained by me and had been placed in the school in her training year some years previously. Following the first year of data collection, the chief technician, Mary, was also interviewed as was Chris, the visiting University Tutor.

Participant	Role	Year 1 2013		Year 2 2014-15				
		One-to-one interview	Mentor meeting	Field observation	Focus group	One-to-one interview	Mentor meeting	Written reports
		Autumn term	Two observed, Nov and Dec 13	March 15	July 15		One observed	July 15
Jo	Beginning teacher			✓	BT	x Jan 15 ✓ April 15 ✓ July 15 <i>as trainee</i>	✓ Nov 14	✓ trainee
Paula	Beginning teacher	✓ Dec 13 <i>as trainee</i>	✓ Nov 13 ✓ Dec 13	✓	BT	✓ April 15 ✓ July 15 <i>as NQT</i>		✓ trainee 14 ✓ NQT
Sally	Beginning teacher	✓ Dec 13 <i>as trainee</i>	✓ Nov 13	✓	BT	✓ Jan 15 ✓ July 15 <i>as NQT</i>		✓ trainee 14 ✓ NQT
Denise	Mentor of trainees	✓ Nov 13	✓ Nov 13 ✓ Dec 13	✓	M	✓ Mar 15	✓ Nov 14	
Liz	HOD* NQT mentor**	✓ Nov 13*		✓	M	✓ Jan 15**		
Christine	NQT mentor			✓	M	✓ Jan 15		
Kathy	Professional tutor	✓ Nov 13						
Tasha	Deputy head	✓ Dec 13						
Chris	University tutor					✓ June 15	✓ Nov 14	
Mary	Technician			✓		✓ Jan 15		
	Other department members			✓				

Table 1 The participants in the study

M Mentor, BT Beginning Teacher. Liz was Head of Department\* throughout the study and was interviewed as NQT mentor in year 2\*\*

A summary of all participants, their roles in school and how they contributed to the data collection is in Table 1.

The first year of data collection was the pilot study, in line with the pattern of the EdD programme being followed. This considered aspects of the conceptual framework: the workplace learning environment (whether it is expansive or restrictive by developing the ideas of Fuller and Unwin, 2003), how the beginning teacher community of practice (Wenger, 1998) participants understood 'learning to become a teacher' and to note how the introduction of the School Direct policy was affecting the department. A 'community of practice' is defined by Wenger as a group of people engaged in a "sustained pursuit of a shared enterprise" (p. 45). Using the community of practice model (COP) as a lens to view the 'actors' in the community of the science department may show they have a number of roles, differing experiences, differing status within the school and differing levels of involvement and commitment to the department; they may each individually be participants in a number of COPs which may be tacit and informal. One example of mutual engagement of the community is the teaching of science to pupils but this is a limited description of the joint enterprises that contribute to the common shared mutual engagement. Another COP is the focus for this study: those who are mutually engaged in the joint enterprise of training beginning science teachers. This COP does not involve all members of the department and it includes others who are outside the department. In this study this COP is labelled the COP-beginning teacher, the community of practice of those involved in the joint enterprise of initial or beginning teacher training.

Reflection on the findings of the early study led to a review of the methodology, the participants and the research questions. Pleasingly, the data collected in the first year continued to be relevant and showed how the beliefs of the participants were not

necessarily matched by their practice. The notion of 'teacher resilience' came to the fore at the end of the first year of the study, initially in conversation with a school leader (Tasha) and professional tutor (Kathy) locally and then raised by several school alliances. We were asked, as an HEI, what we do to teach the trainees resilience.

#### 1.4 The research questions

The research questions (RQs) developed over the course of the study, being informed and reviewed in the light of emerging findings and the theoretical, research and policy literature. The main and overarching research question is rooted in my professional experiences as a secondary science teacher, head of department, deputy head and, more recently, as science teacher educator: what is the nature of the learning environment of a science department for beginning teachers? The term *beginning teacher* is used as a group term for early career teachers who may be trainee teachers or NQTs.

My interest is in how the community of those involved in training teachers create an environment or culture to support the learning of those new to teaching and what factors influence this. This main question is explored through subsidiary research questions that focus on three planes of analysis, the intrapersonal, the interpersonal and institutional (Rogoff, 1995).

RQ 1 What is the nature of the learning environment experienced by beginning teachers in the science department? This focuses on the lived experience of the trainee and beginning teachers and is the intrapersonal level.

RQ 2 How is 'learning to teach' articulated by members of the science department, including beginning teachers and their mentors? This addresses the interpersonal dimension and the discourse in the department about teaching.



RQ 3 How do models of work place learning reveal the culture of learning in the science department? This considers the community of the science department through the lens of workplace learning theories; this is also the interpersonal level. Schools are sites of pupil learning and the study considers adult learning; theories of workplace learning are about adult learning.

RQ 4 What are the wider factors that are affecting the learning environment for beginning teachers? This moves the focus out to situate the department and the teachers within the larger context. This is the institutional level.

The literature review, in the next chapter, helped me understand the theoretical, research and policy contexts for each of the research questions. I justify the interpretative methodology and the case study approach in Chapter 3.

## 2 Literature review

### 2.1 Introduction

The overarching research question of the study ‘what is the nature of the learning environment of a science department for beginning teachers?’ is a big, challenging question and it could be explored in the literature in a variety of ways. I have approached it through the theoretical, research and policy literature of work place learning because the recent policy changes emphasise the role of schools compared to HEIs in teacher training, Part of my motivation for this study is wanting to explore the learning in the school placement hence the literature of workplace learning being the main theme in the literature review that follows. The second theme is the wider factors such as policy change because there have been recent changes which I perceived in my role as teacher educator as significant. The final theme emerges from science teacher education literature; I am broadly familiar with the literature relating to the HEI-based learning of science beginning teachers and have used this to develop my practice as a science teacher educator. This literature needs to be challenged and its relevance and appropriateness critiqued in the current context. I have therefore structured the literature review into three broad sections:

- Experiential or workplace learning models
- Wider factors affecting teachers work
- The individual learning the work of science teaching

The subsidiary research questions, listed at the end of chapter 1, emerge from these three sections. These are organised using Rogoff’s planes of analysis (1995) and this is explained in the final section of this chapter.

## 2.2 Experiential or workplace learning models

This section of is a review of the key theoretical and research literature of workplace learning. This is the more recent term for what was initially called experiential learning and the key models considered are

- Schön: the reflective practitioner,
- Kolb: experiential learning cycle,
- Goodwin: professional vision,
- Eraut: informal learning and two triangle models
- Little: the role of talk in workplace learning
- Lave and Wenger: Communities of Practice (COP), situated learning and legitimate peripheral participation
- Fuller and Unwin: expansive and restrictive learning environments

Key studies of workplaces are included to illustrate how these models may be appropriate to understand the workplace learning environment of a secondary school science department. This section finishes with a summary of the different learning theories underpinning these models and the metaphors for learning that emerge in the discourse about these models of workplace learning.

### 2.2.1 Schön: the reflective practitioner

A key, influential theory of experiential learning, the idea of the 'reflective practitioner', was developed by Schön (1983). He suggested that there was a need for an "inquiry into the epistemology of practice" (p. viii). He closely examined the practice of a range of highly skilled practitioners such as architects, engineers, planners, psychotherapists to find out what they actually do and how they learnt to become expert practitioners. He introduced

the phrase 'reflection in action' to describe how the expert becomes "researcher in the practice context" (p. 68). He describes an expert practitioner allowing 'surprise' in an unexpected new situation and so, drawing on knowledge, experience and understanding from previous situations, will experiment with a novel solution for this new situation.

This process of reflection in action is challenging to articulate and a novice listener lacks the experience and tacit knowledge to appreciate the description. Schön includes the teacher as an example of a 'reflective practitioner' and, simply described, he argued that it is not possible to learn to be a teacher without being on the inside and experiencing 'teaching'. This was a marked shift from a technical rationalist view that learning to teach was to learn a body of knowledge, to a recognition that expertise would develop through the workplace learning opportunities of classroom experience and practice. This model has had a profound impact on teacher training and remains at the heart of the approach to teacher training at the HEI where I am employed.

### 2.2.2 Kolb: experiential learning cycle

Another model of experiential learning familiar to beginning teachers comes from Kolb's influential text (1984) which brought together models of learning which combined perception, cognition, behaviour and experience and demonstrated that models developed by Lewin, Dewey and Piaget have common characteristics "that serve to define the nature of experiential learning" (p. 21). It describes cognitive steps taken by the learner within a social context of 'experiencing'. This model was familiar to the experienced teachers in the department and was also used in training sessions with the trainee teachers at the HEI. The steps of Reflective Observation and Active Experimentation are described by Kolb as "transformative" (p. 42) and Fry et al. (2009) argue that these two steps can be strongly

influenced by feedback from others. This is a constructivist model of learning (Fry et al., 2009).

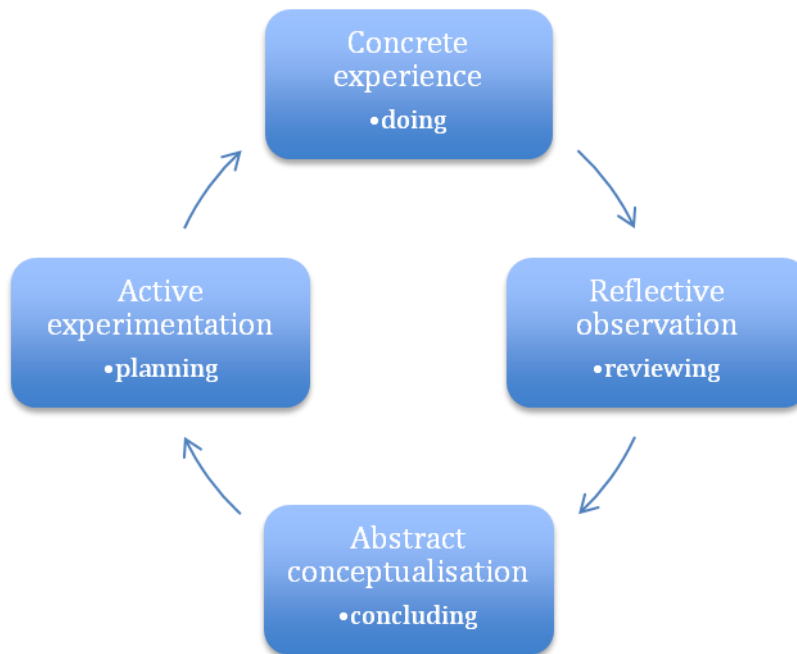


Figure 1 Kolb's experiential learning cycle

Kolb's model is familiar to many teachers as it is included in many training day presentations in school where the model is proposed as a tool for improving practice. The process described is very similar to what Schön would call 'reflection on action' (1987) where the reflection comes *after* the practice. Jarvis (2014) critiques the widespread use of Kolb's models of experiential learning because it focuses on explicit learning that is consciously experienced and it does not attempt to address the unconscious, implicit learning that Schön was proposing through an epistemology of practice. Kolb's model also suggests that learning cannot happen without completing the cycle.

It is noted that both Kolb's and Schön's widely espoused models locate the learning within the individual although recognising feedback from a mentor (or teacher or more knowing

other) can be influential. Other models consider learning as a complex social process and these are considered below. They may be more relevant to the context of the science department.

### 2.2.3 Goodwin: Professional vision

Goodwin (1994), an anthropologist, introduced the term professional vision which he defined as the "socially organized ways of seeing and understanding events that are answerable to the distinctive interests of a particular social group" (p. 606). His interest was:

"the methods used by members of a community to build and contest the events that structure their lifeworld and contributes to the development of a practice-based theory of knowledge and action" (p. 606).

He uses the term lifeworld as the "life that is concretely lived" based on Husserl (1970, cited in Langdrige, 2007, p. 23) and situating the learning in everyday lived experience. Goodwin analysed two contrasting examples of professional activity to illustrate how the three practices of *coding*, *highlighting* and *producing and articulating material representations* are used by the participants to "build and contest" professional vision (p. 606). The practice of 'coding' is the classification and categorisation of the professional knowledge "around which the discourses in a profession is organised" while the process of 'highlighting' is a process of identifying or linking relevant information or phenomena. 'Producing and articulating material representations' is how the process of highlighting "structures the perception of others by reshaping the domain of scrutiny" (p. 606) by, for example, creating a graphical representation. This initially sounds a long way from the practice of teaching but the model has been taken forward by Sherin and others in teacher education (Sherin et al., 2008; Sherin and van Es, 2009; van Es and Sherin, 2002).

In 2002, van Es and Sherin developed a software tool to help beginning teachers to 'notice' particular incidents or activities or aspects of classroom practice; the motivation behind this research was their argument that to reform classroom teaching, teachers need to be able to interpret classroom interactions and information and make decisions in the moment. This decision making is akin to Schön's idea of 'reflection in action' and Goodwin's ideas of coding and highlighting. They then explicitly took the theory of professional vision and applied it to the professional development of maths teachers supporting their discussion and interpretation of classroom practice through the use of videoed classroom excerpts as "the ability to notice and interpret significant features of classroom interaction" (p20) encouraging their ability to 'code' and 'highlight' (Sherin and van Es, 2009).

Sherin et al. (2008) provided personal video cameras to facilitate extensive discussion and allow coding and highlighting away from the classroom. Stürmer et al. (2013) also applied van Es and Sherin's notion of professional vision (2002) and explored it in the context of how pre-service (trainee) teachers develop. They developed a pre-test – post-test instrument to measure progress in declarative knowledge and professional vision where declarative knowledge is the factual knowledge that an individual is aware of knowing. Following specific taught interventions, the group of 53 pre-service teachers showed significant gains in both. They refer to professional knowledge as general pedagogical knowledge about teaching and learning and assert it is an indicator of whether pre-service teachers are able to apply their knowledge about effective teaching to classroom situations through two processes: firstly, 'noticing' as described by van Es and Sherin (2002) and secondly, their 'knowledge-based reasoning'. The three levels of knowledge-based reasoning have been distinguished: description, explanation and prediction (Sherin and van Es, 2009) and they argue that pre-service teachers will move through these three levels of reasoning as they become more experienced.

These two examples of the notion of professional vision being developed in trainee teachers via intervention activities, and via structured professional development activities for more experienced teachers, take examples of particular moments of professional practice out of the classroom context. Both allow for deep exploration of practice in a structured way and the models are more complex than the models of Kolb and Schön and encourage social interaction and discourse. This approach builds on Schön's ideas of reflection in action, reflection on action and is more developed than a simple lesson evaluation or reflective diary; it is an example of an epistemology of practice that was Schön's vision (1983, 1987).

#### 2.2.4 Eraut: informal learning and two triangle models

My focus in this study is on the learning that happens in the science department, in the team of adults, teachers and trainee teachers. Eraut (2004, 2007) in his studies of workplace learning was interested in how adults learn when engaged in practice. He initially drew on cognitive models of memory which locate learning from experience within the *individual* learner rather than in the social community of the workplace. He considered three core questions: what is being learned, how is it being learned and what factors influence the level and demand of the learning effort (Eraut, 2004). However, in his analysis of learning contexts, many were located in social relationships. In 2007, he recognised these social contexts in his typology of early career learning which was based on his observations of a variety of workplaces and are shown in Table 2.

Many of the activities listed are learning opportunities the same as or similar to those available to trainee teachers whilst on placement in school.



Table 2 Typology of early career learning (Eraut, 2007, p. 409)

<b>Work processes</b> with learning as a by-product	<b>Learning activities</b> located with work or learning processes	<b>Learning processes</b> at or near the workplace
Participation in group processes	Asking questions	Being supervised
Working alongside others	Getting information	Being coached
Consultation	Locating resource people	Being mentored
Tackling challenging tasks and roles	Listening and observing	Shadowing
Trying things out	Reflecting	Visiting other sites
Consolidating, extending and refining skills	Learning from mistakes	Conferences
Working with clients	Giving and receiving feedback	Short courses
	Use of mediating artifacts (weekly reflection of progress, lesson feedback forms, reports)	Working for a qualification
		Independent study

The group of **work processes** listed in Table 2, he also called informal learning because these are activities where learning is a by-product, a by-product of the work activity.

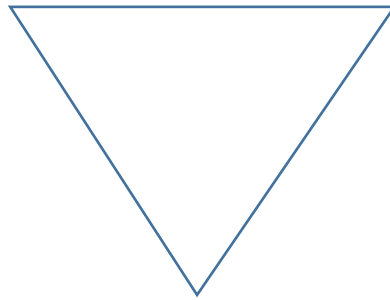
**Learning activities** and **learning processes** are activities that would be readily recognised as learning and time may be allocated specifically for these activities.

Eraut also developed a two triangle model with three **learning** factors (challenge and values of the work; feedback and support; confidence, commitment and personal agency) and three **context** factors (allocation and structuring of work; encounters and relationships with people at work; individual participation and expectation of performance and progress). Again these are pertinent to a school workplace and explore the social context.

Figure 2 Factors affecting learning at work: the two triangle model (Eraut, 2007)

Triangle 1: Learning factors

Challenge and value of work



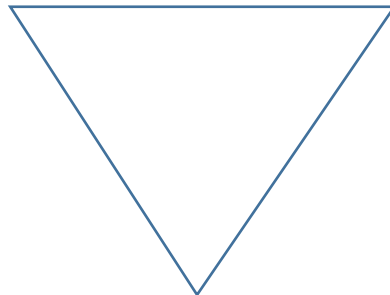
Feedback and support

Confidence and commitment

Personal agency

Triangle 2: Context factors

Allocation and structuring of work



Encounters and relationships with people at work

Individual participation and expectations of their performance and progress

The two triangle model is a visual summary of the factors that Eraut suggests early career professionals, their mentors and managers need to note that may “enhance or hinder individual or group learning” (Eraut 2007, p420).

### 2.2.5 Little: the role of talk in workplace learning

Another example of the importance of the social context are the specific studies of workplace learning in schools by Little (1982) and Horn and Little (2010) which focused on the role of talk in teachers' learning at their workplaces and suggested that a greater range of professional interaction with a wider diversity of individuals contributed to more successful 'learning on the job', and that conversational routines that linked "frameworks for teaching with instances of practice" (Horn and Little, 2010, p. 181) were particularly important.

The models of learning that are held by the participants of the COP-beginning teacher are likely to emerge in their talk or discourse and may include the learning theories, metaphors and concepts of experiential learning, whether an individual or social activity. How learning to teach is perceived will indicate how rich the learning environment is for those entering the teaching profession.

### 2.2.6 Lave and Wenger: Communities of Practice (COP), situated learning and legitimate peripheral participation

Another way to look at trainee teachers learning to teach in a science department is to consider them as participants in a "community of practice" (COP) as defined by Wenger (1998); his definition was that the participants are **mutually engaged** in a **joint enterprise** and have a **shared repertoire** (p. 72-73). The shared repertoire might include practices, words, artefacts and particular discourses, concepts, and history. This way of conceptualizing learning was different and acknowledged the complexity of social and cultural interactions within the group. Wenger described communities of practice (COPs) as sites of social learning or situated learning and also described a social theory of learning described below. This sociocultural model was ontologically different to the

cognitive constructivist models of Kolb (1984) and early Eraut (2004) as the learning was not a feature of the individual but a feature of the social context.

The social theory of learning developed by Wenger (1998) was based on the thinking of Vygotsky, amongst others, and the role of the teacher in learning. This placed “learning in the context of our lived experience of participation in the world” and is “fundamentally a social phenomenon” (p. 3). The social theory of learning underpins Wenger’s communities of practice (1998), and situated learning and legitimate peripheral participation (Lave and Wenger, 1991). Lave and Wenger’s (1991) theoretical model for newcomers moving to a full practitioner within a COP was called “legitimate peripheral participation” (LPP) (p. 2). Initially newcomers were peripheral to the shared joint enterprise and through formal and informal learning experiences they become full participants of the COP. Lave and Wenger (1991) drew on five studies to illustrate the variety of routes of apprenticeship, incorporating different formal and/or informal situated learning or teaching. It is not easy to see which of the five studies is closest to initial teacher training but the concepts of situated learning and LPP are transferable.

However, Wenger (1998) described the learning as happening through participation, and he described meaning being made (constructed) through discussion with others or through experience and participation. The activities or practice of the science department will be given meaning by a process that Wenger termed ‘reification’ and he described it as “a point of focus around which the negotiation of meaning is organized” (p. 60); there are similarities here with Goodwin’s professional vision and *highlighting*, the process of identifying or linking relevant information. This could be organised around an artefact (for example the report which is completed termly for trainee teachers) or a process such as the feedback discussion after a lesson. Wenger also used the learning as “becoming”

metaphor as the participant gained the identity of a full participant in the COP (p. 5). In section 2.3.4 below I expand on the use of metaphor.

### 2.2.7 Fuller and Unwin: expansive and restrictive learning environments

In Fuller and Unwin's study (2003), they took the conceptual frameworks of COP and LPP (Wenger, 1996; Lave and Wenger, 1991) to devise a framework to understand the effectiveness of different workplaces as sites of learning. The researchers developed a continuum termed 'expansive' to 'restrictive' of the workplace learning environment of apprentices. Fuller and Unwin suggested that "three inter-related themes (participation, personal development and institutional arrangements) underpin (this) ...continuum" (p. 407) with *expansive* describing an environment that is stronger and richer in features conducive to learning from a personal to an institutional level. They constructed a framework of these features, drawing on their earlier work (2001a cited in Fuller and Unwin, 2003) and applied it to case studies, thereby showed that applying the framework enabled the researchers to "categorise company approaches to apprenticeship" (p. 407) and show aspects of the complex sociocultural context experienced by the apprentices in each setting.

The model has been successfully applied to a variety of contexts (Evans et al., 2006; Orr and Simmons, 2011) including Hodkinson and Hodkinson's (2005) longitudinal study of the workplace learning of qualified teachers in English secondary schools across four subject departments (not science). This led to an adapted framework based on Fuller and Unwin's to more appropriately describe the workplace of teachers. The framework was adapted to facilitate analysis of the teacher learning data and Hodkinson and Hodkinson "could readily identify degrees of all the listed types of restrictiveness" (p. 125). They also described three contributing factors to improving teachers' workplace learning: the

dispositions of the individual teacher; the practices and cultures of the subject departments; and the management and regulatory frameworks, at school and at a national policy levels. Hodkinson and Hodkinson's focus was the professional development of qualified teachers and they noted that planned, formal professional development activities took the teachers away from classes; this was a tension with senior staff. They also noted how different teams in departments responded to imposed learning activities due to policy change (Evans et al., 2006). Their study is now 10 years old and there have been significant changes in secondary schools and the model will be tested in this study to see if it is still appropriate; it is included in Appendix 1.

Hodkinson and Hodkinson (2005) found that the framework could be adapted to a school setting and the policy context has changed significantly since 2005 when their study was completed. However, it is important to note that trainee teachers in a secondary science department are situated differently as learners to those in the three studies of Hodkinson and Hodkinson (2005), Evans et al. (2006), and Orr and Simmons (2011); in this study none of the trainees are employees of the workplace but are following a Post Graduate Certificate of Education (PGCE) route as a student of an HEI. Another difference is the formal taught component located at the HEI. These differences suggest a review of the framework of the expansive/restrictive continuum adapted for the learning environment of a secondary science department and the learning of trainee teachers is appropriate.

#### 2.2.8 Learning theories and models of workplace learning

The models of workplace learning above either focus on the individual as a learner in the workplace or the social environment of the workplace within which workplace learning happens. The models that focus on the individual have a theoretical basis of constructivism or social constructivism. These modes include Schön's 'reflective

practitioner' (1983), Kolb's 'experiential learning cycle' (1984) and Eraut's early work (2004).

**Constructivism** is based on Piaget (Inhelder et al, 1987) who described the child as a lone scientist who learns about the world through experience or discovery learning. He recognised that the child was an active participant in learning and constructivism is a model that beginning science teachers would be familiar with from their training. This approach is termed constructivism as the learner is constructing a model of their environment or world. Cognitive conflict is a Piagetian term for an experience which challenges the child's previously held model of the world. An important theoretical idea about how children learn science developed by Driver, Squires, Rushworth, and Wood-Robinson (1994) argues that children progress through different models of the natural world (Piagetian stage model of development) and that scenarios that encourage cognitive conflict, facilitated by a teacher or more knowing other, can accelerate children's cognitive development in science. It is likely that a science teacher would be familiar with this model of science learning and may refer to this model when conceptualising workplace learning. **Social constructivism** as a theoretical model of learning is attributed to Vygotsky who was studying in the USSR at the same time as Piaget was working (Daniels, 1996) and his model of learning had similarities with Piaget in that it recognized that the child was an active agent; the main difference is that Vygotsky identified that social interaction with others, whether peers or teachers (or more-knowing other), was key to the learning of the individual. This model is called social constructivism and recognizes the role of culture and context to the learning processes; this is absent in Piaget model of learning. Again, this is a model that science teachers are likely to be familiar with (Ross et al., 2010; Wellington and Ireson, 2012) and again they may draw on this model when conceptualising workplace learning.

However, the more recent models of workplace learning are based on the social learning model developed by Lave and Wenger (Lave and Wenger, 1991; Wenger, 1998). This is described in detail above and while based on the work of Vygotsky it conceptualises learning as a social process situated in a 'community of practice'. Fuller and Unwin's model of expansive and restrictive learning environments (2003) is based on the theories of communities of practice, legitimate peripheral participation and situated learning (Lave and Wenger, 1991). The later work of Eraut (2007) considers how the work process, learning activities and learning processes contribute to a typology of early career learning and also how learning factors and context factors affect the learning environment. He is considering the social-cultural context for workplace learning. Goodwin's description of professional learning is "socially organised ways of seeing" (1994, p606) and the studies of teachers by Sherin et al. (2002, 2008, 2009) describe particular events contrived to encourage this socially-organised way of seeing. These social models of workplace learning are different to the models of the individual learning.

### 2.2.9 Metaphors used for workplace learning

The metaphors that are chosen or selected to describe learning give an insight into "our spontaneous everyday conceptions and scientific theorizing" and can help us "elicit some of the fundamental assumptions underlying both our theorizing on learning and our practice as students and teachers" (Sfard, 1998, p. 4) and metaphors are widely used in research about workplace learning (Hager and Hodkinson, 2009; Rogoff, 1995; Wenger, 1998). Sfard initially discussed the value of using the metaphors for learning 'as acquisition' and 'as participation', showing the inadequacies of each and the strength of both metaphors when considering learning. She argued from the position as a mathematics education academic and she encouraged the use of these metaphors as learners, teachers and researchers. Expanding on Sfard's two metaphors: learning 'as



acquisition' envisages the learner collecting useful information, skills, experiences and the very act of accruing these discrete items can be construed as learning. Learning 'as participation' is an active process such as participation in group processes, working alongside others and working with clients. This is inherently a social process.

Hodkinson and Hodkinson (2005) included 'learning as construction' drawing on the constructivist and social constructivist theories of Piaget and Vygotsky. Hager (2005, cited in Hodkinson and Hodkinson, 2005) used the term 'embodied construction' for workplace learning, preferring this term as it captures the active embodied process rather than the static of passive participation or acquisition. Learning as construction locates learning as a socially negotiated and constructed activity. Later, Hager and Hodkinson (2009) argued for 'learning as becoming' and rejected the metaphors that imply learning by transfer;

"When a learner constructs or reconstructs knowledge or skills, they are also reconstructing themselves" (p. 633).

Learning here was linked to identity change.

All four of these metaphors – acquisition, participation, construction and becoming – may be appropriate; trainee teachers need to **acquire** evidence to demonstrate their competence in particular standard areas, they **get** a PGCE, QTS and 'pass' particular assessment hurdles; they jointly **participate** in the activity of teaching in a department and with other colleagues and they **construct** and discuss their pedagogical content knowledge through wide ranging experiences and over the passage of time. As they learn to teach they **become** teachers.

Rogoff (1995) also used metaphor when she described three "inseparable concepts" that reflect the three planes of analysis as apprenticeship, guided participation and

participatory appropriation (p. 141). The learner is frequently in the role of apprentice in workplace learning literature. Rogoff uses the metaphor of apprenticeship to capture the community or institutional activities involving all active individuals participating in a culturally organized activity to develop the activity of the less experienced people. The focus of attention is on the nature of the activity involved and its relation to the practices of the community. Guided participation refers to the interpersonal activity or the ways that people communicate and coordinate efforts while participating in the activity. Participatory appropriation refers to how the individual's change their involvement at an intrapersonal level and how they change to become part of the community or institution.

Learning theories and how language is used to articulate learning the work of teaching is important for exploring the overarching research question; the methodology and methods of how this lived experience is studied is also important and that aspect is addressed in Chapter 3. Here the focus is on the many theoretical and research based models of practice-based learning and also how the concept of 'learning to teach' is individually conceptualized by the trainee teachers, mentors, teachers and leaders in school. This is likely to impact on the 'working model' of the learning environment in practice as experienced by the trainee teacher. Rogoff et al. (1996) showed in a discussion of a public elementary school programme that the theoretical perspectives of learning held by the adults (teachers, parents) were aligned to models of instruction (or learning). It is thus very likely that the models of learning that members of the science department have will affect their discourse and their behaviours related to teacher training.

This suggests that a subsidiary research question that explores how the process of workplace learning is conceptualised by those in the science department is important to

the overarching question 'what is the nature of the learning environment of a science department for beginning teachers?'

RQ 2 How is 'learning to teach' articulated by members of the science department, including beginning teachers and their mentors?

Secondly, the theories of workplace learning above can be used as tools to better understand the workplace learning environment of the science department.

RQ 3 How do models of work place learning reveal the culture of learning in the science department?

## 2.3 Wider factors and teachers work

Recent and relevant education policy is described in the introduction and here I build on that to include policy literature that has considers the impact on the workplace. In addition to this area, three additional themes are considered:

- Addictive presentism
- Resilience
- Balkanisation

### 2.3.1 The impact of policy change

Ball (2013) and Childs (2013) map an increased introduction of choice or marketization in teacher education alongside a drive towards a traditional craft view of teaching work with increased accountability measures. They identify these threads of neoliberal and neoconservative policy change through Conservative governments from 1979, New Labour from 1997 and the Coalition 2010-15 with a neoconservative return to traditional

values and traditional teaching featuring in a speech of Michael Gove, Secretary of State for Education for the Coalition:

“Teaching is a craft and it is best learnt as an apprentice observing a master craftsman or woman. Watching others, and being rigorously observed yourself as you develop, is the best route to acquiring mastery in the classroom.” (Gove, 2010)

The neoliberal policies link education reform with economic success and thus a drive for increased marketization of education such as providing parents with choice based on league tables, and increasing numbers of schools outside local authority control through ‘academisation’ introduced by New Labour and increased by the Coalition who also introduced free schools. Beauchamp et al. (2013) agree that there is a more “generic stance” with a “decisive shift away from a research-based profession and towards the construction of teaching as a craft” (p. 1). However, they did identify that most ITT providers continued to offer programmes with a strong emphasis on educational research but they were concerned that the introduction of School Direct in the 2011 Education Act (DFE, 2011a) would threaten these models.

The white paper Educational Excellence Everywhere (DFE, 2016a) included the intention to “(s)trenghen university and school-led training and accreditation, including increasing the rigour of ITT content and the proportion of ITT that is school-led” (p. 124). The same white paper included an increase in free schools by 500, a university technical college in each town, an expansion of multi-academy trusts and prompt intervention in underperforming schools. With the referendum decision to leave the EU, a change in Prime Minister and Education secretary in June 2016, this white paper has not progressed to a draft bill. However, the white paper informed the discourse and debate about state education in England at the time of the study and the school and science department were

working in the ensuing climate of uncertainty and a likely increased role in preparing new teachers for teachers' work.

The enactment of policy may have an impact at institution level and also at department level. Ball describes the effects of thirty years of policy change as creating a culture of performativity, a "regime of accountability that employs judgments, comparisons and displays as means of control, attrition and change" (Ball, 2013). Ravitch (2013) in her overview of the impact of this culture on education provision in the USA describes each child being reduced to a 'data-point'. Reflecting on changes of behaviour by teachers in schools, Hargreaves (2010) coined the term *addictive presentism* for the response by teachers to performativity.

### 2.3.2 Addictive presentism

Hargreaves revisited Lortie's book '*School teacher*' written in 1975 which focused on teachers' work; Lortie described teachers focusing on the short term – *presentism*, concentrating on the small scale rather than whole school - *conservatism* and performing teaching in isolation from other teachers – *individualism*. Hargreaves suggests that in an attempt to develop school programmes that address the obstacles to change of individualism and conservatism, teachers' work now demonstrates a new kind of presentism which he describes as *addictive presentism*. The characteristics of addictive presentism is the enthusiasm of teachers engaging in short term interventions that yield immediate results, typically to improve results (data), rather than undertaking long term changes to teaching and learning, to pedagogy. He captures this in:

“Schools became addictive organizations, on successive ‘highs’ concerned with meeting targets, raising performance standards, and adjusting strategies right down to continuous, just-in-time interventions with every child” (p. 150)

Hargreaves goes on to argue that a consequence of this reduced individualism and increased presentism is that there is a new kind of conservatism, where teachers are narrowly focused, taking part in hurried uncritical exchanges about technical issues (Hargreaves, 2010). This is similar to Childs’ et al. (2013) comment that the discussion between teachers in the science team room was often fleeting and serendipitous. This is one way that wider policy change can have an impact at a local level on teachers’ work.

It is important to note that Hargreaves is describing a very different model of workplace learning to that described above in section 2.2. Addictive presentism is based on a **behaviourist** model of learning. A behaviourist approach to learning was initially developed by Watson (1914), influenced by the early work of Pavlov and his famous animal experiments that showed that a stimulus could lead to a reflex or conditioned response. Watson is credited as the founder of the behaviourist approach which applied the stimulus-response approach of classical conditioning to children and education; observable behaviour change was taken as objective evidence of learning (Gray and MacBlain, 2012; Miell et al., 2002). Skinner argued that particular behaviours of children could be rewarded or punished and this led to behaviour modification as the child learned. This is operant conditioning where an association is made between the behaviour and the consequences. This approach ignores that children are more complex than animals; humans have motivations and an ability to consciously think about a problem. However, it is successfully applied in the design of behaviour reward charts and ABC (Antecedent-Behaviour-Consequence) behaviour management approach for children on the autism spectrum which are seen in several schools. Addictive presentism describes particular short term responses to the stimulus of data or performativity.

### 2.3.3 Resilience

The notion of 'teacher resilience' has come to the fore in recent years and was explicitly raised by Tasha, the deputy head at Birchwood, at the end of the first cycle of data collection: "How do you teach your trainees resilience?" It is not an issue solely of concern in the UK or in the teaching profession. There is an extensive international body of literature to be found in health and social care, sport exercise and health sciences and also teaching and education.

Fletcher and Sarkar's (2013) review of psychological resilience identified that definitions of resilience are based around adversity or core adaptation, that it is a trait or a process. Richardson (2002) developed the theory of resiliency as a psychological process where an individual facing adversity goes through a process of disruption and reintegration to arrive at a new state of balance; he also proposes that resiliency can, with time, increase self-efficacy. Jacelon's (1997) review of several large, quantitative studies of adults facing serious illness found that those who demonstrated resilience in the face of adversity had "extraordinary personal resources" (p. 125) including a positive outlook, a confidant, intelligence, education and an ability to adapt to change. Jacelon summarizes the findings around two themes: firstly, personal factors such as reflectiveness, perseverance and self-reliance and secondly family situation and, for some, a strong supportive community. Flach's theoretical model (1980) is that when an individual's routine is disrupted by adversity, they need to go through a period of disintegration followed by reintegration similar to Richardson's theory of resiliency. Gu and Day's (2007) study of teachers looked specifically at resilience as part of the Variations in Teachers' Work, Lives and Effectiveness project (VITAE), a large longitudinal study of 300 teachers in 100 schools. They draw on two different models of resilience: again a trait in the individual drawing on positive attributes that built and contributed to resilience and a second multi-dimensional,

dynamic model situated in a complex social setting of relationships. They found the context where the individual is experiencing adversity will determine whether the individual will be able to show resilience.

Two more recent studies perhaps show why resilience has come to the fore in recent years. Johnson and Down (2013) review and critically evaluate the research on resilience in early career teachers. They argue there is a focus on problematic rather than enabling behaviours and a tendency to regard early career teachers as lacking in agency. The authors argue that these limitations narrow our understanding of the resilience that early career teachers do demonstrate and suggest that traditional conceptions are underpinned by a set of values, beliefs and assumptions that promote western middle class values as a universal truth. These include reductionist models of human coping, and a focus on the individual and problematizing the individual. This has the effect of shifting the responsibility for resilience and wellbeing onto the individual rather than siting it within a broader social, political and cultural context. In summary, these studies describe resilience to be a complex and multidimensional psychological quality arising from the interaction of internal and external factors. There are two main conceptualisations of resilience; one as a personal trait that tends to problematize the individual if issues arise due to (a lack of) resilience; another as a process that is developed over time and tends to problematize the context or situation.

Taking a critical approach to these studies, work in Australia links the increased focus on resilience with neoliberal policy change. The 'Keeping cool' project was an attempt to address a shortage of teachers and was set up to embed resilience in teacher education. Mansfield et al. (2014) gave an overview of their findings and argued that resilience is a complex interplay between the personal challenges and resources of early career teachers



and the challenges and resources that are present in the context, similar to studies above. However, in addition the same group of researchers (Price et al., 2012) reflected on the project and situated it in a time of social and political change and argued that resilience is socially constructed and in the current neoliberal policy context this impacts on definitions of teacher identity and the nature of teachers' work.

Through vigorous debate within the team the construct of 'resilience' was scrutinised through critical theory and labour process theory. They posit that teacher resilience is constructed by the neoliberal, neoconservative policies being enacted by managerial technicist approaches to policy enactment in schools. They refer to Hargreaves 'addictive presentism' (see above) and ask "what makes teachers' work so adverse?" (p. 88). The questions they raise suggest that teacher identity and work is being shaped by the discourse about resilience in the media, recent research and recent neoliberal policy.

#### 2.3.4 Balkanisation

There are studies that identify the social interaction in the team room in school as important. Childs' et al. (2013) study of four subject departments (including history and science) noted that science departments with team rooms allowed for collaboration and the discussion needed for new teachers to learn but also highlighted how this can lead to balkanization, a term coined by Hargreaves and MacMillan in their study of two secondary schools in Ontario (1992). They used the term to describe departments with a very strong culture of working together as a team but could not be described as being part of the school. The balkanized cultures have particular characteristics:

- Low permeability – subgroups are strongly insulated from one another
- High permanence – often strongly defined in space (e.g. team room) which leads to remaining defined and delineated over time

- Personal identification – individuals become attached to the community and this is linked to their teacher identity.
- Political complexion – a source of identity and a political culture which influences the allocation of resources, promotion opportunities and status (p2-3)

The negatives include a narrowness of knowledge and beliefs about teaching, shared assumptions about workable teaching and learning approaches and potential resistance to whole school initiatives.

In an ethnographic study of a school as a site for student teacher learning, Douglas (2014) studied the learning opportunities afforded to students on placement. He found that the tools or artefacts provided to students to structure and negotiate their learning on placement were interpreted differently in each of the four departments so it is likely that the department will offer its own interpretation of school placement and induction. At an intrapersonal level, the learning environment of the department may contribute to the beginning teachers' developing identities as teachers, their SCK and PCK, their skills of behaviour management. Their own dispositions and responses to the context will also affect their experience as will the nature of the department and the extent to which it is balkanised.

The literature reviewed in this section shows that factors external to a department can impact the work of teachers and the culture of the workplace. This suggests that a subsidiary research question that explores how the impact of wider factors on the overarching question 'what is the nature of the learning environment of a science department for beginning teachers?'

RQ 4 What are the wider factors that are affecting the learning environment for beginning teachers?

## 2.4 The individual beginning teacher learning the work of science teaching

The research literature exploring the experience of the individual school placement experience of trainee teachers is relevant as it considers learning the work of teaching or more specifically science teaching. This section includes:

- Learning subject knowledge: PCK and SCK
- The nature of science
- Learning behaviour management skills
- Identity change experienced by teachers
- Individual orientations of beginning teachers to the teaching placement

This section is not exhaustive but is selective; it focuses on key themes emerging in the literature of about learning about the work of teaching or teaching science.

### 2.4.1 Learning subject knowledge: PCK and SCK

‘Learning how to teach’ has been broken down in the current teaching standards in England (DFE, 2011b) into the following areas: having high expectations, promoting good progress, demonstrating good subject and curriculum knowledge, planning and teaching lessons, responding to individual needs, assessment, managing behaviour and fulfilling wider professional responsibilities. The challenge for all trainee teachers is having good subject knowledge and developing an appropriate pedagogic knowledge. This has been explored extensively since Shulman (1986; 2004) introduced the terms Subject Content Knowledge (SCK) and Pedagogical Content Knowledge (PCK) to distinguish these two key areas. It is now accepted that a highly qualified graduate in the subject area will typically need to work on developing their subject knowledge *for teaching*, SCK, or what is sometimes termed ‘subject knowledge per se’ and that during the pre-service training

period the trainee teacher will move from having little PCK (typically) to more PCK, informed by their training and their practical teaching experiences (Nott and Wellington, n.d.).

The issues of developing science SCK and PCK is a common theme of ITT literature (Childs and McNicholl, 2007; McNicholl et al., 2013; Osborne and Dillon, 2010; Ross et al., 2010; Wellington and Ireson, 2012). There is an expectation in most secondary schools that science teachers will be willing and able to teach outside their specialism since the policy document Science 5-16 published in 1985 (DES) stated that science was 'for all' and argued for breadth and balance and stated that "all pupils should be able to continue their study of each of the main areas of science throughout the compulsory age range" (Gillard, 2016, p. 4). It was closely followed by the introduction of GCSE in 1986 and it is still the case that secondary age students study biology, chemistry and physics to 16. While there may be overlap of concepts (for example, energy), it will be taught in a different way in each of biology, chemistry and physics, with differing curriculum progression models and differing underlying fundamental principles (Ross et al., 2010).

#### 2.4.2 The nature of science

Another significant challenge for beginning science teachers is their personal view of the nature of science (NOS), which is rarely explicitly addressed in undergraduate courses. Many trainee teachers are challenged by questions of the ontology and epistemology of their subject and the same is true of science (Nott and Wellington, 1993). Science is the study of the nature and behaviour of the material and physical universe. The revised National Curriculum (DFE, 2013a) for science

“aims to ensure that all pupils develop understanding of the **nature, processes and methods of science** through different types of science enquiries that help them to answer scientific questions about the world around them.” (p136)

This statement contains two specific SCK challenges for beginning science teachers: the nature of science (NOS) and science enquiry.

There is a continuing shortage of specialist physics teachers which means that physics in particular is often taught by non-specialists (DFE, 2016b). The case study school, Birchbrook, expects science teachers to teach outside their area of specialism. Childs and McNicholl (2007) explored the experiences of 18 science teachers of teaching outside their specialism and found that their experiences were similar no matter how long their experience of teaching. They said “they did not have the knowledge to make an informed selection of a ‘good’ resource” as they could in their specialist subject, with “(m)any of the more experienced respondents ... concerned about their ability to plan in the medium and long term” (p. 9) and did not possess knowledge of typical pupil misconceptions coupled with an appropriate range of explanations to address these issues arising from a complex combination of PCK and SCK. An earlier Australian study by Fraser and Tobin (1989) of 22 exemplary science and mathematics teachers noted that “(e)ven in a study of exemplary teachers’ weaknesses in content knowledge were found to cause problems” (p. 7). Another challenge for all trainees learning how to teach is developing the skills of behaviour management; this is not specific to beginning science teachers.

### 2.4.3 Learning behaviour management skills

The work of managing behaviour is another theme in the literature of ITT and is included in recent policy relating to learning to teach. The NQT survey (NCTL, 2015b) and the Ofsted priorities for ITT (Ofsted, 2015a) include behaviour management. Czerniawski’s

(2010) study of Newly Qualified Teachers (NQTs) in London found a concern with behaviour management particularly in negotiating their emerging teacher identity. This resonates with a study by Haggarty et al. (2011) of 15 science and mathematics NQTs which concluded with concerns about mentoring which typically focused on supporting the teacher to 'fit' into the culture of the school, through particularly supporting the development of effective behaviour management strategies. Haggarty et al. (2011) considered the perspectives of the induction mentor, induction tutor and the Newly Qualified Teacher (NQT) but did not consider the wider sociocultural context within which these teachers were working.

#### 2.4.4 Identity change experienced by teachers

It is too simplistic to reduce becoming a teacher to SCK and PCK. Pedretti et al. (2008) suggest that the subject specialism contributes to a science teacher's identity and self-efficacy and that for trainee teachers "their emerging science teacher identity is tentative and evolving" (p.957). Deneroff's study of an exemplary science teacher argued that "science teaching is best understood by socially-constructed identities rather than as the end-product of knowledge and beliefs" (1995, p. 1). She drew on social practice theory developed by Lave (1996) who said learning was the "identity-making life projects of participants in communities of practice" (p. 157). Lave strongly argued, from a social justice perspective, that teachers needed to know that this defined their work with students.

Teachers' sense of identity has been found to sustain their motivation and commitment to the job of teaching (Day, 2002; Gu and Day, 2007) with Day (2002) suggesting teachers found a way to maintain their identities by negotiating or "manoeuvring" around the imposed practices in school. Marie, the subject of Deneroff's study (2016), was able to do

this but eventually left teaching while Donna, another exemplary science teacher, had a “conceptualization of self” (Blake, 2002, p. 79) through her beliefs as a teacher, her subject (science) and her self-efficacy, and that this sense of self led to conflict in her school.

Donna said

“No matter what happens, it is all about relationships. It’s all social” (p. 79).

Fox and Wilson (2009) showed the importance of relationships to support the developing and emerging identities of beginning science teachers. They applied network theory to show developing professional and social networks of support and their findings highlighted the importance of trusting relationships with peers with whom the beginning teachers may collaborate and thus develop their practice. The teachers created their own network maps and a framework used for analysis derived from an earlier study and the coding frame gave insights into the affordances and barriers to networking.

Both Lave and Wenger (1991) and Hodkinson and Hodkinson (2005) identify identity transformation as part of the process of becoming a teacher, of work-place learning. Wenger (1998) looked at identity formation in the interpersonal activities of communities of practice and how this is negotiated through participation and belonging in the learning community. Hager and Hodkinson (2009) use the metaphor of ‘learning as becoming’ to encapsulate the final stage, identity transformation, of the learning journey of a teacher. Ball (2013) argues that teachers have been remodelled as a consequence of recent policy change and identity is not entirely intrapersonal but can be changed by institutional factors. He suggests that “there is a new language through which teachers talk about what they do” (p. 171) and it may be that the influence of more school-led training provision and a craft-based profession may affect the identity discourse of teachers and trainees. Ball is also suggesting that policy is shaping teacher identity in his argument that each teacher is an enterprise in the market of education.

#### 2.4.5 Individual orientations of beginning teachers to the teaching placement

The Developing Expertise of Beginning Teachers (DEBT) longitudinal study (Burn et al., 2000; Hagger et al., 2008; Mutton et al., 2010), established in 1998, followed teachers from training year into their teaching posts. Their developing thinking and practice was tracked through their approaches or attitudes to learning. The team identified “five distinct dimensions and their associated orientations” (Hagger et al., 2008, p. 166) which comprised: intentionality, frame of reference, response to feedback, attitude to context, and aspiration. These dimensions of the individual proved effective in analysing the disposition of the teachers to their own learning, their responses to contextual factors and their success as they moved into teaching posts. The individual’s attitude to the context is included but the nature and complexity of the social and cultural context is not explored. Intentionality ranging from deliberative to reactive was based on Eraut’s (2004) study of informal workplace learning which is referred to below in RQ2. Again, Eraut’s study focused on the individual not the social environment.

The timing of this study which aims to explore the lived experience of beginning teachers in the science department at a specific time of policy change and policy enactment makes the findings of interest to schools and teacher education. The recruitment and training of teachers is more school-led and the role of the HEI is supposedly reduced; is there any noticeable change?

The literature reviewed in this section shows the individual’s experience of the department is important. This suggests that a subsidiary research question that explores the experience of the individual beginning teachers is important to the overarching



question ‘what is the nature of the learning environment of a science department for beginning teachers?’

RQ 1 What is the nature of the learning environment experienced by beginning teachers in the science department?

As stated at the beginning of Chapter 2, the overarching research question of the study ‘what is the nature of the learning environment of a science department for beginning teachers?’ is a big, challenging question and I have approached it through the theoretical, research and policy literature of work place learning. This has informed the subsidiary research questions (RQs) and these emerge from the literature of workplace learning, the wider factors having an impact on that workplace and also the specific literature relating to the individual beginning teachers’ experience of placement or workplace learning. The section below explains the ordering and structuring of these subsidiary questions.

## 2.5 Planes of analysis and the subsidiary research questions

I would like to consider the theoretical basis for the structure and organization of the subsidiary research questions.

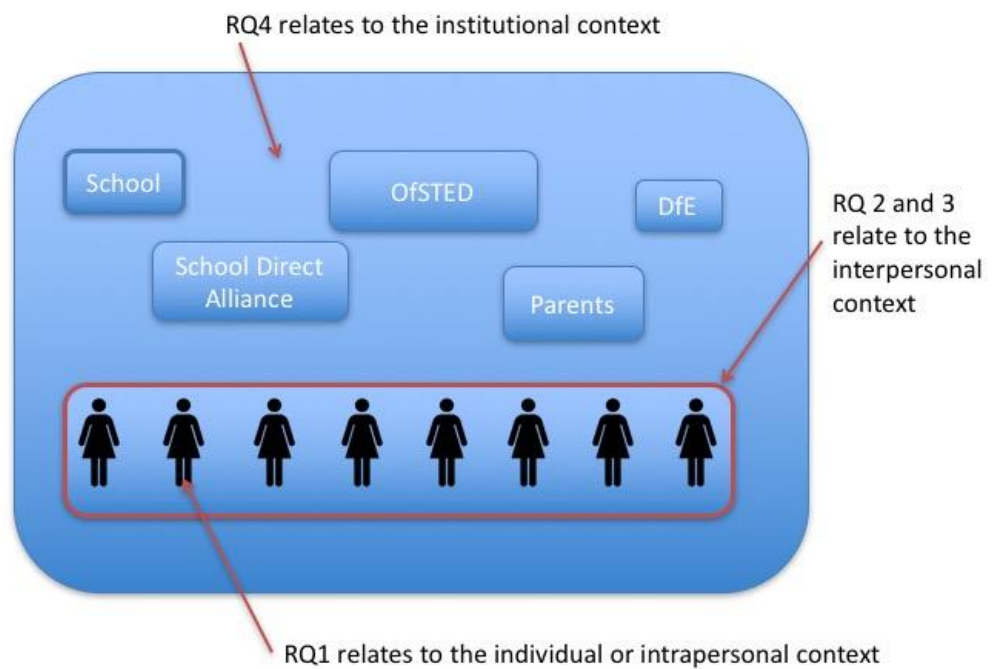


Figure 3 A simple representation of the RQs to show the planes of analysis based on Rogoff (1995)

The term 'levels of analysis' is used in social sciences to indicate the location or scale of the focus of the research. Bronfenbrenner's ecological model of individual development (Bronfenbrenner, 1979) is an example of levels of analysis which describes the environment within which an individual develops or learns; the model shows this as multi-layered from the individual, microsystem, mesosystem, exosystem to macrosystem. It was proposed as a model of development to consider the influence of the different aspects of the environment on the individual and shows how they are situated in a specific social, cultural and historical context. The individual is at the centre of the model and the first interaction is with others in their microsystem (family, close friends etc.). However, Bronfenbrenner's ecological model does not include the individual's inner world, their experiences, motivations or perceptions which is included in RQ1.

Rogoff (1995) devised a theoretical approach to analyse sociocultural activity of social learning through three planes of analysis. These were “personal, interpersonal and community processes” (p139) and she recognized that these are inextricably linked and mutually dependent. The aim is to accept the three planes of activity are inseparable but each plane can be brought into focus whilst the other two planes of activity continue but are not considered. This approach to data analysis allows patterns to emerge from what may seem chaotic. While her research was focused mainly on young children in education, she discusses this concept in the context of work and education, adults and children. She emphasized that while focusing on one plane the links with the other planes needed to be remembered and recognized.

The research questions in this study are considering different aspects of the sociocultural milieu of the department and Rogoff’s planes of analysis are more appropriate than Bronfenbrenner’s ecological model because it includes the intrapersonal, the inner world. The research questions include three planes of analysis: RQ1 intrapersonal; RQ2 and RQ3 interpersonal and RQ4 institutional; while these are inseparable, bringing each into focus discreetly will bring aspects of the complexity into plain sight. This will be returned to in the next chapter, methodology. Because they are inseparable there is some overlap of the literature considered relevant to each research question.

## 2.6 Summary

The main justifications for this study are two-fold: its situated-ness in a time of policy enactment that is emphasising the role of the school in ITT; a lack of studies exploring the sociocultural milieu for all involved in the COP-beginning teacher in the department.

My interest is in how the community of those involved in training teachers create an environment or culture to support the learning of those new to teaching and what factors influence this. The main overarching question ‘what is the nature of the learning environment of a science department for beginning teachers?’ is explored through three themes which come from my recent experience as a science teacher educator:

- Experiential or workplace learning models (section 2.2)
- Wider factors affecting teachers work (section 2.3)
- The individual learning the work of science teaching (section 2.4)

The subsidiary research questions emerged from the review of theoretical, policy and research literature and have been structured according to the three planes of analysis, the intrapersonal, the interpersonal and institutional (Rogoff, 1995). This is explained above in section 2.5.

RQ 1 What is the nature of the learning environment experienced by beginning teachers in the science department? This focuses on the lived experience of the trainee and beginning teachers and is the intrapersonal level.

RQ 2 How is ‘learning to teach’ articulated by members of the science department, including beginning teachers and their mentors? This addresses the interpersonal dimension and the discourse in the department about teaching.

RQ 3 How do models of work place learning reveal the culture of learning in the science department? This considers the community of the science department through the lens of workplace learning theories; this is also the interpersonal level. Schools are sites of pupil learning and the study considers adult learning; theories of workplace learning are about adult learning.

RQ 4 What are the wider factors that are affecting the learning environment for beginning teachers? This moves the focus out to situate the department and

the teachers within the larger context. This is the institutional level.

The methodology, research design, data collection and analysis follow in the next chapter.

## 3 Methodology, research design, data collection and analysis

### 3.1 Overview

The chapter explains and justifies the selection of methodology, research design of case study, data collection methods and data analysis methods. It shows how they are congruent with the research paradigm which is interpretivist. The chapter concludes with a consideration of research quality and the ethical considerations including positionality and reflexivity.

The research questions are restated here as a reminder of the nature of the questions.

- RQ 1 (and main question) What is the nature of the learning environment *experienced* by beginning teachers in the science department? (the intrapersonal)
- RQ 2 How is 'learning to teach' *articulated* by members of the science department, including beginning teachers and their mentors? (the interpersonal)
- RQ 3 How do models of work place learning reveal the *culture* of learning in the science department? (the interpersonal)
- RQ 4 What are the *wider factors* that are affecting the learning environment for beginning teachers? (the institutional)

The purpose of the study is to address the research questions effectively to develop a rich case description of the science department as a site for workplace learning for beginning science teachers

### 3.2 Methodology and research design

The methodology for a study describes the “approaches to, kinds and paradigms of research” with “... the aim to ... understand the process itself.” (Kaplan, 1973 cited in Cohen et al., 2007, p. 47). The research questions above are considering experiences, discourse and culture and the methodology must be appropriate. This study is an exploration of the experience of beginning teachers and how the meaning of ‘learning to teach’ is articulated: the study is exploring socially constructed meaning that is situated in a particular time, 2013-15, and location, Birchbrook School (Thomas, 2009). It is a study of the social world of the COP-beginning teacher, where the intention is to explore the subjective perspective of each individual in relation to the research questions, leading to specific and situated meanings. Given the different viewpoints to be elicited, it is inappropriate to consider what is being studied as fixed and defined so the ontology is the interpretivist paradigm (Cohen et al., 2007).

A positivist ontology assumes that there is a truth that can be objectively studied (Bryman, 2008; Cohen et al., 2007; Thomas, 2009), that it is fixed and can be measured and rules or laws can be devised that generalize the findings. This model is inappropriate for this study as any interpretation of the social world is subjective and cannot be fixed as it depends on the perspective of each observer. The study explores the situated knowledge of the department and it probes the lived experience of the teachers and trainee teachers at a time of turbulence as policy decisions are enacted in practice. The new knowledge that is being studied is the perceptions of these individuals and the meanings they are making and sharing.

The epistemological decisions about how the study is designed to explore the research questions must ensure that methods are chosen that are appropriate to allow data or

evidence to be collected. As a consequence of an interpretivist methodology the data will be primarily qualitative (Bell, 2014; Bryman, 2008; Cohen et al., 2007) and the methods used are described below.

A strength of an interpretivist study such as this is the richness and detail revealed that describe a snapshot in time as it is perceived and understood by a group of people who make up the department. When this perspective is adopted the data collected is specific, subjective and socially constructed so it is not possible to give a general account (Cohen et al., 2007); it is possible to give rich and detailed, or thick, description (Thomas, 2009).

The overarching perspective of the study is sociocultural as the individual cannot be considered in isolation but as an individual in social action, that all learning is socially constructed. Wertsch (1995) described the purpose of a sociocultural approach as:

“to explicate the relationship between human mental functioning, on the one hand, and the cultural, institutional, and historical situations in which this functioning takes place, on the other.” (1995, p. 3).

The functioning that Wertsch mentions above takes place when teachers and trainee teachers are working together, talking, sharing, planning, socializing and doing teachers' work and the functioning is between adults not between teachers and pupils.

My interest is how the members of the science department create a culture or environment for those learning how to teach science. As described in Chapter 2, I draw on sociocultural situated learning theories (Rogoff, 1995; Wenger, 1998; Fuller and Unwin, 2003) to explore the learning that arises from the sociocultural milieu and describe the different planes of analysis of the department through the research questions above (Rogoff, 1995) using the theory as a way of exploring the sociocultural complexity of a



workplace as a site of learning. She initially described the planes as “personal, interpersonal and community processes (p. 139)” and then expanded these terms to participatory appropriation, guided participation and apprenticeship. The planes of analysis approach is also evident in the expansive/restrictive continuum models of workplace learning environment developed first by Fuller and Unwin (2003) and adapted for school settings by Hodkinson and Hodkinson (2005).

The ontological basis of the sociocultural perspective is widely attributed to Vygotsky who said that

“the social dimension of consciousness is primary in fact and time. The individual dimension of consciousness is derivative and secondary” (1979, cited in Cobb, 1994, p. 30)

This is interpreted to mean that we become conscious of what we know through social interaction with others. So the learning and the culture or environment is revealed through the social discourses of the department and will involve a defined group of people involved in the joint enterprise of training beginning teachers to teach, Wenger’s community of practice (1998).

RQ1 suggests a phenomenological approach which explores the lived experiences of individuals in the community of practice and is the intrapersonal level of analysis; this approach pervades the study. A brief summary of the origins of phenomenological psychology is that it is based on the phenomenological philosophical approach of Husserl who rejected the mind-body, subject-object dualistic thinking current at the time (late 19<sup>th</sup> century) for a perception of the world as it is perceived by people (Langdridge, 2007). The key concepts of phenomenological psychology are a focus on the lived experience or the lifeworld of the individual and an emphasis on rich description. Finally, the process of

‘epoché’ in which the researcher is ‘bracketing’ their own experience and subjectivity to allow the ‘essence’ of the ‘things in their appearing’ and a focus on *what* is experienced and the *way* it is experienced (Langdrige, 2007).

Epistemologically, I am taking an inductive and deductive approach to the data. Inductive reasoning means that the theory is derived from analysis of the data collected; deductive reasoning means that theory shapes the research question and the data collection process (Bryman, 2008; Thomas, 2009). The first two research questions about the nature and the way the team articulate their views about the learning environment tend towards an inductive approach whilst RQ3 is applying theories of workplace learning, hence deductive, and RQ4 about wider factors is informed by the current political context and tends towards the deductive. However, it is not possible as a researcher to take an entirely inductive approach because my research decisions are informed by my reading, whether consciously or not (Sikes, 2009). The next section justifies the choice of design.

### 3.3 Research design

As stated above the overarching framework for this study is sociocultural and the nature of the research questions means they can only be addressed through considering a defined culture or workplace; they cannot be answered by looking at several science departments, for example, as the culture of each would be different or by looking at one department over a sustained period of time where the individuals or the context may change. The study is of a defined context, in time and place, and taking a broad definition, case study “investigates a contemporary phenomenon in its real-world context” (Yin, 2013, p. 2). It is important to establish why other methods were rejected and what type of case study method has been selected.

### 3.3.1 Why case study?

In this section I further explain why case study design is appropriate and why I have rejected other designs appropriate to the interpretivist paradigm.

I am not able to do an ethnographic study which requires the researcher to participate in the department and immerse themselves in the practices being studied (Hammersley, 1992). A narrative enquiry would consider the individual stories, informed by phenomenology, of the lived experiences of the individual participants (Langdrige, 2007) but my study is more than that; the research questions, as described earlier, go beyond the individual to the interpersonal and institutional perspectives. Action research is inappropriate as there is no planned intervention or experiment to change the practice of the department (Cohen et al., 2007). A case study drawing on cultural historical activity theory (Douglas, 2014) was considered but the research questions are closer to an illuminative or descriptive case study described below.

Case study in educational research is the “study of a singularity in depth in natural settings” (Basse, 1999, p. 47). I am adopting this definition as the purpose is an in-depth study to explore and reveal in detail the culture or learning environment in the science department to support beginning science teachers. It is important for case study that the geographical and time boundaries are clearly defined (Basse, 1999; Cohen et al., 2007; Thomas, 2011; Yin, 2013); the study is located in one school, over a time period of two years, with a defined group of people. Case study is a widely used research design and in the next section I justify the type of case study.

### 3.3.2 What type of case study?

In this section, I consider a number of key authors on case study in chronological order to demonstrate the characteristics of my case study.

Parlett and Hamilton (1987) described a type of case study which was evaluative in nature but concentrated on “the information-gathering rather than the decision-making component of evaluation” (p. 71); they called this *illuminative*. This metaphor of shining a light on a case to reveal what has not been seen before and to evaluate through information gives what Thomas (2011) calls a *purpose* to the case study; I would argue my purpose is to illuminate the nature of the learning environment of the science department for beginning teachers.

It is important to state that this case study does not set out to be evaluative or to directly bring about change, what Bassey (1999) called an ‘action’ case study which has similarities to action research. The research questions do not evaluate the learning in the department. Bassey focused particularly on case study research in educational setting and suggested three types:

- Theory seeking or theory testing
- Story-telling and picture drawing
- Evaluative

I would suggest this study has something in common with the first two in that the conclusions do argue that the theoretical framework explored through RQ3 is appropriate. However, it tends more to story-telling or picture drawing in that a rich description of the sociocultural community of practice is described.

Finally, Yin (2013) described three types of case study: ‘exploratory’, ‘descriptive’ and ‘explanatory’ with a descriptive case study aiming to capture a complete description of the case or “phenomenon within its context” (p. 5) whilst an explanatory case study seeks

cause and effect relationships (a positivist paradigm) to provide explanation for why things happen the way they do. So this study would align with what Yin would describe as descriptive; and to summarise Yin, Bassey and Parlett and Hamilton this study is illuminative and descriptive.

These are also important methodological points showing that the methods, data collection and analysis are congruent with the interpretative paradigm and the sociocultural and phenomenological perspectives. Any meaning from research in the interpretative paradigm is interpreted through the social, cultural and historical context in which the study is located or situated (Hollway et al., 2007). These limits must be acknowledged and recognized. Bassey (1999) argued the importance of three things: the boundaries of the case, the integrity with which the data is analysed to reveal as much depth, richness, thickness as possible, and the description of the case so that it is recognisable by others familiar with the field. There is then the potential for generalization to similar cases (Bassey, 1999) and this point is developed further below. Stake, drawing on the earlier work of Louis Smith (n. d., cited in Stake, 1995, p. 2), also described the case as requiring a clear boundary and being in itself a system. Stake (1995) makes an additional methodological point focusing on the role of the researcher. It may be that the researcher is taking on a role as an advocate or biographer of the case, as an evaluator or interpreter within the research community using the case as a model. The researcher as advocate for the case could be seen as biased or in some way blinkered, but Stake argues that as long as the researcher is absolutely transparent in their own advocacy and the reasoning behind this, the readers will read the study through that lens.

This point is developed further in the ethical considerations below. Thomas (2011) suggests making the purpose of a case study clear; the purpose described above arises out

of my interest and expertise in science teacher training, what Stake would call an intrinsic case study. Simply put, it is an inquiry driven by interest.

There are tensions in the research community about generalizing from qualitative studies and in particular about generalizing from a small-scale case study. Bassey (1999) argues that it is important to be realistic about the findings and not to over emphasize their importance and that there are two situations where generalization is acceptable: firstly, to other similar cases and secondly when findings are exceptional and challenge previously accepted generalizations. He called these fuzzy generalisations. Stake (1995) similarly agreed generalisations were possible but used different terminology: those within the bounds of a case he termed 'petit generalisations' and the term 'grand generalization' where a case study reveals an exception to a previously stated generalization. Stake summed up the strength and weakness of case study methodology:

“We do not study a case primarily to understand other cases... The first criterion should be to maximize what we can learn” (p4) and later “we do not choose case study design to optimize production of generalisations.” (p8)

To summarise the research design of case study is chosen because it is a small-scale study of a clearly bounded case both in time and location. This is methodologically appropriate to the interpretative paradigm as the situatedness of any meaning created is acknowledged. This is a descriptive or illuminative case study that aims to describe the case in rich detail drawing on data collected over two years and I draw conclusions that Bassey would call 'fuzzy generalisations'. The aim is to describe and make explicit the nature of the case as a site of workplace learning, to understand it more fully and to learn about the issues and drivers operating within it.

### 3.3.3 The case

As described above it is important that the case is defined and bounded, “set in temporal, geographical, organizational, institutional and other contexts” (Cohen et al., 2007, p. 253). There is a time boundary of Sept 2013 to July 2015 and there have been changes or developments over that period so it can be considered a diachronic study, a study over a time period of 2 academic years (Thomas, 2011).

I now return to the nature of the site of this case study: the Science Department in Birchbrook School, and the participants who were all involved in initial science teacher training and were all, bar one, science teachers. I have chosen the particular school as a “local knowledge case” (Thomas, 2011, p. 76); I know the school well and it works in partnership as a host school for trainee teachers from my employing HEI. What makes it interesting and worthy of study is that it is a ‘typical’ mixed school hosting trainee teachers following the traditional fee-paying PGCE route and the School Direct route. The Ofsted grading of the school has recently moved from ‘Requiring Improvement’ to ‘Good’, while the rather dated local reputation means the school has often not been the first choice for admissions or employment.

For the purposes of this study the participants are considered a community of practice (Wenger, 1998) in that they have mutual engagement in the joint enterprise of training new teachers. Following reflection on early findings, the University tutor, the chief technician and the NQT mentors were also included.

### 3.4 Data collection methods

The methods of data collection were aligned with the research design of case study and appropriate to the overarching interpretative paradigm and phenomenological approach. The research questions focus on the experience of the beginning teachers (RQ1), the discourse about learning to teach (RQ2), the workplace learning culture (RQ3) and the impact of wider factors (RQ4). A wide variety of methods were used and extensive data was collected; the methods were chosen to collect data of the subjective lived experience of the participants in the department through interview, observation and documents.

Qualitative semi-structured interviews in the first cycle of data collection were planned with a clear structure and, on reflection, the most appropriate metaphor from Kvale and Brinkmann (2009) is 'interviewer as miner'. The questions are included in Appendix 2 and were planned around RQ2 (how is learning to teach articulated), RQ3 (models of workplace learning) and RQ4 (a specific focus on School Direct) and I approached the interview to collect information. Reflecting on the findings led to a review of the style of the second and third cycle of interviews where the metaphor of 'interviewer as traveller' is more appropriate and I hoped to allow the creation of new knowledge through a conversation (Cohen et al., 2007). These interviews were planned differently with prepared summaries of earlier interviews to prompt discussion. I asked fewer questions and used the prompt 'Can you tell me more about that' to provoke the interviewee to talk more and typically to more depth. The main purpose of the one-to-one interviews and observations in the second cycle of data collections was to gain insight into the unique lived experiences of the individuals within the "community of practice" (Wenger, 1998), experiencing the department as a trainee teacher, as a Newly Qualified Teacher, as a mentor, as a visiting University tutor or as a 'leader' of teacher training. This led to RQ1, asking about personal experience and taking a phenomenological approach and I wanted



to focus more on listening and allowing the interviewee to talk about a topic. The aim was that the interviews were more like conversations (Rubin and Rubin, 2005).

The location and situation of interviews are important to ensure participants feel relaxed and feel comfortable to contribute (Kvale and Brinkmann, 2009; Langdridge, 2007); quiet locations either in school or in my office were chosen and participants were reminded of their right of withdrawal at any time. The sample comprised those in the COP-beginning teacher: the beginning teachers (Sally, Paula, Jo), their mentors (Denise, Christine, Liz [also HOD]), the school-based professional tutor (Kathy), University based mentor (Chris), deputy head (Tasha), and the chief technician (Mary). School based interviews were time constrained but that was not a problem with any of the participants. I took time to reflect after each interview about how the interview went, particularly how I felt and how I behaved (Finlay, 2009) and my emerging thoughts; these thoughts are early analysis. I was very aware that I was a participant in the interview and my questions, my presence and my behaviour would affect what the participant said.

All interviews and observed mentor meetings were between 30 and 60 mins, digitally recorded and then transcribed by a research assistant. A variety of evidence has been collected to explore and illuminate the experiences of beginning teachers in the case study department from a number of perspectives. Bassey (1999) states that an educational case study should be supported by “sufficient data [...] for researchers to explore significant features of the case” (p. 47). I have been guided in my data collection by Yin’s four principles of data collection (2013). These are

- to use multiple sources of evidence,
- create a database of the evidence,
- maintain the chain of evidence and

- exercise care when using data from electronic sources.

These principles bring together the points from Stenhouse (1978) about maintaining a database and evidence chain and are rooted in extensive research experience of Yin to ensure the researcher has a credible body of data that is able to speak for itself.

A summary of each of the methods of data collection follows:

#### 3.4.1 Field observation

Field observation allowed access to the workplace being studied and the interactions between members of the community of practice, trainee teachers, NQTs, mentors and others. One full teaching day was observed in March 2015. I was based in the team room and observed from 0810-1540. I took photographs and made extensive notes.

#### 3.4.2 Focus groups

A focus groups of the three mentors, Denise, Christine and Liz, discussed their reflections on mentoring and being involved in the study. I asked few questions and their discussion triangulated with their one-to-one interviews. I carried out a similar focus group for the three beginning teachers, Sally, Paula and Jo.

#### 3.4.3 Observation of mentor meetings

Three mentor meetings were observed between Denise and the trainee teachers. The final one, which followed an observed lesson, included Chris the University tutor. I did not observe any mentor meetings between the NQTs and their mentors.

#### 3.4.4 Network maps and spider diagrams

Spider diagrams of the learning environment for trainee teachers were drawn by participants in year 1. I constructed network maps for each beginning teacher and mentor in year 2 drawing on the available data.

### 3.4.5 One-to-one interviews

Seventeen interviews were carried out over the two-year period. These were semi-structured interviews and the questions asked in year 1 focused on the learning environment for trainee teachers and in year 2 they focused on the experience of learning to teach and reflections on the workplace learning models I had introduced to the department.

### 3.4.6 Written documents

A plethora of written documentation was available to me: weekly reflections by trainee teachers, lesson plans, lesson observations, reports, email communications. In this thesis I draw on the regular reports on the progress of the trainee teachers and the NQTs and the emails between the Professional Tutor (Kathy) and the mentors of trainee teachers. These documents contribute to the discourse of the COP-beginning teacher and contribute to the research questions. Lesson plans are not part of the research focus. Data I did not collect includes emails and social media contact (Facebook, Twitter), mentor meetings between NQTs and their mentors because I did not know when they were going to be scheduled, nor the notebook each trainee recorded their classroom teacher feedback.

Here is a timeline showing the data collection events over the two years of the study.

**Table 3** Timeline showing data collection events

Year 1 Academic year 2013/14	Data collection activity
Sept-Oct 2013	
November 2013	One to one interview with Denise (mentor) One to one interview with Liz (Head of department) One to one interview with Kathy (Professional tutor) Observation of Mentor meeting between Paula and Sally (trainees) and Denise (mentor)
December 2013	One to one interview with Paula (trainee) One to one interview with Sally (trainee) One to one interview with Tasha (Deputy head) Observation of Mentor meeting between Paula (trainee) and Denise (mentor)

January – June 2014	
July 2014	Analysis of Written progress reports of Paula and Sally, trainee teachers,
Year 2 Academic year 2014/15	
Sept – Oct 2014	
November 2014	Observation of Mentor meeting with Jo, Denise and Chris
December 2014	
January 2015	One to one interview with Jo, trainee One to one interview with Sally, NQT One to one interview with Liz, NQT mentor to Paula One to one interview with Christine, NQT mentor to Sally One to one interview with Mary, technician
February 2015	
March 2015	One to one interview with Denise, trainee teacher mentor to Jo Field observation in the team room
April 2015	One to one interview with Jo, trainee One to one interviews with Sally, NQTs
May 2015	
June 2015	One to one interview with Chris, University tutor
July 2015	One to one interview with Jo, trainee One to one interviews with Paula and Sally, NQTs Written progress report of Jo, trainee teacher analysed Written progress reports of Paula and Sally, NQTs analysed Focus group with Liz, Christine and Sally, mentors Focus group with Sally and Paula (NQTs and Jo (trainee)

### 3.5 Data analysis overview

I collected multiple sources of evidence to provide a richness of detail and to allow triangulation of findings from different sources and also to allow a ‘convergence’ of findings from the different sources (Yin, 2013, p. 121). I developed a database of evidence, Yin’s second principle, to record and store the evidence as it was collected; to keep the data secure and importantly in its original form. My database includes the original digital recordings, the original transcripts, photographs, progress reports and other documents; I then developed a working set of data and documents that I developed during analysis including a large Excel spreadsheet that I used to record notes and quotations by theme.

Appendix 12 shows the notes and quotes worksheets in the Excel workbook. Any interpretation or reflection on the data has been kept with these working documents.

Yin makes an important point that the database of evidence and the case study report are two different entities. The database of evidence needs to remain unchanged and in Chapter 5 I analyse and discuss the findings. The data could be interpreted by others and it is important to show how I have approached the interpretation. This has allowed me to return to data sources many times in the light of emergent themes; I have included my research diary and reflective/reflexive writings as well as these show how my research questions developed, how theory prompted a review of ideas and at times re-evaluation of next steps, and how I have returned to the original data as themes have emerged. It is important to show how the process of collecting the data may have at times influenced what I collected whilst the data itself remains a true record.

Thomas (2011) similarly suggests maintaining a database of raw data but he recognizes that as a researcher you start to sort and 'interpret'; this is a stage of analysis before report writing and these materials should be described as working documents separate from the raw data. This database of raw evidence also offers a clear timeline or chain of evidence which again contributes to the reliability of the findings. Here reliability is interpreted in this qualitative study as the true record of what steps and actions were carried out and the reasoning behind decisions during data collection.

### 3.5.1 Data analysis methods

It is important to keep the purpose of the study in mind when considering the overall approach to data analysis. This is a case study that is illuminative and descriptive and the

purpose is to address the research questions and develop a rich case description of the science department as a site for workplace learning for beginning science teachers.

The study of the lived experience of the beginning teachers and their mentors includes a wider study of the culture of the department, which is partly revealed through the lived experiences of these participants; other data sources contribute to the rich case description such as the progress reports written for the trainee teachers and the NQTs.

A constant comparative approach to the data (Cohen et al., 2007; Thomas, 2011) is an iterative process based on content analysis whereby themes are explored both deductively and inductively. This approach of exploring themes (deductive) or eliciting themes (inductive) has been used. The detail of how this was done is explained in the next section. The entire data set was analysed in this way sorting the data elements according to research question. Initially notes were recorded and then an additional dataset of quotations from the recorded interviews was also compiled including page references (see Appendix 12).

Different approaches to the data are taken to address each research question; RQ1 focuses on the lived experience of the beginning teachers and RQ2 focuses on the language used to describe learning to teach and again considers how the members of the COP-beginning teacher describe their lived experiences. The methodology of phenomenological psychology is used and the data analysis methods of interpretative phenomenological analysis (IPA) (Denovan and Macaskill, 2013; Langdrige, 2007; Smith et al., 2009) and template analysis (Amos, 2014; King, Carroll, Newton and Dornan, 2002; McLachlan et al., 2012) were explored. RQ3 and RQ4 use theory to interpret the data, the theory of workplace learning and the impact of the wider policy context on the workplace learning

environment. So, the data analysis has been informed by the theoretical and conceptual framework of adult learning and workplace learning particularly that sited in English secondary schools and science departments; this has informed the deductive analysis. The data analysis approach adopted also allows for emergent themes and an iterative cycle of analysis which is shown in Figure 4 and described below.

The data analysis has been informed by phenomenological psychology which recognizes how we are embedded in language and social interaction such that once something is experienced it is interpreted, “we experience a thing as something that has already been interpreted” (Finlay, 2009) An interpretative approach recognises that researchers are not blank slates but bring theoretical ideas and concepts to the analysis. In this context of interpretive phenomenology, thematic analysis (Langdrige, 2007) requires the researcher to spend considerable time with interview transcripts to identify major themes; it is an inductive and iterative process that requires the analyst to be very aware and critical of their own preconceptions that may influence the analysis.

IPA uses similar data analysis processes to thematic analysis but the research questions have a focus on how people perceive lived experiences; it is again an inductive approach. An example is the study of Denovan and Macaskill (2013), where the findings were initially analysed around a priori preliminary themes; further analysis elicited sub-themes.

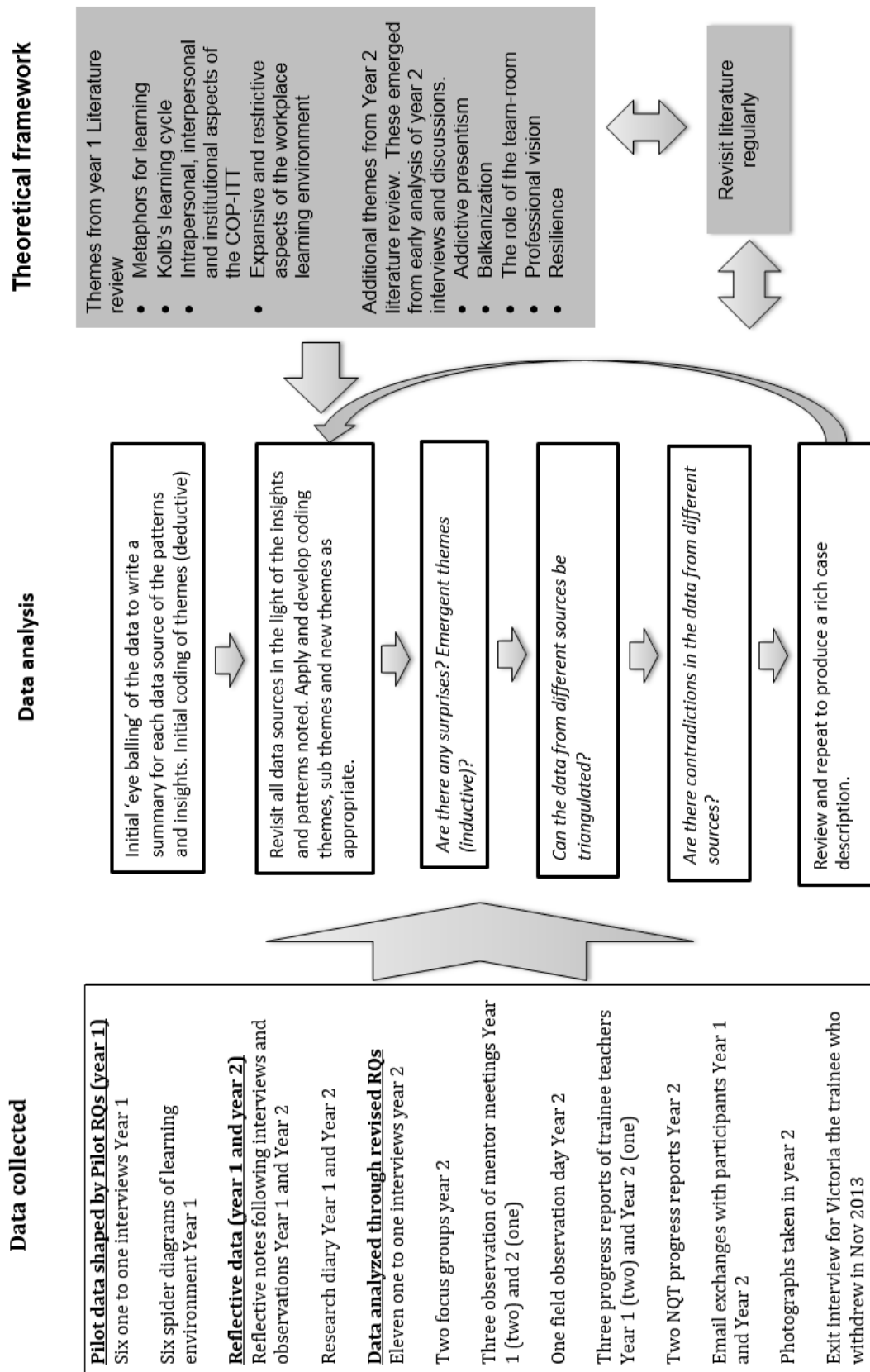


Figure 4 Overview of the data analysis approach



This is an example of a study that shows how the database of evidence was compiled, the timeline of decision making and the reflexivity of the researchers. It also shows how themes and sub-themes emerge from the interview data. This process was adopted and Appendix 12 shows the database of evidence.

Template analysis is an approach developed by King (King et al., 2002; McLachlan et al., 2012) that is not entirely inductive as identified themes are used to code the data, analysed from a wide variety of sources.

Case study is a common research approach for small scale studies in education such as this and I have adopted a data analysis strategy as recommended by Yin (2013). His four strategies of data analysis are:

- Relying on theoretical propositions
- Working data from the ground up
- Developing a case description
- Examining plausible rival explanations (Yin, 2013, p.136-142).

So my intention was firstly to analyse the data deductively and to take a thematic analysis approach based on specific theoretical propositions which is the first strategy above. Secondly to take an inductive position and work with the data from the ground up, similar to a grounded theory approach. As this study is situated in a very particular context of policy changes and my professional experience, it is not possible to have a completely inductive approach because of the preconceptions informed by the theoretical, research and policy literature that I bring to the data but there is the opportunity for unexpected emergent themes. Thirdly, I have the intention to develop a case description. Finally, it is important to examine the data for plausible rival explanations. This is particularly

important for a small scale study in a familiar context for the researcher; there is a risk that the researcher will find what they expect to find (Bassey, 1999) and steps were included to increase the validity of the findings and prompt plausible rival explanations. These steps were to share my emerging interpretations of the data with peers and colleagues formally (at ATSE and BERA conferences and with my research group, 2014) and informally with colleagues and the participants. I shared summaries of the one-to-one interviews with each of the participants.

The strategy adopted for analysis involved looking for “patterns, insights and concepts that seem promising” (Yin, 2013) and also to work with the data in a variety of ways such that familiarity and the iterative process of looking allowed more themes to emerge, including some surprising insights that could lead to rival explanations. This iterative process is summarized in the central column of Figure 4 above.

At times, Yin’s approach to data analysis tends to a positivist approach with reference to variables and precision. Bassey (1999) describes educational research as a creative activity and a systematic activity; he proposes that analysis is condensing raw data to meaningful statements which he calls “analytical statements” (p70). He similarly describes analysis as an iterative process where the analytical statements are coded and cross referenced to one another and also to the research questions so that many analytical statements can be reduced to few second level analytical statements that are in accord with the data. This is the process that was used to derive statements from the data to build up a rich case description, referenced to the research questions, considering the themes but also being open to new creative strands to emerge from the data, the inductive approach to analysis. The iterative process leads to what Stake (1995) calls categorical aggregations, similar to the second level analytical statements of Bassey, where the researcher is looking for correspondence and patterns and Stake acknowledges that the

best data needs to be identified and studied and the rest set aside. However, he also acknowledges that early direct interpretation of the data as it is collected (or shortly after) can also contribute to the analysis. My research diary and reflective writing includes early direct interpretation and this has been referred to at times in order to challenge and stimulate rival explanations as suggested by Yin (2013). Similarly, the data that has been set aside has also been reviewed at a later date to ensure that the emerging findings are in accord with all the data and again to stimulate rival explanations. It is argued that validity, or perhaps integrity, was achieved through these steps to ensure that there was coherence in the description of the department that emerged. A discussion of validity and reliability is in section **3.6 Research quality**.

### 3.5.2 Discussion of the theoretical framework and the research questions

Table 4 summarises how the theoretical themes map onto the research questions to show that each research question is addressed and how it is answered (these are on the right hand side of Figure 4 showing an overview of the data analysis process).

**Table 4 Mapping the research questions to the theoretical themes**

Research questions	Themes
RQ1 What is the nature of the learning environment as experienced by beginning teachers?	Resilience (Fletcher and Sarkar, 2013; Johnson and Down, 2013; Mansfield et al., 2014; Price et al., 2012) The role of the team room (Childs et al., 2013) Balkanization (Hargreaves and Macmillan, 1992) 'Lived experience' emergent from the discourse in the interviews (phenomenological approach)

<p>RQ2 How is 'learning to teach' articulated by members of the science department including beginning teachers and their mentors?</p>	<p>Metaphors for learning (Hager and Hodkinson, 2009; Sfard, 1998)</p> <p>Kolb's learning cycle (Kolb, 1984)</p> <p>Professional vision (Goodwin, 1994)</p> <p>Learning theories</p> <p>Language of learning emergent from the discourse</p>
<p>RQ3 How do models of work place learning reveal the culture of learning in the science department?</p>	<p>Intrapersonal, interpersonal and institutional aspects of the COP-beginning teacher (Rogoff, 1995)</p> <p>Typology of early career learning (Eraut, 2007)</p> <p>Expansive and restrictive aspects of the workplace learning environment (Evans et al., 2006; Fuller and Unwin, 2003; Hodkinson and Hodkinson, 2005)</p>
<p>RQ4 What are the wider factors that are affecting the learning environment for beginning teachers?</p>	<p>Performativity (Ball, 2013)</p> <p>Resilience (see above)</p> <p>Addictive presentism (Hargreaves, 2010)</p>

A spreadsheet was used to track my data against each of the themes and this is included in Appendix 12. As each data element was analysed I returned to the spreadsheet and added notes including quotations. This became an iterative process as notes on one data element would stimulate thinking about a developing theme or stimulate me to double check where findings seemed to triangulate. I followed up on particular themes or experiences from one type of data to another; for example, the theme of resilience came up strongly in the mentor focus group which led to me revisiting each of the one-to-one interviews and then the final end of year reports for the NQTs and the trainee teacher.

### 3.5.3 Discussion of data elements and how they were analysed with reference to particular research questions and themes

I have collected data from the department over a period of two academic years and nearly two calendar years and, as is common for case studies, there was a large amount of data. The strategy to analyse the data and how the strategy will answer the research questions is described above. The study considered the science department as a whole as a site of work place learning for beginning teachers. I have grouped the mass of data for the purpose of analysis to address the research questions into types of data. The experiences of individuals within the department contribute to the case description of the department as a site of workplace learning.

The data from Year 1 was revisited in the light of the findings in Year 2. This was to triangulate findings and particularly to challenge findings and stimulate rival explanations. It is important that any analytical statements emerging from the Year 2 are also explored in the data collected in year 1. This contributes to the validity of the findings.

It is also an important ethical position that all data contributed by the department was considered (The Open University, 2013) while balancing this with Stake's reminder to identify the best of the data and set the rest aside (Stake, 1995); referring back to the data of year 1 was a strategy to check that the best had been identified and a more informed decision of what to set aside was made.

The research questions were mapped onto the data elements and this was used to guide the analysis strategy for each data element and is shown in Table 5 below. A brief description of the data collection process for each element is given below.

The **one-to-one interviews** in year 2 were designed to explore the experiences of individuals within the department and as members of the COP beginning teacher (what it was like to be a learner within the science department or to have a role in supporting those learning to teach) to reveal the complexity of the sociocultural workplace learning environment particularly focusing on the intrapersonal and interpersonal levels of analysis.

The **two focus groups**, of mentors and beginning teachers, were carried out towards the end of the data collection (at the end of year 2) and particularly contributed to the interpersonal level of analysis. I also asked both focus groups to reflect on their involvement with the research and how it affected them and their views on learning to become a teacher. The questions were posed in a way that would provoke discussion and to explore how learning to teach was articulated. I checked the input I made into the discussions and I asked very few questions and the questions were to keep the focus on learning to teach.

The purpose of the **field observation day** was to experience a day in the 'team-room'; this room was clearly the heart of the science department and where the vast majority of teachers return after teaching (except for Jonathan). The technician, Mary, also spent a great deal of time in this room. This day gave an insight into the network of professional relationships and the culture of the department. There were also discussions that were 'vignettes' of learning conversations. This day was recorded almost entirely in my words through on-site note making and this was strongly influenced by theoretical themes that had previously been identified. The day of observation did seem to be typical and particular themes those arose in the one-to-one interviews of the science team were discussed or enacted.

I had access to a wide variety of **text documents**: lesson plans, lesson evaluations, weekly reflections on progress for trainee teachers and also reports written by the visiting University tutor. Most of these documents, while interesting, did not contribute to the main research question about the learning environment experienced by the beginning teachers in the science department. It was also important to focus on the best of the data as Stake recommends (1995). I have selected only text documents that were jointly constructed by the mentors with the beginning teachers. These were the regular reports on the progress of the NQTs (written termly) and the progress reports for the trainees (again termly). It was clear from early interviews with Kathy, the professional tutor and Tasha, the deputy head, that the school did not have additional policies separate to those of the University relating to teacher training. The written reports also included contributions from Liz, the HOD, and Kathy, the Professional Tutor. These were analysed using discourse analysis.

The observations of **mentor meetings** recorded learning conversations in action. These were analysed mainly by using the techniques of discourse analysis. These were initially deductive using the themes of the research questions of the pilot study and themes that came to the fore in the early months of year 2: resilience, balkanization and addictive presentism.

I cross referenced each data element against the four research questions to ensure that the data collected were contributing to the research questions posed and also to check that the research questions were appropriate to the study. This review process was also iterative as the data analysis proceeded and resulted in modest revision to the research questions particularly RQ4. When I initially framed by area of interest I was motivated to

explore the potential impact of the introduction of School Direct as a policy change; it was clear that this was a weak focus for RQ4 and I amended it to 'wider factors' which ensured that it encapsulated the institutional level of analysis. This revision arose out of the iterative review of the data, the emergent findings and reflexivity as a researcher; my preconceived beliefs about School Direct.

At the start of the data analysis I was uncertain whether the data collected in year 1 was relevant to the study and used this mapping process to check how it could be incorporated. This is shown in Table 5. The data collected in the Year 1 one-to-one semi-structured interviews, including the spider diagrams drawn by the participants, were shaped by the questions I asked; these questions were structured around my early research questions. The participants described aspects of the learning environment that indicated that they would recognize an expansive learning environment but I did not explore whether what they experienced was expansive or restrictive (Fuller and Unwin, 2003). This research question, exploring the 'lived experience' of those in the department was added to the study and the interviews and focus group included questions about the experiences of the participants.

I have separated my own reflective notes and research diary as these include my early thoughts on data analysis; the purpose of the notes was to capture my lived experiences of being a researcher. These notes are important for the phenomenological approach to the data collection.



Table 5 Data collected mapped onto the research questions

Data collected	Research questions
Pilot data shaped by Pilot research questions (year 1)	
Six one-to-one interviews Year 1	RQ2 RQ4 partly
Six spider diagrams of learning environment Year 1	RQ2 RQ4 partly
Reflective data (year 1 and year 2)	
Reflective notes following interviews and observations Year 1 and Year 2	RQ1 RQ3
Research diary Year 1 and Year 2	RQ1 RQ3
Data analysed through finalised RQs	
Eleven one-to-one interviews year 2	RQ1, RQ2, RQ3, RQ4
Two focus groups year 2	RQ1, RQ2, RQ3, RQ4
Three observation of mentor meetings Year 1 (two) and 2 (one)	RQ1, RQ2
One field observation day Year 2	RQ1, RQ2, RQ3, RQ4
Three progress reports of trainee teachers Year 1 (two) and Year 2 (one)	RQ2
Two NQT progress reports Year 2	RQ2
Email exchanges with participants Year 1 and Year 2	RQ2
Photographs taken in year 2	RQ1, RQ3

### 3.6 Research quality

It is methodologically important that the issues of quality or integrity in the research are considered. It can be broken down to validity and reliability, where validity is the extent to which the account represents the social phenomena to which it refers (Hammersley, 1990) and reliability refers to the degree of consistency with which instances are assigned to the same category by the same researchers or by the same observer on different occasions (Hammersley, 1992).

Reliability is a contested notion in qualitative research (Bryman, 2008; Cohen et al., 2007; Silverman, 2013) so I have strived to ensure that this case is recognized as typical. I have done this by discussing my developing research with my peers to ensure that some degree of generalisation to other similar cases is possible (Bassey, 1999) and I report on this in the discussion chapter. Bassey stated that where a case study is carried out without integrity there is a danger that a fiction is created rather than opening a window onto a unique setting. Concerns expressed by Stenhouse (1987) about case study were based on his perception that the underpinning data were not fully accessible to educational practitioners and researchers and that this could have an impact on the perception of educational research generally. He was influenced strongly by the dominant positivist perspective at the time and he argued that case studies should include a 'case record' so that others could repeat the study or scrutinize the veracity of the claims. His main concerns here were about validity and reliability. However, his proposal for a 'case record' can be challenged because the fleeting, transient nature of qualitative research, which is bound to its context of time and place, cannot be reliably repeated; a case study captures some key moments in vivid detail and a separate case record is not necessary. The detail in the case study research should itself state the nature of the case, the research questions,

how the data were collected such that it has validity or perhaps a better term is 'fidelity' to the researched case (Cohen et al., 2007, p. 135).

Thomas (2011), Yin (2013) and Cohen et al. (2007) have different views about validity and reliability of findings in case study. Yin suggests that the database of the case study evidence would lead another researcher to the same findings but much of his work is quantitative and positivist. Thomas is perhaps more realistic in rejecting positivist notions of reliability and validity; they are not useful as there is no expectation that the findings could be reproduced by another researcher drawing on the same database of evidence. Instead, for Thomas, quality in a study such as this is demonstrated through making explicit the expertise and experiences of the researcher that shape the decisions made over the period of the study, that informed the original identification of the research questions and the areas of interest and to allow the reader to see how the findings are shaped by this subjectivity.

Yin (2013), Stake (1995) and Thomas (2011) do agree that steps should be taken to allow the reader to see how the study has been carried out. They agree that many types of data are collected and that each is recognized for its limitations and biases. For example, for each document used noting who wrote it, for what purpose, for what audience, when and how was it written; for each interview recognizing that the questions are shaped by the researcher and the responses will be influenced by the relationship between the researcher and participant; in summary being honest about the biases and gaps at each step of the process. Taking this position, the database of evidence shows how the researcher arrives at their findings; it is a transparent record making plain the biases that are as a consequence of the researcher's experience and expertise; this is a version of validity and reliability. Transparency in the language used in the study ensures it is

accessible to the intended audiences who may in this case be teachers and practitioners in school, not necessarily educational researchers.

Another way to demonstrate validity is triangulation of data, where data is drawn from a variety of sources or perspectives in the study. This is described by Yin (2013) as the “convergence of evidence” (p. 121); this is perhaps easier to picture. Thomas (2011) reminds us that triangulation is about looking at the data from different directions or perspectives. Stake (1995, p. 87) offers a list of actions of a case study researcher to assist in the ‘validation’ of naturalistic generalisations which includes “accounts of things that readers will already be familiar with so they can gauge the accuracy, completeness and bias of reports of other matters” and “describe the methods of case research used in ordinary language including how the ‘triangulation’ was carried out”. These actions contribute to the transparency or integrity of the data rather than validity as defined above.

### 3.7 Ethical considerations

#### 3.7.1 Ethical processes

Ethical consent for this study was sought from the Open University Human Research Ethics Committee and a favourable opinion was received in October 2013 (see Appendix 3). Through an information sheet and consent forms, I ensured participants would be able to give informed consent, be aware that they are able to withdraw at any stage and how data would be stored and eventually destroyed. These were signed at the first interview and stored securely and examples are also in the Appendix 3.

However, these were not the ethical issues that concerned me during the study. To some extent the moral principles guiding research practice have become trivialized and proceduralized into form filling and meeting well described expectations (Rossman and Rallis, 2010, p. 380). This is what Floyd and Arthur (2012) call “external ethical engagement” (p. 3) which can be easily attended to; “internal ethical engagement” is more challenging and includes the ongoing moral and professional dilemmas of researching those with whom I have professional and personal relationships.

### 3.7.2 Insider researcher

At the time of the data collection I was a science teacher educator and training (and had trained) some of the participants and worked as a “colleague” alongside all of them. It was clear from the first cycle of the data collection that whilst I was not part of the science department in the school, I was part of the “community of practice - beginning teacher”. My advice was sought several times during the course of interviews, situating me in my ‘work’ role rather than my researcher role.

My relationship with the school and the participants is also likely to continue beyond the scope of the study. Floyd and Arthur (2012) say that challenge of being an insider researcher are longer term for those EdD researchers who are researching their own practice and the practice of those with whom they work and will continue to work. They urge “researchers from the outset to consider the issues that are raised such as ongoing professional relationships, acquisition of dangerous knowledge and the need to protect anonymity of respondents in the long term future” (p. 8). This raised questions for me such as ‘is it possible for the school and the individual participants to remain anonymous in the future?’ and ‘what would be the consequences if that anonymity is compromised?’

I am also aware of the power relationships between the researched and the researcher (Sikes, 2009) particularly for the trainee science teachers' conscious of my role as the course leader. I reassured them that my work as a researcher was separate to my work as course leader; I reminded all participants that I was keeping the site and participants in my research anonymous to my work colleagues. Sikes (The Open University, 2013) also raises the issue of using the data collected purposefully; this influenced how I regarded the data collected in the first year which led me to review my research questions. I revisited the early data in the light of the revised questions and I have incorporated it into the dataset where relevant. I agree with Sikes that it would be unethical to take up the time and effort of the participants and then set aside their contributions.

### 3.7.3 Researcher reflexivity and positionality

**“Reflexivity** is an important but contested and complex concept. Put simply, it is an explicit self-consciousness about the researcher's, or research team's and/or the research funder's social, political and value positions in relation to how these might have influenced the design, execution and interpretation of the theory, data and conclusions” (Griffiths, 1998; Greenbank, 2003 cited in Griffiths, 2009, p. 17)

Positionality is the researcher making clear their biases; these may be through class, race, age, ethnicity, sex, education and other cultural factors. Reflexivity is the process of the researcher making this clear for the reader (McDowell, 1992). Paraphrasing Langdridge (2007), reflexivity is an essential component of the researcher's approach so the researcher needs to be conscious of and reflective about the ways in which their questions, methods and own subject position might impact on the knowledge produced in the research study. The researcher is not a detached observer in search of an objective truth. An interpretative approach seeks to recognize the ways that knowledge is co-constructed and the researcher seeks to recognize what they bring to the study via their

questions and choices and how this affects how the experiences of the participants are recounted (Langdrige, 2007, p. 59). Langdrige poses reflexive questions to aid the researcher and I used these to provoke reflexion at key points in my study.

My reflexivity has developed over the period of my study and had an impact on my work as an educator particularly how I work with mentors and how I frame my work and knowledge in relation to their work and knowledge. I am more aware of how I have changed since being a teacher in a secondary school and also how I was still thinking of that as my primary identity; however, I can see that my identity as a secondary teacher is based on dated notions, school based work practices and expectations have changed, and I need to take care not to assume that I understand the school as a work place in the way that I did when I was definitely an insider. My interpretations of school reality may be using outdated memories (Kamler and Thomson, 2014). While allowing for the long shared history and intimate involvement with the case study department I must not inflate the amount of common knowledge that may be assumed (Berreman, 1987 cited in Hellowell, 2006)

Moving onto consider the ethic of care: this is a moral principle that informs all relations and decisions during research (Rossman and Rallis, 2010) and research itself can be regarded as reflexive practice. An ethical and competent researcher cares about her participants. My developing reflexivity has also characterized my journey; I have moved from being concerned about the developing relationships with the participants to recognizing that it shows the relationship with the setting is maturing and how that may lead to more authenticity in the findings. Fuller (2012) noted that participants and researchers need to connect with one another on some intrinsic level and “our overlapping biographies are important to our developing relationships” (p. 183).

### 3.8 Summary

This chapter of the methodology and research design of case study makes clear that it is an interpretative and qualitative study. The next chapter gives the findings from the data collected and selected by one researcher, me. My motivations and approaches have been included to enable the reader to consider the findings that follow through my eyes.



## 4 Findings

### 4.1 Introduction

This chapter of findings is a selection from the extensive data collected over two years; this is summarized in Table 1. I have selected data for this chapter that both constructs a coherent picture of the sociocultural environment of the department and focuses on the main and subsidiary research questions. It is important to recognize that this process of selection and the resulting 'picture' created from the data are inevitably subjective and one of many pictures that I could have created. I have tried to ensure that this picture remains true and recognizable by the individuals who have participated in the study; this is important for an illustrative and descriptive case study (Bassey, 1999; Parlett and Hamilton, 1987). I have checked this by revisiting the original data and by sharing sections of the findings with those who participated and then considering their feedback. A summary of the first interview was shared with participants at the start of the second and I showed each participant the summary of their interview data included in this chapter. Kathy was the only participant who made a negative comment saying that it did not say much about what she did prompting me to revisit her transcripts.

Given the potential for the amount of information and the number of individuals in this study to be overwhelming, I have organized this chapter into sections to give a narrative structure with the intention to aid building a picture of the department, to create a rich description for the reader. It is important that a descriptive case study of one case presents the data in a way that the findings could be recognisable by others familiar with the field. There is then the potential for generalization to similar cases (Bassey, 1999). This chapter of findings is presented in the style of a rich case description for this reason. It starts with the field observations of the department to give an overview of the department and the team; the sections that follow drilling down in a structured, but not

chronological, way to allow the complexity of the sociocultural environment to unfold.

The sections are as follows:

- Field observation in the team room
- Focus group of beginning teachers
- Focus group of mentors
- Observations of meetings between trainee teachers and the mentor
- Network maps and spider diagrams
- One-to-one interviews:
  - with beginning teachers
  - with mentors
  - with others in support roles
  - with senior staff
- Written documents noting beginning teachers progress

Appendix 4 gives brief biographies of the participants.

## 4.2 Field observation in the team room

This took place one day in late March 2015. The team room was the work base for ten teachers with space for a 'guest' where I sat. I recorded activities and my reflections in my notebook, remaining in the team room except to interview Denise and to take photographs in the corridor outside the team room (see Appendix 6). I mapped the floorplan but did not visit lessons. I arrived at 8am and left at 3.40pm. I typed up my notes afterwards and I have summarized the day around emergent themes: department work; pastoral work; social; food and drink; filing visits by Mary, chief technician; Jo's learning (trainee teacher); Paula and Sally's learning (NQTs); visitors.

The team room used to be a science lecture theatre, with a disused demonstration bench and fume cupboard, and is roughly the size of a typical secondary classroom, approximately 7m by 8m. Figure 5 shows the layout of the room. The trainee teacher and two NQTs had the same sized workstations as those established teachers who used the team room as a base. Three teachers did not have workstations; two senior staff, Tasha and Greg, had offices and one part-time teacher, Jonathan, worked in his classroom. The Head of Department, Liz, had an office in addition to a workstation in the team room.

There were two computer stations by the window, a fridge, a microwave and the disused demonstration bench for making tea, siting the two coffee machines and placing 'shared' food. There was a table with a guillotine, eight four-drawer filing cabinets and six sets of shelves. There were bags, boxes or stacked papers under all desks and most desk surface was covered with stationery such as books, worksheets or papers. There were three additional computer workstations on desks. Photographs of the space in appendix 7 show it to be crowded, cramped and equipped to serve a variety of purposes.

During the day there were conversations that I have categorized into social and work with work sub-divided further into department 'curriculum' based or pastoral. Examples of the conversation topics are given below and these illustrate how at times the room became a 'living space' with eating, socializing and personal grooming and at other times a typical work space.

#### 4.2.1 Department work

A summary list of 'curriculum' conversation topics follows (with repetition indicating that these were separate conversations): moderation, exam paper marking, practical PSA (Practical Skills Assessment – post 16), practical work for PSA, room swaps, UMS marks

(Uniform Mark Scale), mark schemes, recording marks on the system (electronic datasheets), assembly, biology and physics PSAs, teaching style in a lesson, amanuensis for a pupil, malfunctioning computer, the fate of the broken computer, syllabus, an ISA (Investigative Skills Assignments - GCSE) practical, Easter holiday session for year 13, email text for potential Physics teacher, numbers for year 12 Biology next year, review of year 11 groups linked to tier of entry, minibus driving, a chemistry lesson with trainee teacher, lesson observations of NQT, how to teach to 'tick boxes' when observed by leadership team, pupil premium, marks on the computer, ISA marks, missing ISAs, who needs to do particular ISAs, when pupils can do ISAs, speaking to students about their ISAs, a mark-scheme, discussion of a physics lesson with trainee teacher, chemistry interviews tomorrow, PSAs going on tomorrow, Biology qualitative PSA, Badger tasks, types of graphs.

#### 4.2.2 Pastoral work

A pupil who is becoming more confident, a child who needs to do a detention to catch up his ISA, a home visit, support for another pupil, "life assistance" (a heart-to-heart with a pupil about their learning), student X who comes for help with his personal statement and also gets personal grooming advice, 6th former who pops in for advice and banter, student X talks about his forthcoming operation and his hair.

#### 4.2.3 Social

Meal out next week, growing up, babies and names, Tessa's pregnancy, Liz's early morning swim, hair drying, multi-coloured biro, money for the coffee machine, arachnophobia, the attraction rating of a physics teacher applicant, what you have to put up with in here, baby names, families, very personal topics, tumours, Facebook.

#### 4.2.4 Food and drink

Eating/drinking in the team room: coffee, coffee, coffee, coffee, crème egg, soup, apple, soup, Ryvita, Hula Hoops, soup, soup, nuts, kettle. Eating was often 'grazing' with several

staff having sandwiches out of lunchboxes at lunchtime. The team room was the 'dining room' for most of the department. The main school staff room is a very short walk along the corridor.

#### 4.2.5 Filing visits by Mary, chief technician

Twelve occasions where Mary was working with files, filing cabinets and assessments. Three other times there was reference to files and ISA/PSA tracking on the computer.

#### 4.2.6 Jo's learning (trainee teacher)

There were two exchanges between Jo (trainee) and two teachers, Tessa and Christine, neither of whom were her mentor. The first was 14 minutes long and was based at the computer on Colin's desk. There was talk about the science content, the structure of the lesson and activities to include in the lesson.

Christine and Jo talked about a physics lesson after lunch and this exchange was about 20 mins. Christine suggested a 'teacher starter' and then "let them get on with it". They both popped out to look at something in the prep room and then came back and worked on a behaviour plan. Later it was clear that they had moved on to how to manage the learning using learning checks. Jo returned to the window computer and about 23 mins later she told Christine she had sent her an email about the lesson. She asked Christine to do a formal observation of her as she needed evidence of progress checks (opportunities where the teacher checks pupil progress or learning in the lesson). She needed evidence and did not have enough. Christine said that what she needed to show was independent learning.

Jo talked to me about how she was 'adding stars to her lessons' and starting to use Ofsted criteria more. We discussed these criteria and Jo felt she had made progress as she was

now able to use the Ofsted criteria, the same criteria used by others in the department and I prompted her to tell me why a lesson would be 'Good'.

#### 4.2.7 Paula and Sally's learning (NQTs)

Liz talked with Paula about a follow up observation needed after Paula had an observation by the Headteacher that was judged to be 'Requiring Improvement (RI)'. Liz praised both NQTs ("they have been such good girls") and told Paula that she was a good teacher and that "all we need" was for Liz to get the evidence and the identified issues would be fixed.

"You are not an RI teacher in any shape or form." (Liz)

Liz wanted an observation tomorrow and she wanted Paula to focus on pace and what to improve on.

"Can't you just tell them something to improve on? You just need to learn to show you are a good teacher." (Liz)

Later Liz said that Paula needed to learn about the dialogue when you are observed.

"You need to tick the boxes." (Liz)

Sally was in the team room for short periods: before school, break, lunch, and after school. She did not work at her desk as she chose to stay in her classroom to get things done; she typically found the team room distracting. At the beginning of the day she told me that she got a 'strong Good' in an observation by the Head followed by an RI from her mentor, Christine. At the end of the day she talked about the use of the revised Ofsted grading and the effect of having an RI grading. She said it would lead to an opportunity for more learning which she was positive about but it would also result in a negative mark on her record. She wanted to learn but was fearful of the negative feedback.

#### 4.2.8 Visitors

Several people pop in briefly for pastoral reasons, for example an update on a pupil, and one came for seasoning for soup. A senior colleague came in to talk about the timetable

for next year with Liz and Christine. Several post-16 students came in to discuss exam papers and there was a relaxed warmth in the relationships. Older students came in to the room if the business was science. There was an incident in the morning where a first aider was talking with an injured child in the corridor and then in the anteroom. This was ignored even when the staff member came in and asked about a first aider.

#### 4.2.9 Photographs taken during field observation

The photographs in appendix 7 show little space for each teacher in the team room. Desktops were covered in files, papers and personal effects including food and drink. Under the desks was crowded with personal belongings such as shoes, boots and bags and also stacks of exam papers. There was little space in the room that also held eight filing cabinets that were accessed many times during the observation day by Mary the technician. Photographs of the corridor show clean, well-organized displays giving a positive and inclusive view of science and study of science.

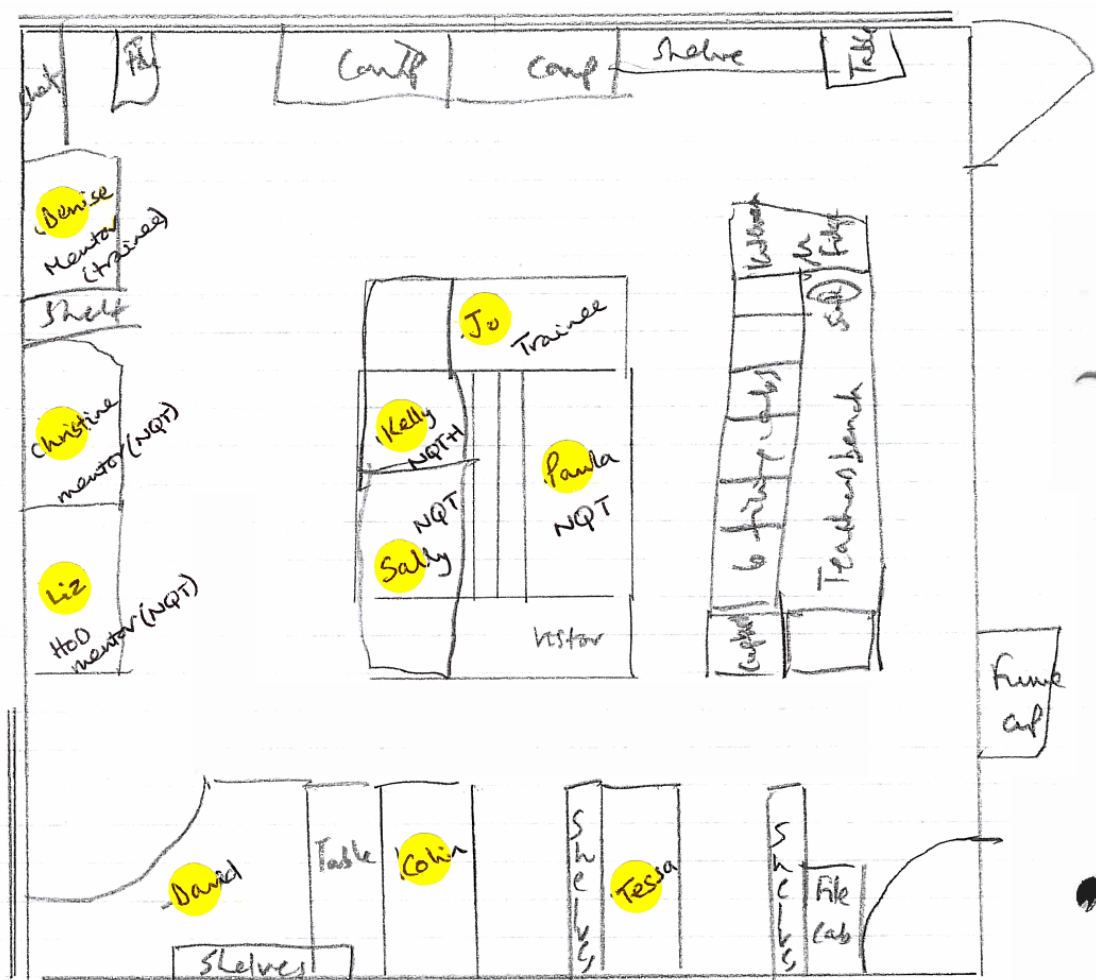


Figure 5 A sketch of the team room

#### 4.3 Focus group of beginning teachers

The focus groups in July 2015 included **Jo** who had finished her training and was now employed by Birchbrook, and **Sally** and **Paula** who were completing their NQT year. I recapped the focus of the study (learning to teach science here) and asked what it was like to be involved in the study, had it made a difference? During the course of the interview I asked “did your mentor make the most difference to you?” and “what helped you learn?”

They each talked about their assigned mentor and the help and support they had received from them. The mentor was not typically the main source of help and support and they



named a wider network of teachers with key individuals emphasized (see network maps in Appendices 8 and 9 and below). However, they each attributed some key learning to their mentor. They all followed the required meeting and reporting routines although writing the NQT reports was a chore particularly for their mentors. Paula says that the time taken writing reports would be better spent observing her teach and giving straight-forward improvements on what she needed to work on.

“Who is going to read these things? Genuinely?” (Paula)

They all agreed that it was good to talk to someone who was not their school mentor and agreed that you needed to be careful what you say to your mentor (whether as a trainee or NQT) as it may be seen as you not coping or a cause for concern and when talking to each other there was no danger of being called a tell-tale.

“We have kept each other afloat this year, haven’t we.” (Sally)

They also used the opportunity to appreciate how they had helped each other: Jo and Paula told Sally how much she helped them both. All three agree that talking is very important to them but Sally finds written reflection helps her see how she has progressed. They all describe the process of reflecting with those that ‘get’ where they are ‘at’ as useful.

Sally found the reflective process useful while Paula found it pointless. This led to an exchange about their different approaches to a planned NQT observation by their mentor or leadership team: Paula said Sally over prepares while Paula does nothing differently because she wants feedback on what she ordinarily does. Sally said that through the in-depth planning for observation she had developed some standard lesson structures.

Jo referred back to a crisis (her ‘wobble’) she had in March where she got advice and was able to talk things through; writing did not help her. She doesn’t get the whole write-it-

down thing. She needed to talk it through and named several in her network of support who helped at this point. Paula said that she wondered if people wrote down what they thought others wanted to read, and the same with providing evidence for their portfolios. They all found looking back over their evidence helpful to see the progress they had made.

They reflected on the one-to-one interviews and found them helpful as it gave a chance to talk about their 'learning to teach' and to recognize through the interview the progress they had made; Jo found some of the questions hard but came to realize who was helping her most; Paula noted she progressed from doom-and-gloom to a sensible to-do list; Sally enjoyed the time to think deeply and reflect.

They talked briefly about the blue band. During the study period, Liz (HOD) had a blue wrist band with MTFU (Man The F\*\*k Up) on it and this was given to individuals in the department at certain times. Paula was also given a t-shirt with MTFU on it by Liz and photographs of both are included in Appendix 5. I have used the initials MTFU when individuals use the term in the transcribed interview quotes and the term blue band elsewhere unless meaning is compromised.

“Sometimes you need the MTFU band, picked at, pinged at you: pinged at you, flinged at your head.” (Paula)

“Yeah, the rules for stress management. Rule number one, MTFU. General rules and one of them says, thou shall say no.” (Paula)

“I had it on for two days and then I was, yeah I feel a lot better now.” (Jo)

#### 4.4 Focus group of mentors

The focus groups in July included **Denise**, the mentor for trainee teachers (Jo), **Christine**,

NQT mentor for Sally and **Liz**, NQT mentor for Paula. I recapped the focus of the study and asked if being involved made a difference to them, what helped the beginning teachers learn, and about resilience, reflection and mentor meetings.

The participants seemed to bolster one another's confidence but saw that they were each different in the way they mentored. Denise described herself as nurturing and described this as a positive quality. She also said she let herself down because she was maternal and nurturing and thought she should be harder on the trainees and make them be more independent. Christine thought Denise should be harder and Liz commented that she can be hard and there have been tears. Being hard was not seen as a bad thing nor as a good thing, more a necessity. Denise said she gave them constructive feedback and good trainees took it on and tried things and came back to her. The blue band made her laugh in an embarrassed way – but she thought it worked as it made them take responsibility. Denise said she felt isolated.

Denise and Christine said Liz was very black and white, saying how “things need to be done like this”. The examples given included throwing pupils out and behaviour management. Liz said it was giving the beginning teachers reliance, support, and encouragement. Liz talked of mentoring in the same way as she talked about her vision for the department in her one-to-one interview.

“We don't want them to see themselves as victims...” (Liz)

Christine talked about finding the models of learning shared at the beginning of the year useful to help her think about how she worked with Sally and what kind of mentor she is; it had encouraged her to ask more questions and let them become the teacher that was true to themselves. She also suggested that they need to be the mentor that is true to themselves; that they should also match trainee/new teachers to the mentor and came up

with the idea of team mentoring. Christine liked to talk and hear what others were doing.

The blue band came up with some embarrassed giggling in the focus group; it was to get them (beginning teachers) to take responsibility.

"And we throw, and I think that makes them learn, doesn't it?" (Liz)

"Makes them take responsibility for it." (Denise)

"And it's a physical thing about owning the problem." (Liz)

"Do something about it, give it back when the problem's solved." (Liz)

There was no mention of whole school models of mentoring but there was reference to whole school expectations of them. Senior leaders expected the beginning teachers to manage pupils and Liz (as HOD) supported them throwing out pupils until the pupils have learnt the expectations.

"We don't reflect and we don't evaluate because we're going too fast." (Liz)

"You're so busy, you've got so many other things." (Denise to Liz)

## 4.5 Observation of meetings between beginning teacher and mentor

### 4.5.1 Nov 2013: Denise, the mentor of trainees with Sally and Paula (then trainees)

The mentor meeting happened next to the team room in the room with the photocopier. Both trainees were in the same mentor meeting and all were confused about the timing of the meeting leading to Paula leaving part way through with a promise to catch up later. Sally came along to the meeting with questions and was well aware of what needed to come next, doing what Denise called "getting on with it".

Denise started with administration and checked what had been done, what needed to be

done and emphasized that compiling the right kind evidence from teaching was important for their portfolios. Denise was well organized about what needed to be done. She suggested going to Tasha, deputy head to find out whom to observe outside the department. Denise did not know who may be good to observe and did not suggest anyone. Denise wanted to get their primary placement done. Several times Denise talked about getting the “girls” to do it themselves.

There was a comment from Sally about the lack of mentoring time she had this term. Denise accepted this and said that Chris the University Tutor was not worried. There was no observed lesson to discuss together so the discussion was quite superficial about classes observed by other teachers.

Denise did not ask hard questions tending to describe **what** was done not **why** it was done. The practice discussed - plenaries, differentiation, and assessment for learning (in the autumn term) – was challenging practice for trainees. Denise asked how long Sally was taking for lesson planning. There was an emphasis on sticking to lesson plans and how this was important.

#### 4.5.2 Dec 2013: Denise, Paula (then trainee)

The mentor meeting was in the room with the photocopier. There was a discussion about the lesson that Denise observed Paula teach and how Paula needed to learn to juggle because Paula forgot to order textbooks as she was working on her job application and forthcoming interview. Denise did not hear Paula say she failed to order the books until the third time when she asked if Paula had ordered them. Paula was being open about this from the start.

She praised Paula that she had got the teaching sorted and now Paula needed to sort

differentiation. The discussion moved to acquiring evidence. Paula commented that “next time I will do this” and Denise gave one suggestion about what to try. Paula said that the lesson went quite well and Denise gave a concise evaluative summary. The language used by both was describing what happened and Denise evaluated the pupil learning but not Paula’s learning. There were no questions relating to Paula’s practice. Denise focused on what the pupils learnt and their behaviour. Differentiation needed to improve because some did not learn enough. These incidents were pointed out as things that need to be followed up rather than learning points to be discussed with Paula. The pace of the feedback was fast.

The discussion was mainly descriptive with one point where Denise asked “what could have been done different?” There were administrative questions from Denise about the timetable, Paula’s second school placement, her University report. Paula asked about her report and her second school and Denise said this was something someone else will sort.

#### 4.5.3 Nov 2014: Denise, Chris, Jo (trainee)

This meeting happened in a classroom and followed a lesson observation of Jo by Chris and Denise. There were three distinct phases to the feedback: discussion led by Denise; discussion led by Chris; then Chris discussing recording the school visit.

Denise started by asking how it went, then followed up by asking what Jo did differently. Jo described the detail of her preparation and the structure of the lesson and Denise coaxed her to note that Jo talked less and this lesson was much more student-focused. Denise then gave summary feedback, what worked, how she could have done it differently. Denise talked more than Jo.

When Chris debriefed Jo, he asked what she thought was the most effective part of the

lesson? Why she chose that sort of lesson today? Were there any risks? Did she achieve her goal? He initially asked questions and Jo talked more than he did. This continued for a while then he summarized what they had talked about and drew on evidence from the lesson to show which pupils had learnt and other evidence to show that it was a successful lesson and why. He then asked Jo “How can you be certain that these pupils are learning in your class?” Jo struggled to understand the question and Chris said she would need to think about it. Jo said that mini-plenaries came into her head.

Denise and Chris both said that Jo could teach but now needed to focus on the learning that the pupils were doing and “how do you know they have learnt?” It was clear that Jo was not clear what was meant. They tried to illustrate it with alternative things that could be done. Jo suggested her use of exam questions was part of what they want but she was not sure.

Chris then completed the administrative record of the University Tutor visit with Jo; he summarized that Denise was doing a good job as mentor as she didn’t dive straight in and say that was great, that was rubbish. He recorded a target that Jo needed to factor in opportunities to check student progress in the lesson. There was then an administrative discussion about the training programme, deadlines, essays, files, lesson evaluations, weekly reflections on progress.

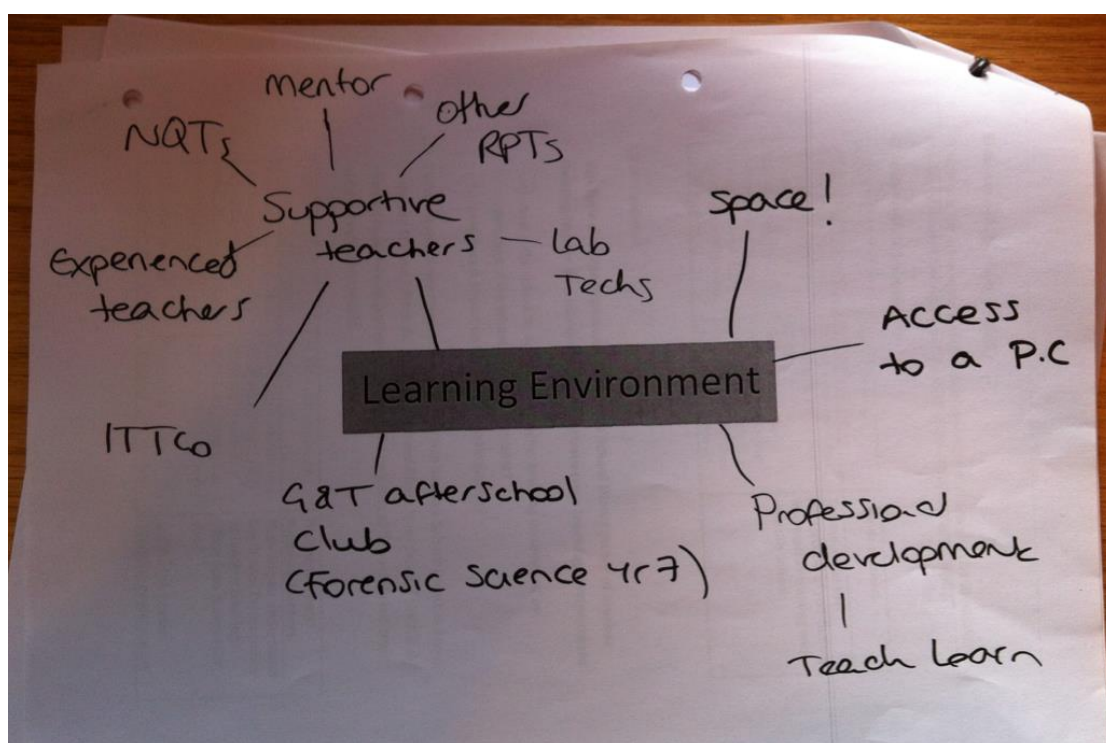
Jo shared a number of concerns but got little support. Jo’s timetable was eleven lessons a week when the recommended load was eight. Chris accepted this was OK. Jo said that she didn’t understand a particular evidence file and Denise says she thought Jo was fine. Jo talked about how she found it hard to write her weekly reflections; she was not certain what reflection meant and did not seem confident. She was seeking reassurance; both

Denise and Chris said things were fine.

#### 4.6 Spider diagrams and network maps

Spider diagrams were constructed by participants in the interviews in the first phase of data collection to show their representations of the learning environment for trainee teachers. Appendix 8 shows these diagrams and a summary table that includes additional items from the spoken interview categorized into people, places, information/resources, experiences, qualities and negatives. A spider diagram is in Figure 6.

Figure 6 An example of a spider diagram



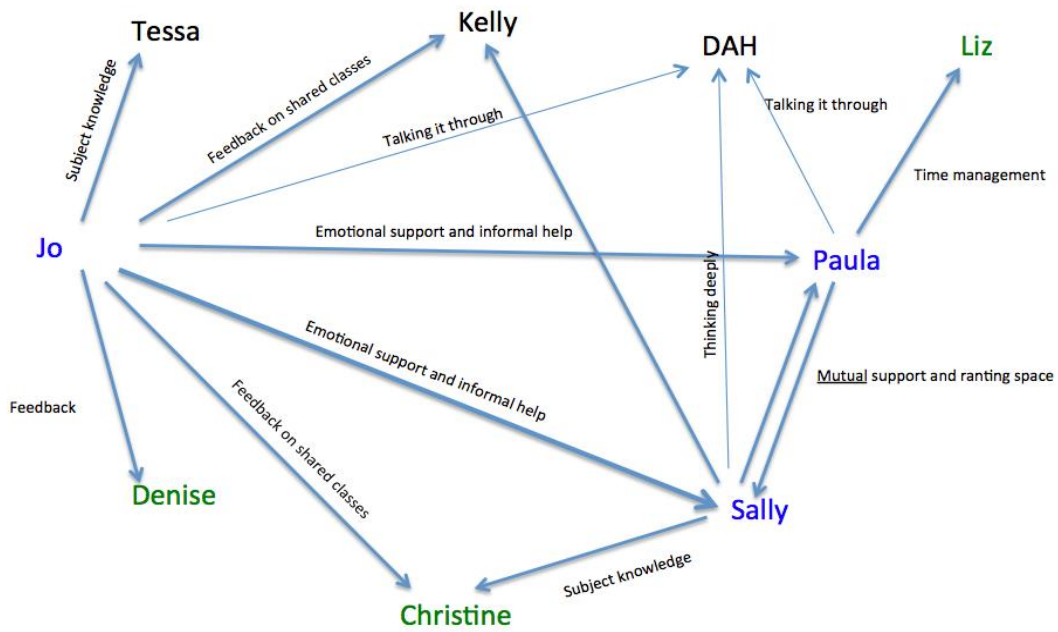
I constructed network maps in Year 2 to show the network of support (Fox and Wilson, 2009) for each beginning teacher and mentor, drawing on the data collected over two years. These are shown in Appendix 9 with examples shown in Figures 7 and 8.

Unsurprisingly beginning teachers have more complex networks of support for learning to teach. It is notable how mentors have a simple undeveloped network of support for



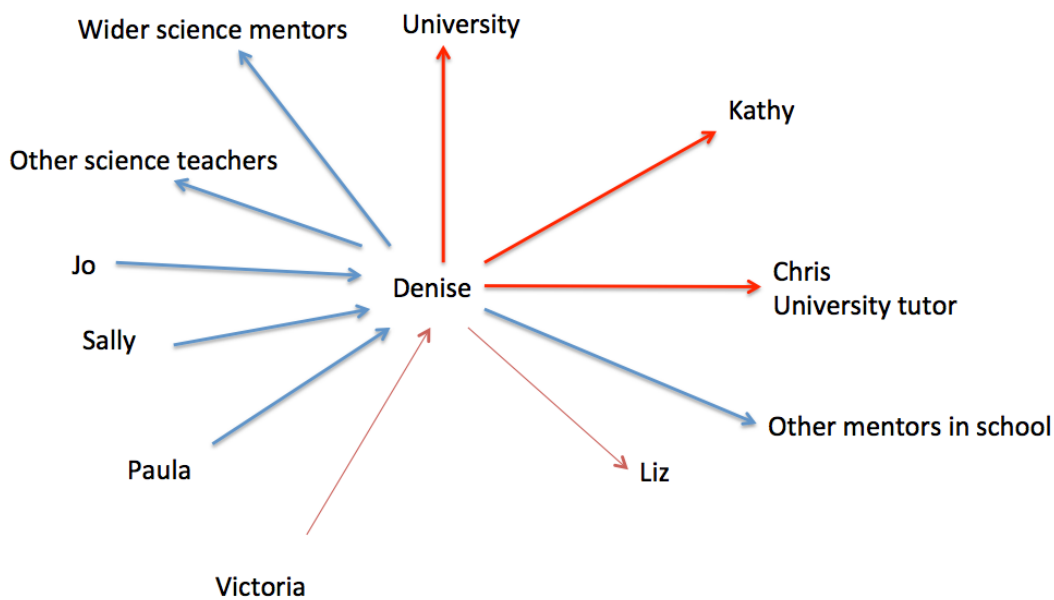
mentoring.

Figure 7 Network map based on the focus group of the beginning teachers



Network map based on the focus group of the BTs year 2

Figure 8 Denise's network of support with year 1 (red) and year 2 (red and blue)



Denise's network of support year 1 (red) and year 2 (red and blue)

## 4.7 One-to-one interviews with beginning teachers

During the one-to-one interviews in year 2 the models of learning which were shared with the department at the start of the second year were shown to the participants. These included metaphors for learning, Kolb's experiential learning cycle, and a summary of expansive/restrictive learning environment. The diagrams were printed out on A4 paper and the participants were also shown these images in the interview (Appendix 1 and 10). The purpose of sharing the images was to share some of my thinking, and use the model as a prompt in the interview.

### 4.7.1 Jo

Jo was interviewed three times in 2015; the first interview was accidentally deleted and I wrote a summary account that Jo checked for accuracy at the second interview. The final interview was in July after the focus group of beginning teachers. This section is an edited compilation to draw out themes in Jo's interviews. Three themes stand out: a mini-breakdown or 'wobble' she had in March, her struggles with understanding requirements for written reflection and finally what was meant by pupil progress. Others are: what helped her learn, working with others particularly her mentor, the team room, the blue band and the learning models.

The people who were most helpful were experienced teachers and NQTs who were still able to talk about their planning in contrast to very experienced teachers like David and Liz who could not explain their planning. Two teachers, Kelly and Paula, were helpful because of the questions they asked and Kelly in particular because she said that observing Jo helped remind her of what she should be doing. Later in the year, Jo found her main support in Christine and Sally. Jo identified whom she would go to for particular help with subject knowledge. Outside of the department, the Professional Studies sessions with Kathy and the other trainees gave Jo the chance to talk and also have ideas. She

enjoyed sharing and talking with other trainees at Birchbrook and also in her second school.

“I need to get out and observe others more.” (Jo)

Jo liked the space of the team room as it gave a chance to catch people. Jo found the team room in her second school very different and she described hiding in a corner and not talking to people. She needed to be open and in an open space where she can just sprawl

“even if it is just my mind sprawling into that space and not me and that’s quite nice to have.” (Jo)

She values

“being able to talk to people and actually explaining things and bounce off people in a constructive way.” (Jo)

This was how she worked with Christine. The team room allowed the opportunity to talk,

“you can't hide away, you need to talk.” (Jo)

Jo had not had so much contact with her mentor as Denise was part-time; she found her feedback helpful and constructive. Later in the year she worked closely with Christine who would be her mentor next year. She described Christine’s feedback as more direct and blunt while Denise said the same thing but in a way that Jo said

“I just sort of nod along rather than take it in fully.” (Jo)

Denise told her mid-year that she had gone backwards since Christmas and also said she was on track.

Jo’s ‘wobble’ was in March and she said she knew what was going wrong. Progress checking was not quite there and she was being too nice to pupils. Although Jo was getting feedback from three teachers including her mentor and she knew it was an issue, it was not until Christine spoke to her in a way that was “like being told off by my Mum”. Jo

described that she needed to “actually kick me a bit”. Christine said to Jo later that she was harsher on her now she was going to be an NQT with them. Denise also nearly made Jo cry with clear concerns but it was not until Christine said it forcefully that Jo realized she needed to change her ways. She looked back on her cry and how people told her later that they knew when she was going through it and they kept an eye on her.

“I think that was the stress and I was a bit unprepared I think in my head.” (Jo)

Jo said that Christine was the first to tell her to basically MTFU. She gave the advice in such a blunt way and it wasn’t coming from Denise so Jo was a bit taken aback.

“...then it really got me thinking. ...it started to get me out of the wobble and it set off my tears.” (Jo)

Jo recapped how she had been struggling with a low ability group and she could describe key actions she took in the lesson after her mini-breakdown.

“Bam, bam, bam and it made a difference... I was struggling to aim it at the right kind of level.... It was just working on progress which has been my problem the whole year.” (Jo)

Denise’s feedback to Jo had always been quite critical and very good at getting her to think

“but because it’s not changed in the way it’s been delivered at all over the year, I haven’t really realized I was being kicked. Christine had been quite calming and then turned round and said this isn’t good enough.” (Jo)

Sally had been there when Jo had a cry and Sally had a similar experience with Denise.

Christine came across as knowing exactly what she was talking about.

“OK this is someone who is very experienced now telling me I need to pull my act together. With Denise it’s ‘this is my mentor trying to help me through.’” (Jo)

Jo talked about how she did not understand what progress was until early in the spring term; she thought it was progress through the lesson not have they learnt anything new,

improved on what they knew before the lesson or just recapped something they knew before. One teacher had said to her that she had not cottoned onto progress until the end of her NQT year. The best bit of advice came from Tessa; to use green cards that are basically mini plenary activities. This gave her thinking time in the lesson as Tessa suggested.

Reflection was difficult for Jo and she did not know what to write for the University weekly reflections. She described it as

“once I’ve done the reflecting (in my head) I can’t remember what I was doing beforehand.” (Jo)

She wrote what she was struggling with for Chris her University Tutor and recognized that by that point she had already talked with people and had done the processing. Then she tried to remember what she had processed to write down for Chris. She found it a very strange thought process and she thought it was a bit backwards.

Jo was pleased she had started to use Ofsted grading in her planner. She hadn’t gathered any good evidence for her portfolio except for her cry but did have all her lesson plans and found it helpful to look back at what she was doing and she could see how much she had moved on.

Jo often said “I don’t get it” when talking about her learning but she was able to use the learning models to describe some aspects of the learning environment. Jo thought it was an expansive department but she was not out of the department much. Pupil progress was her big sticking point. The Kolb model worked with those who could do the abstract conceptualization and encouraged experimentation. Christine pushed for the concluding (Kolb) – “it is not working, so try something differently”. Sally and Paula encouraged the

same by using questions. She identified the 'abstract conceptualisation' part of Kolb as the sticking point; being scared to try new things. She cut herself off from the last two parts of Kolb and after her wobble she started to try new things.

"I was scared as well, I felt I was not doing well enough. And I didn't want to be disappointing myself or anyone else. Sally has helped as she is good at learning from experience and going 'well, why didn't it work?'" (Jo)

Jo also identified the blue band.

"Resilience is the new big thing... The blue band sounds really horrible, it's the fact that they've done it and said, right OK we're going to get you through this... It's a joke but it also makes you go, yeah OK I can do this... I put the band on and wore it for two days and I looked at all the plans that I'd done... I ripped up three of them, they were terrible, they were so linear... It was like a kick up the arse basically. It was kind of a joking way but at the same time I was crying when they gave it to me... I don't think it would work with everyone but it worked with me... you have got to be able to put up with that because you just won't fit in." (Jo)

She does not feel that she has been trained to fit Birchbrook but rather Birchbrook has brought certain qualities out of her:

"They have pulled more of that out into the right direction, if that makes sense. Rather than steering me in the right direction." (Jo)

#### 4.7.2 Paula

Paula was a trainee in Year 1 and an NQT in Year 2, with her mentor changing from Denise to Liz. She transformed as a teacher over this time, and in the interviews three key emergent themes were marking, her NQT report and a 'Requiring Improvement' judgment of a lesson in the spring term 2015. Other themes were learning to prioritize, the blue band, support from others, what had (and hadn't) helped her learn. I have kept the chronological order to show how she changed.

In Year 1 Paula described needing support from others: trainees, an approachable mentor; an approachable professional tutor; supportive technicians. She also talked about space: having a laptop; a desk; somewhere to put books; somewhere to put her things. She was able to describe experiences, almost reliving them and including quotes of what she said and what others said. She could state explicitly what she had learned, did not seem to reflect deeply but she was very decisive. She said she wanted to be told what needed to be improved. She thought she had an amazing mentor, and was part of a supportive team, with Mary the technician as the backbone of the science dept. Paula did not mention anyone outside the science team.

She felt encouraged to get involved at her main school, joining in professional development (Friday morning Teach/Learn session – a brief meeting before the school day for teachers) and was encouraged to do a Gifted and Talented workshop. She got involved in school trips and after school clubs and said that in the department meetings there was always talk about improving differentiation, targeting particular pupils plus what they were doing in class and changing round pupils in groups. Paula approached these things as opportunities to learn more and tried to get involved in everything.

Paula said the teachers gave good feedback on lessons and focused on what she could do better rather than what she was already doing well. She did not feel patronized. She felt as though she was part of the team and liked the fact that even the children seemed to see her as part of the school and not a supply teacher. Paula was observed by Ofsted during the autumn term in 2013 and had a grading of 'Good'. She was very proud of this.

She described herself as nuts, a monster raving looney, invited others to join in with the

madness of her classroom. She described the first term as an NQT (2014) as

“being thrown in the deep end with a wave machine and no buoyancy aid and lead around my ankles... then being told to mark at the bottom of the sea.” (Paula)

Paula thought that all of her mentors had been amazing. Denise was great with both Sally and Paula last year but they used to set each other off crying. Denise was relaxed, friendly and optimistic while almost ‘smashing you’ with her feedback on a lesson. Liz “has a completely different approach...if ever I’ve got a problem she has got a solution”, for example her workload had been sorted by Liz and she now had the ability to prioritize.

In spring 2015, the Headteacher had given Paula a ‘Requiring Improvement’ judgment in a lesson observation. I asked about the planned follow-up observation by Liz that was discussed in the field observation day (4.2 above); Paula said she increased the pace as requested and Liz said it was good and suggested something else to improve. Paula was clear about her strengths and areas for improvement. She commented on being graded against people who have been doing it for 10/20 years.

“Being told I was Requires Improvement was crushing... I put my life and soul into this, I try so hard... It was hell on Earth when the coffee machines broke.” (Paula)

In April 2015, she says that the thing that was going to burn her out was the marking; she described the dilemma of marking to meet the school policy and to monitor learning. She wanted to make her feedback to pupils worthwhile when she marked.

Liz introduced the blue band; it started with Liz throwing the band at Paula and telling her to wear it.

“So I put the man up band on, hid it under my sleeve and went and taught my lesson. I came back in and went, I manned right up. The irony of it is our



department are all women.” (Paula)

She said it makes a joke out of the situation; it was not a harsh environment. It had helped Paula put things in context. Liz asked hard questions such as ‘why did you do that?’ She encouraged Paula to try new things and had good ideas herself that she encouraged others to try. The blue band had emphasized how you needed to move on and leave things that you were not going to worry about or you can’t change.

“Oh, I can’t remember what I got upset over but when somebody tells you, oh man up and you sit there and you think about the situation and you think, why am I crying and you sit back and think, I’m actually crying because I’ve just got some books to mark. I am a teacher; this is part of my job.” (Paula)

Liz gave Paula a MTFU t-shirt and Paula wore it on her bad day when she had a full teaching day.

“What she means is pull yourself together, stop crying over it, it’s nothing. She says to me, will this matter in an hour? If that’s yes, will it matter in a day? Week, what about a month, six months, a year, ten years, will it matter? No, now stop snivelling and pull yourself together.” (Paula)

Denise told Paula that it only worked with her because of her personality:

“Actually makes me laugh instead of cry more.” (Paula)

Paula and Liz completed her NQT progress report together and it took three attempts because they missed something each time.

“It was meaningful the first time, rushed the second time, and the third time we made something up.”

Neither of them cared about the report, they just got it done, “we’re ticking a box”. She learnt nothing from doing it. Liz just expected her to get things done and write down the key things – not everything. The report was time consuming and it was there to please

someone not record what had happened. Paula questioned who read it.

Paula described the environment as expansive and she was encouraged to join in with social activities with the department. She recognized Kolb's cycle and felt that Liz helped Paula learn from experiences. She did not talk about anything outside of the department team except her form group briefly. Paula thought that Birchbrook had prepared her to be teacher anywhere.

#### 4.7.3 Sally

Sally was a trainee in Year 1 and an NQT in Year 2, her mentor changing from Denise to Christine. Key emergent themes from the three interviews were her own learning and training, book checks in the spring term 2015 and needing to do the right thing. Other themes were opportunities, the blue band, support from others, workload.

In Year 1 Sally was a trainee and saw the department as a supportive environment but she had little time with her mentor, only thirty minutes with the group of three trainees. She was able to talk about reflection and using the standards to make sense of her learning. Sally knew that she needed to get on with it and that she could. She seemed very aware of whom to ask for help and advice but found the lack of space (small table, no shelves) and the noise and chatter of the team room difficult. Sally was able to evaluate the impact of Denise and Kathy and the opportunities she had on her learning. Sally liked to talk to others, liked to construct meaning, reflect with the class teacher or mentor, to have guided reflection and she had many questions. She found the talk about standards in the department to be weak. Sally had experiences of teams and was aware of the 'politics' going on and the need to say the right things/do the right things and talk to the right people. Sally liked all the opportunities for learning about the school outside of her lessons.

She had accepted a job at Birchbrook because she felt the school shared her core values and the department was emotionally and socially supportive but perhaps not supportive in developing her learning.

In January 2015, Sally reflected that she was happy and felt she was doing something worthwhile and valued. At this point she was focused on learning how to cut corners.

“...being uptight about not doing the job completely 100% as I’m told I have to do it and knowing where I can cut corners ... so there’s a bit of system manipulation, although I’m being told I have to do things as an NQT, there are plenty of examples where the teachers who are telling me to do those things are also not doing those and cutting corners... I decide about which things I want to take to my mentor for discussion and who ... and where I go and get that information from.” (Sally)

She noted that the school had high expectations of NQTs and expected them to set detentions and mark books in a way that more experienced teachers did not have to. She believed that marking books well had a positive impact on pupil learning but she had not met those expectations with her marking and book checks. This required her to get 11 sets of books marked and checked. She realized that more experienced staff were strategic in their marking and they were aware of the monitoring via book checks. This was a critical incident for her and affected her lesson observation judgments which are important parts of her NQT progress report.

“... So that was a bit frustrating at first to realize it’s not what you do, you’ve got to be able to show that you can do it.” (Sally)

She knew who to go to for support for subject knowledge, that Mary was very helpful and she needed to remember that Mary was not a teacher. The HOD, Liz, tended to come up with snap judgments and fixed things as she did not have time to sit and talk things

through. Sally was not always on the same page as Liz. Sally continued to go and observe others and learnt from each of these observations.

She found the team room a difficult place to work as it was noisy and distracting.

“... my desk is really small there and I haven't got a computer at my desk but also I just tend to go off and, I get, I find, I get quite stressed with... the pressure of, of the, 'you got to do that' difficult so I just go and hide in my room.” (Sally)

But she also knew that she missed out on the support from others. She felt that she was not quite comfortable, not feeling part of the team. She talks about having her own space in her classroom and using it to organize herself. Reflective writing was important, joint planning with her mentor very useful, continued observation of others.

Although Sally rarely saw Kathy, the Professional Tutor, she was still involved and had a clear grip of procedures but sometimes got bogged down in policy and process. Sally was unsure where some decisions about NQTs come from; was it Kathy or Deputy Head?

She had half an hour a fortnight of mentor time. She was working with LSAs and others, working with an experienced deputy, Tasha, who had very good Subject Knowledge and helped with pupil misconceptions. Sally mentioned specifics that she takes to Christine, and the people that support with SK and who helps with what. Sally sometimes found she had not understood or known school or department system.

At the end of the year Sally repeated how well she had worked with Paula and how they have been mutually supportive; she was genuinely surprised that Jo had found her support to be important. Sally looked back and reflected on her progress since the PGCE year, noted how she now had a deeper understanding of the Standards and she could now

make sense of pupil progress with more depth. She noted how she learnt from observing others without needing to write notes now; she found she incorporated good things into her practice from learning through observing. She also thought she was now willing to try more things.

It was important to be accepted into the team and she now sees herself as a Birchbrook teacher and thinks that if she taught somewhere else she would have to learn and teach differently. She was pleased to have passed her NQT year as when you are not an NQT you can have an opinion otherwise you have to get on with it. Sally felt that the learning environment she experienced was an expansive one and she had pushed herself to make the most of the opportunities. She had an experience during the NQT year of asking for help and this was reported to others as not coping.

Sally did use Kolb and commented that she thought that Christine was good at learning by construction and there were other growth models that could be used. At times she felt frustrated that Denise did not seem to use the Kolb cycle. Christine was fine with mistakes but Denise less comfortable and told you what to do. Sally talked about the blue band and how it built resilience.

“I think, I feel, what’s the word, ambivalent about man the f\*\*k up. On the one hand I think it’s awful, I think it’s just absolutely awful, however, when you’re in a fire and you’ve got to get down the fire escape, sitting there and panicking is not going to get you down there, ... the man the f\*\*k up thing is a kind of a stop point at which point you stop yourself from spiralling down... And I think although man the f\*\*k up is, you know, you get the band there is, you also know that there is a lot of love and support underneath with the department. So I think it, because that love and support is there, but in part it can get used because nobody else has got the

time to deal with your mini crisis.” (Sally)

She felt a tension between “Ofsted” learning (her term) and her values and commitment to all pupils’ learning.

## 4.8 One-to-one interviews with mentors

### 4.8.1 Denise, mentor of trainees

She likes to be a mentor as she has a nurturing personality and she was recently a trainee herself so knows what the trainee teachers are going through.

“... enjoy it, I like it, it is really satisfying, it suits me.” (Denise)

Denise had no idea of the view of the Head teacher about hosting trainee teachers as they haven't talked about it. She mentioned the busy-ness of the department and she could not attend the Teach/Learn meeting on Friday as the department had a briefing at the same time.

She referred several times about giving things: giving a wide variety of experiences, giving grounding, giving stretch, giving information and access to resources. Types of experiences are named: observation, helping, letting them get involved, extra-curricular activities (Science club and Gifted and Talented club). The training was described as happening alongside the department rather than engaged with the department. If the information could be more accessible, then trainees would be able to get on without 'bothering' the department. She thought Sally and Paula as trainees got on with it, as they are mature. Mary, the technician, was described as being good with the trainees, and she did add that some science teachers are not as good with trainees.

The department drew Denise to the school when she trained there. She was proud of the

department and what they gave to the trainees - and what they got back in terms of personal affirmation. There was no in-school professional development for her as a new mentor – there was information transfer and functional training and School Direct seemed to have little impact on Denise. Kathy, the Professional Tutor, gave information mainly by email and Denise tended to skim these and not read deeply. There was general mention of being busy and wanting to make sure that trainees were supported without taking up the team's time. She said how valuable she found only an hour a week with her own mentor when training.

In Year 2 Denise felt isolated and wanted feedback on whether she was doing it right.

“Sometimes I feel like I'm not going it right. I think being a mentor is quite a, you muddle along with it but I question myself a lot. I sometimes worry if I'm doing as much as I should be doing or if I'm doing too much or, and how I compare to other mentors because you're very isolated as a mentor... You very rarely mix with other people.” (Denise)

Denise felt she was good at mentoring and the teaching workload could be too much. She saw a tension between doing too much, and doing too little for the trainees, a tension between nagging and nurturing, telling trainees about what to try, giving Jo the opportunity to try.

“Sometimes I think that contributes to the student feeling overwhelmed and I know myself that I have to work on that because I want them to do the very best that they can but I need to hone in the advice that I'm giving them. I need to sometimes, I should let some of it go I think, but maybe I shouldn't, maybe you guys want us to be really over critical of them and push them to their limits and all of that.” (Denise)

She felt, at one point, that Jo the trainee was stuck but was confident she could do it.

Denise was waiting for the penny to drop but Jo wasn't thinking about it or maybe wasn't putting enough effort in because she was tired. The department team was supportive of Denise but she didn't get out of the department much.

“So the feedback that I would give from when they started, three quarters of the way through I would say in this autumn term was more about, so getting through the lesson, looking like a teacher, sounding like a teacher, getting through the lesson, getting through the mechanics of the lesson, having a beginning a middle and an end. Just those housekeeping-y more type things, whereas now I'm focusing on the progress of the students, their learning, it being more student-led than teacher-led all of those kind of things. So developing the actual trainee as a teacher rather than just somebody who can stand up in front of a class and maintain the class till the end type of thing.” (Denise)

“(now) I want her to focus on differentiation, and I want her to focus on showing progress.” (Denise)

The other trainees she had were naturals. It was important to watch good or outstanding teachers doing it right. Denise talked about the feedback Chris the University tutor had given Jo.

“Yeah Chris doesn't say a lot but he goes in for the kill doesn't he and he hits the nail on the head. And it's always about progress.” (Denise)

#### 4.8.2 Christine

Christine was the NQT mentor to Sally. Christine described building the training to help the NQT see what mattered and made a difference, especially what would help at that moment.

“I like making the most of building on what people have already got and I don't know, I like passing on what knowledge I feel, yeah that I've got quite a few years' experience now and it's nice to help somebody and pass on ideas and, I like that, I



have to admit I like that feeling when you say to someone, oh why don't you try this and then they, when you have another meeting and they go, I tried that and it was really good and helping people make the most of their skills kind of thing. I didn't have a very good NQT mentor, she really tried to make me teach in her style and I nearly gave up in my NQT year because I found it really difficult and I think, and I struggled through and then when I found my own feet I've never looked back and I found my own way and I think it's making sure that you let somebody be themselves but guide them in the right direction." (Christine)

Christine talked about giving the beginning teachers' skills so they can deal with the challenges of teaching by themselves. Christine used questioning and saw that as the best mentoring approach so the NQT can become the teacher they have the potential of becoming.

"I love co-planning, I think my way of doing things is by trying to get them to say here are the main things I want to do, here are my objectives, and then it's me helping them, which I think is a skill you get from experience, is helping and know what order to do things, when to make the transition, I find NQTs find it really difficult when to stop doing something and move on." (Christine)

She liked the learning models and found them useful as she was familiar with Kolb and had used it and recognized that it had been shared at Birchbrook. She said she guided the beginning teachers, challenges, 'gives it' to them sometimes. She recognized lots of expansive elements but recognized that what happened outside the department wasn't known about. It was an isolated department, with long stayers, and most used the team room. Christine said the blue band was used to help them survive the culture.

"Oh it's great, it's great (the team room). Because we all do have different roles and we, and there are, there is natural mothers in there and then there's natural people who go, 'this is the way you should do it' and are very much, 'come on get a

grip', we have a bracelet actually with some choice words on that we've made them (wear).

*Laughter*

... when they've had a lesson, we get them to realize it's not you, it's the kids, get over it, move on, don't worry, put it behind you, it's happened, there's no point dwelling on it." (Christine)

Pupil progress was key but she recognized it as a learning step for the beginning teachers. She said she was very different to Denise and held Denise in high regard but said Denise was too nice to the beginning teachers and had told her so. Christine talked about writing Sally's NQT report and described how Sally wrote most of it and it followed what had come out of their mentor meetings.

#### 4.8.3 Liz (as NQT mentor)

Liz was the HOD and NQT mentor to Paula.

Liz had clear interventions to support NQTs: for example, support to ensure pupils were thrown out of lessons until they were prepared to follow the teachers' rules. She was comfortable taking charge and was very clear about what was expected, diagnosing where things were going wrong and what would happen next. She supported the beginning teachers with behaviour management even when senior management were starting to worry (however, she started to worry this year that things were never going to come good). Another intervention was to work on time management and make sure that lessons were planned that were 'doable' (to plan and deliver). The blue band was hers and she used it initially with Paula.

"She did used to moan an awful lot and in the end we got it to a bit of a joke, went oh off you go again Paula and I've got this band, and I shouldn't have it, and on the outside of it, it just says, man the f\*\*k up and I just chucked at her, I said you've got to wear this for the afternoon now and she was like, oh I need to man the f\*\*k up

*Laughter*

And it's like saying it's OK to be like that. And we'll say it to each other, I'll say I need the man the f\*\*k up band today and I think that kind of thing, making them realize that it's not just them that are having those problems, that we also have those problems." (Liz)

It was important to Liz that the beginning teachers saw that other experienced staff struggled with classes too and supported one another. Liz described how she wrote Paula's NQT report by sitting down with Paula and just getting it done.

Liz described the blue band culture as a way of getting the beginning teachers to move on, deal with poorly behaved kids disrupting lessons, doing enough, but working hard. Liz talked about the need to be working smart and she also talked about teachers who were being perceived as lazy or not coping. Liz saw the team room as key as she was too busy to provide one-to-one support. She expected the beginning teachers to use the team before they came to her, she thought of it as an open community and everyone shared. She had not mentored before taking on Paula. She knew she was not necessarily the best person to be mentor.

"I know that I'm Head of Department and I've got Denise but I don't, when do I get time to spend with Denise? I don't. I ask Denise stuff, Denise knows this, it's not for me to keep that stuff in my head." (Liz)

She said she can be hard, even harsh but that was the way she is, that was her way of showing she cared. She expected new staff to be honest about issues. There is not a Birchbrook way but there is a Birchbrook way.

"I think the science department way, there isn't a Birchbrook science department way. There is a structure that can be used when people are struggling." (Liz)

She wanted them to be successful teachers and to fit in.

## 4.9 One-to-one interviews with others in support roles

### 4.9.1 Mary, the technician

I interviewed Mary in year 2 as she was mentioned as a source of support in year 1. Mary saw herself as informal support and very much a mother figure. She felt the beginning teachers asked for her help when they did not want to be seen asking for their mentors help.

"There's just somebody else you can whinge at who's not I suppose directly involved isn't it?" (Mary)

She told them where to find things such as resources, photocopier, schemes of work and she helped with physics lessons in particular.

"If they haven't got physics subject knowledge they definitely come to me... how our discipline system works and that type of thing, general areas. How do they put a child in detention, that type of thing." (Mary)

This was because she recognized it was 'safer' to ask a technician and it would be a more formal thing to ask a teacher. She worked with beginning teachers early in their time in the department to help get them settled and she believed that was accepted, valued and recognized by all. Sometimes the mentors asked her if things are going OK with the beginning teachers.

"And they'll (mentor) come in and they'll ask are they, how organized they are and do they come in and practice the practicals, that type of thing." (Mary)

Mary said the team room was important as an identifiable means of support for the beginning teachers. She liked working with the beginning teachers.

"We're not prescriptive no. There is a scheme of work, there are practicals in it but if you've got something that will do the job just as well and is different, then we're quite open yeah. Oh no we're definitely not prescriptive at all." (Mary)

#### 4.9.2 Chris, the visiting University tutor

Chris had been linked with the department for several years and was the visiting tutor for Denise (when training), Sally and Paula in their training year and Jo. He was able to describe how the department was much improved. He put this down to changed leadership, at a school level and also at a departmental level. He said Liz's leadership meant that there was an extra layer of mentoring; she knew what was going on, decided whose lessons trainee teachers would be in (timetable) and if there were any emerging issues. He described a strong sense of a supportive team but recognized that some individuals were not part of that team. Chris said there was lots of support in the department but they were not particularly clear about learning for trainees or beginning teachers. He also talked about how the team eat and drink together and some even go on holiday together.

He described his style in tutor meetings as to get the trainee to think deeply about their practice, to identify what it was that they were doing that was key to pupil learning, to be very analytical about their practice, to really drill down. He recognized that the department and the mentor did not have time or the inclination to do this as they were dominated by the Ofsted agenda of pupil progress at any price. Chris said that the mentor, Denise, was typically focused on pupil progress and he described this as a proxy for trainee learning.

"I know the type of questions that Denise will ask, as she does ask the same, almost two stars and a wish, she'll wrap it up nice and quickly... I think the mentor will see it very much from a school view rather than one that's developing that individual... I think it's easy for the mentor to focus on the pupil learning but it's harder for the mentor to focus on the trainee learning... they do offer personal development but it will be school and departmental focused, it's all focused on

Ofsted. Schools unfortunately don't really have much of a mind's eye view beyond Ofsted." (Chris)

He felt the department was expansive with some restrictive aspects as they didn't let the beginning teachers out of the department; there was a very strong science identity and belonging in the team.

"... that's a supportive environment, you feel like you belong to something... mainly it's that there's actually a good mix of styles there and that creates a supportive environment. I hate that word actually, supportive because in school that generally means that you're out on your ear if you're being supported." (Chris)

## 4.10 One-to-one interviews with senior staff

### 4.10.1 Kathy, the Professional tutor

Kathy saw her role as overseeing the organization and management of the training in school, ensuring the right things happen at the right time and ensuring the trainees had a safe place to talk and that they met the right school experts at the most appropriate time in their placement. She was very conscious of her role in the school structure and what she did and did not do.

Kathy said the group of trainees needed a safe place to share difficult times (behaviour management was the main example given) and while the department was part of the safe environment, she perceived the main safe place was the Professional Studies sessions she led. She would offer support with difficult classes and offer space to talk.

The language she used included: expecting them to get stuck in, being brave, being blinkered, rubbing their noses in it. She saw their learning as a forward journey of

experiences not as a cyclical process. She said the school wanted to grow its own teachers and check that they were right for the school in their judgment.

“...how can we make sure that this is somebody who we’d like to apply and have as part of our team? ... so, in effect, the year, ..., becomes a long interview. And you mould somebody into what you’d like them to be for the future and make them feel part of things.” (Kathy)

The school encouraged inclusion of the trainee teachers in continuous professional development and they were encouraged to observe elsewhere including other departments. The Teach/Learn meeting was mentioned. She saw School Direct as a change of processes that was essential in the current time.

“This is how to survive.” (Kathy)

Kathy shared the agendas of her meetings with trainees showing information giving, checking well-being and the experiences they were having in their departments. She also offered experiences external to the school. There were some guidance notes on parents evening that were more than information and included some training. Some emails gave instructions about tasks that needed to be completed. There was an email to mentors about a team meeting with her. She complimented their organization and efficiency. The meeting was organized around the report to the University on the trainee and focused on information rather than mentoring skills. There was a reminder about how to write targets that are developmental using the University model.

#### 4.10.2 Tasha, deputy head

Tasha talked of being part of a wider teaching community and this was important to learning to teach. She likened it to learning to drive, giving structured experiences starting with observation and then a progression in the challenge of experiences. Tasha took a cyclical approach to thinking about the second school placement, where similar experiences were provided and unpacked further. Tasha referred to clear opportunities to

talk and consider challenging questions.

“... they need to have the science teaching team behind them, providing the coaching, the opportunity for reflection, asking the questions, providing the gap fillers where the trainees need the support and help and they need to provide a nice environment. You know, if going into the science faculty room is like going into the lions’ den, it will be a miserable experience for a trainee or a new member of staff. It needs to be warm, friendly, supportive, ‘talky’ and people need to feel that when they’re there, or if they go into the faculty room and they ask a question, people aren’t going to go, ‘Oh, she doesn’t know!’ That it’s safe, that’s the safe learning environment.” (Tasha)

Tasha described the technician as a taking a ‘grandparent’ role. She gave a good description of the institutional perspective; her role was to drive and keep in focus the institutional needs. Tasha listed a range of experiences she would hope that trainee teachers would get: work as a tutor; work with a year team; parent’s evening; reporting; school trip; extra-curricular; Christmas Fair; Christmas Concert. She mentioned the Teach/Learn meeting on Fridays and an opportunity to pick up good ideas from other teachers in the school. She saw School Direct as different rather than better, more labour intensive. School Direct was affecting the school and their allocation of trainees was affected by the local perception of the school. Tasha suggested that the trainees needed to be ‘right’ to fit into their placement school.

Tasha raised resilience in a meeting with me in the context of expansive/restrictive learning environment.

#### 4.10.3 Liz (as Head of Science)

Liz felt that working with trainee teachers was something that she owed to the profession, giving something back after she had the luxury of having a mentor in the early days. Liz seemed to have a clear moral purpose, which went beyond the department and beyond



the school. However, she said sometimes accountability from the top called for tough decisions and tough conversations. She had not been a trainee teacher or NQT mentor before mentoring Paula. Liz said that the department was very honest and trainees will get upset. However, she did not want the goal set so high that trainees felt it was a 'them and us' culture. She wanted them to feel that they belong and they were part of 'us' and that we all learn together.

She described the trainees getting a wide experience with the team in terms of classes and subjects. Liz said she was there for the mentor to bounce ideas off, to check things, but it was Denise's baby. Liz believed trainees should stick with classes and work on sorting problems out - with support - so they can then succeed. Her role was to show Denise how to get them to succeed and that failure was not an option.

Liz was accepting of the variety of styles people have, and her belief was that one size does not fit all; it was about finding your own style with all teachers following the same basic structure.

“We’re developing their strengths and their skills ... I guess we want to encourage them to be the best teacher they can be in their own, with their own style.” (Liz)

She wanted the trainees to be fully involved in the department - meetings, briefings, training, social activities. She was keen to give them a lot of opportunities and also to contribute if they wanted to. Liz did want trainees and NQTs to be resilient enough for the school. Succession planning was important for her. She wanted trainees to observe others and then go in and do it.

“And it’s nice that there are so many people in one place doing it for the right reasons, but also everyone has a bit of a laugh as well, which is nice.” (Liz)

There was a rich diversity in school that she saw as a good thing. She expected them to

contribute to the workload in science. She was aware of other experiences they were supposed to get outside the department including the Teach/Learn Friday activity. There were opportunities to join in with staff meetings, science training on tracking pupil progress, department meetings, little jobs for trainees, trips.

“I think in the department we try to empower students and trainee teachers, rather than just tell them to follow this. ... That’s hard and teaching them that, learning that kind of resilience, I think is one of the things that makes or breaks you (lesson planning).” (Liz)

She said how busy she was. She described Denise’s qualities as confidence, understanding, caring, had the time now she was part time and she gave straightforward feedback.

#### 4.11 Written documents noting beginning teachers progress

Reports are completed by trainee teachers and NQTs, their mentors and professional tutors at regular points, typically termly, during the year. In both reports, progress against individual standards is reported in written comments. The trainee reports were written in a very generic style with few specifics and it is worth noting that it was very hard to get a sense of the individuals. I analysed these reports with the intention of triangulating data but this proved challenging. What I have reported here is the data that triangulated with other data sources.

##### 4.11.1 Sally and Paula NQT reports

Sally and Paula’s final NQT reports were very different in style and also showed a difference in emphasis. In Sally’s, the word resilience came up seven times; behaviour eleven times with ten times in QTS Standard 7 (behaviour) and she mentioned a lesson that was observed and was judged to be ‘requiring improvement’ (RI).

In Paula's final report the word resilience was mentioned zero times; behaviour forty-one times with thirteen times against QTS Standard 7 (behaviour). The one RI lesson observed by the Headteacher was a strong theme through the report after the second term. This was the lesson that was discussed during the field observation (4.2 above).

#### 4.11.2 Jo's report on her training progress

Jo's report mentions resilience and that she was not making as much progress as expected by her University tutor, Chris, and Professional Tutor, Kathy.

#### 4.12 Summary

This chapter of findings is a selection from the extensive data collected over two years. In the process of selecting data that constructs a coherent picture of the sociocultural environment of the department and focuses on the main and subsidiary research questions I have omitted data. It is important to recognize that this process of selection and the resulting 'picture' created from the data are inevitably subjective and the picture that I have created. I reflect on that process of selection and particularly omission in the final chapter, conclusions. Analysis and discussion of these findings follows in the next chapter.

## 5 Analysis and discussion

In this chapter, the findings of the previous chapter are analysed and discussed with reference to the literature of Chapter 2. The main overarching question is ‘what is the nature of the learning environment of a science department for beginning teachers?’ Using the literature of workplace learning I have analysed the findings in three ways:

- Applying several models of workplace learning as tools to explore the nature of the learning environment.
- Considering the lived experiences of the individuals within the COP-beginning teachers
- Exploring the beliefs about workplace learning that are held by those within the COP of beginning teachers.

This analysis is therefore structured by the subsidiary research questions which are:

RQ 1 What is the nature of the learning environment experienced by beginning teachers in the science department?

RQ 2 How is ‘learning to teach’ articulated by members of the science department, including beginning teachers and their mentors?

RQ 3 How do models of work place learning reveal the culture of learning in the science department?

RQ 4 What are the wider factors that are affecting the learning environment for beginning teachers? Analysis shows that wider factors such as performativity and the expectations of Ofsted, outside of the department, are having an impact on the workplace learning environment of the beginning teachers.

In summary, this analysis shows that the key findings of this study are:

1. There is considerable tension in the mentor's professional life: for example, mentor vs science teacher, accountable for teaching and the results of pupils.
2. The role of the mentor and the learning needs of the mentors were poorly understood.
3. The 'community of practice – Beginning teachers' is not as originally perceived. A COP is defined as participants who are mutually engaged in a joint enterprise and have a shared repertoire (Wenger, 1998). The beginning teachers could be described as a COP but the experienced staff (including the mentors) were not.
4. The increased role of the school in school-based teacher education has led to an increased value placed on accountability measures such as formal mentoring activities and formal record keeping. These formal processes were poor quality and superficial, driven by behaviourist processes rather than social learning or situated learning activities.
5. There is a dissonance between what the beginning teachers were experiencing and what the mentors and institution thought was happening with respect to workplace learning how to teach. This led to an additional dissonance between values and practices

This study of learning how to teach in a school-based placement is important as policy change is placing emphasis on the importance of the school based training and the role of the HEI is being reduced. The findings of the previous chapter are analysed and discussed to emphasise these **key** findings; this chapter is, as a consequence, organised by these key findings. It should be noted that the relationship between the evidence and the key findings is not mutually exclusive and so there will be some repetition of reference to evidence.

## 5.1 There is considerable tension in the mentor's professional life: mentor vs teacher, accountable for teaching and the results of pupils.

There was evidence of considerable tension in the mentor's professional life; the mentors in the study were Denise, Christine and Liz and at the time of the study Denise and Christine were both part time and Liz was Head of Department and all were time-poor. In both of Denise's one to one interviews she said she felt isolated, was unaware of the Headteacher's views of teacher training and admitted to skimming the emails to mentors from the Professional Tutor, Kathy, because she had so little time; at one point in year 1 she mentored 3 trainees and 30-minute mentor meetings were common. The impact on Denise's approach to mentoring was she was tightly organised. In the observed mentor meetings she had a routine to lesson feedback (which was confirmed by Chris the University tutor in his one-to-one meeting) asking the beginning teacher how they felt the lesson had gone then giving a very quick descriptive evaluation of the lesson. In observed mentor meetings in year 1, she was clear about what the trainee needed to do, with a 'check-list' approach to activities to be completed (such as primary school observation, compilation of evidence for portfolio, report) and Denise was clear what was her responsibility and what was not (form tutor role, observing others outside the department, (Nov 2013)). The impact of being time poor on Denise was that she focused on the formal aspects of mentoring as described by Eraut (2004) (or **learning processes**, Eraut, 2007) and the administration activities relating to teacher training were prioritised as observed by Douglas (2014). There was little time for what Eraut (2004) called the informal learning activities.

Denise was also aware of the pressures on others in the department and she felt she should minimise the impact of the trainee teachers on the workload of her colleagues and wished she could develop a handbook of all the information the trainees needed so they

didn't take up too much time (Nov 2013).

Christine in her interview (Jan 2015) described a different approach to mentoring which is recognisable as social constructivist (Daniels, 1996). Christine said she loved co-planning with beginning teachers and Sally (her mentee) said this really helped her learning; this is 'learning by construction' (Hager and Hodkinson, 2009). Christine was familiar with Kolb's cycle from her own teacher training and had recognised it from a school training session. Sally and Jo said she pushed them both to try different ways of doing things through questioning and Christine, Jo and Sally, in their interviews in Jan 2014, linked this style to Kolb and moving round the learning cycle (Kolb, 1984). Christine thought that a social constructivist approach to 'learning to teach' allowed a beginning teacher to make more progress but it was important to be prepared to give straightforward feedback on what needed to change, for example when Jo was struggling and had a 'wobble' (March 2015). Christine could talk about what helped the beginning teachers learn and she said that the learning did not happen in mentor meetings, but "seeds are sown" in the meeting. Referring to Eraut's typology of early career learning (2007) Christine's approach is including informal processes of **work processes** and **learning activities** as well as formal **learning processes**.

Finally, Liz, while committed to teacher training (interview Nov 2013, see below), had not been a mentor before becoming Paula's NQT mentor (Autumn 2014). However, Liz was also Head of Department and had not attended mentor training at the HEI (both Christine and Denise had) and her mentoring practice was affected by the needs and priorities of the school. In the first year of data collection senior staff shared a view that it was important for the school to be involved in teacher training in order to ensure they could recruit new staff. Tasha, deputy head (interview Dec 2013), and Kathy, professional tutor

(interview Nov 2013), were affected by the recent introduction of School Direct (SD) recruitment processes. Tasha said it was more time consuming and for Kathy it was “... how to survive” as a school, suggesting that it was important for the school to be involved in SD. For Liz, as Head of Science, training teachers was something she wanted to give back to the profession and she was clear that she wanted trainee teachers who were resilient enough for the school and that succession planning was important for her. So, in autumn 2013, senior staff saw teacher training, and therefore involvement in SD, as key to meet the challenge of recruiting staff and that the training year ensured they were able to select NQT recruits who would fit the school. Teacher supply as reported in the literature (Howson, 2016) was an issue for Birchbrook and involvement in ITT would meet the needs of the wider institution.

Liz did this in two ways: Liz had clear interventions to support both NQTs with behaviour management ensuring that pupils were thrown out of lessons until the pupils were prepared to follow the teachers’ rules. She also wanted lesson observations and marking to ‘tick the right boxes’, particularly for senior staff. These interventions can be seen as supporting the beginning teachers and perhaps providing a supportive context as described by Gu and Day (2007) to develop resilience. It can also be seen as imposing a clear set of expectations or behaviours. So, while Liz, Denise, Christine, Mary and the beginning teachers at various times in interviews, said that beginning teachers could teach in the way they like, for Liz there were some aspects where there was not flexibility. How work was marked and how teachers managed behaviour was closely managed by Liz. This led to tension between providing support and the mentor labelling a beginning teacher as ‘Requiring Improvement’ which was a phrase drawn from Ofsted and was not a positive judgement.



The mentoring practices of the three mentors were very different; they did not have a shared model and, as I argue below, they were not a community of practice engaged in a shared endeavour: Denise was mentoring usually through formal learning processes of mainly administrative activities that have been prescribed by the HEI and Kathy, the Professional Tutor; Christine was drawing on a variety of models of social constructivist learning and Liz was focused on the needs of the science department and the school. Eraut's two triangle model (2007) describing the context factors of workplace learning is helpful at it shows that the *individual participation and expectations of performance and progress* by the three mentors was muddled.

Denise mentioned the busy-ness of the department in her interview in 2013 and in the focus group in July 2015 she said to Liz:

“You're so busy, you've got so many other things.”

During the field observation day there was a relentless pace to the day and this matched what Liz (HOD) described in the same mentor focus group in 2015:

“We don't reflect and we don't evaluate because we're going too fast.” (Liz)

The field observation day showed that much of the busy activity on that day in March 2015 was assessment based; monitoring coursework and attainment data of groups was a significant topic of conversation and Liz as HOD was at the centre of those conversations, orchestrating moves of pupils between groups and planning interventions with pupils. This is one of the behaviours that contributes to the addictive presentism behaviours in the team but the importance here is the tension placed on the mentors to ensure the pupils they teach achieve good results.

Constructing the network of support for the mentors using the model of Fox and Wilson (2009) with respect to 'being a mentor' (the focus of this study) was limited and not very active (see Appendix 9). Liz and Denise describe an information exchange between them in their interviews in Nov 2013 and both assumed the HEI met Denise's training needs. Christine shared in the focus group in July 2015 that Denise was not hard enough on the beginning teachers. In the same focus group Liz saw Christine as a strong mentor who knew what she was doing. Liz stated that she did not have the space to support Denise when she was interviewed in her role as Head of Department. The individual interviews with Sally, Paula, and Denise reveal a functional, managerial role for the Professional Tutor Kathy who managed key formal mentoring activities – report writing and reminders about lesson observations. The focus group in July 2015 was the first time the three mentors of the science teachers sat down and had time to talk about their practice and some mentoring arrangements were changed for the following training year after this meeting, perhaps as a result of this time to talk and share.

In summary, the mentors were short of time and because of the pressures of their other roles (as science teachers or HOD) they were typically conscientious about the administrative tasks of their role and these tasks often dominated mentor meetings. Managing time, behaviour and progress were emerging as important for the team and are discussed further below. Kathy, as Professional Tutor, did not provide additional training in mentoring, assuming that the HEI training met the mentors needs. This needs to be reconsidered in the light of policy change that has prioritised the schools role in ITT. These mentors did not have time or the training to support their roles as mentors and as a result the **context factors** (see fig 2) are weak and the informal learning processes were not valued by all mentors, both as described by Eraut (2007). The formal **learning processes** of mentoring (Eraut 2007) were in place but informal processes were less consistent and less explicit. Douglas (2014) identified how formal processes of mentoring,

including administrative tasks, tended to dominate support for beginning teachers and in his study the mentors were also time-poor.

One of the expectations of the HEI is that the mentors will play a key role in the development of science subject knowledge for teaching during the placement in school. There seemed to be little evidence of explicit development of SCK and PCK although Mary, the technician, recognised she had a role supporting beginning teachers knowledge of schemes of work and practicals in particular (interview, Jan 2015); this was recognised by Denise, while Sally shared how that can lead to mistakes and misunderstandings if the beginning teacher relies on the technicians (interview, Jan 2015). These findings have implications for the training of mentors, the preparation of trainee teachers for their school placements and also reviewing the training roles of the HEI and the school placement with the shift in emphasis to more school-led training in ITT.

Table 6 Analysis of the workplace using the continuum of expansive-restrictive learning environment for teachers (Hodkinson and Hodkinson, 2005)

<b>Expansive</b>	<b>Restrictive</b>	<b>Beginning teacher (learning to teach)</b>	<b>Mentor (learning to mentor)</b>
Close collaborative working with colleagues	Isolated, individualist working	They are a close collaborative group who have strong networks of support for SK and PCK	The mentors experience isolated individualist working
Out-of-school educational opportunities, including opportunities to reflect and think differently	No out-of-school educational time to stand back, only narrow, short training programmes	Trainees encouraged to take opportunities, such as Friday Teach/Learn, visits to other schools. Fewer opportunities in NQT year.	Trainee mentor, Denise, depends on support meetings at HEI. Seems to be no recognition of mentor training needs beyond this.
An explicit focus on teacher learning, as a dimension of normal working practices	No explicit focus on teacher learning, except to meet crises or imposed initiatives	Named mentor and scheduled mentor and school wide support meetings	Role is allocated but not supported to learn how to support teachers' learning.
Supported opportunities for personal development that goes beyond school or government priorities	Teacher learning dominated by government and school agendas	Some opportunities but emphasis on schools needs (lots of participation in school meetings)	Dominated by government and school agendas
Colleagues are mutually supportive in enhancing teacher learning	Colleagues obstruct or do not support each other's learning	Colleagues are available to provide supportive environment but Denise wants impact to be minimised	Mentor network is not strong or little to support learning beyond administration
Opportunities to engage with other working groups, inside and outside the school	Work restricted to "home" departmental teams, within one school	Focus mainly in department except for Friday Teach/Learn group	Meetings at HEI but not always able to attend.
Opportunities to extend professional identity through boundary-crossing into other departments, activities, and schools	The only opportunities for boundary-crossing come with a major change of job	Little opportunity or encouragement for boundary crossing	Little opportunity or encouragement for boundary crossing
Support for variations in ways of working and learning, for different teachers and departments	Standardized approaches to teaching and teacher learning are proscribed and imposed	There is support for variations in ways of working as long as marking is done and pupils make progress	There is support for variations in ways of working as long as marking is done and pupils make progress
Teachers use a wide range of learning approaches	Teachers use a narrow range of learning approaches	A wide range of classroom learning approaches is encouraged	A wide range of classroom learning approaches is encouraged

## 5.2 The role of the mentor and the learning needs of the mentors are poorly understood.

This study is situated in the time when the School Direct policy for ITT was introduced and this school was part of an alliance of schools working together to recruit trainee teachers through the SD route. The main policy change of SD is to give schools a greater role in ITT. However, nothing had changed in the school except for a greater involvement of the school in the recruitment of trainee teachers. This was acknowledged as being more time consuming by Tasha, the deputy head, in her interview in Dec 2013 while Kathy, the Professional Tutor, recognised that schools had to be involved as it was the future. However, Denise reported that nothing had changed. She admitted she received no special training to be a mentor in school and both Kathy and Denise thought her training needs would be addressed by the central training organised by the HEI.

The discussion of findings above show that the pressures of teaching and other management roles within the science department places demands on the mentors such that the mentoring was limited mostly to formal typically administrative activities.

The mentors have different models of learning for the beginning teachers. Denise tended to tell the trainee what she wanted rather than ask questions and this assumed that the trainee had an understanding of what she wanted (see example of 'pupil progress' below to show that this was not necessarily true). For example, Denise asked for "more differentiation", "more progress", "more pupil-led teaching". Expecting the trainee to change their behaviour from simple direct feedback, is a behaviourist approach as Denise was asking for an observable behaviour change (Gray and MacBlain, 2012; Miell et al., 2002; Watson, 1914). It was not a two-way discussion built on a shared understanding

and so was not constructivist or social constructivist learning. However, she also hoped and encouraged the trainees to “get on with it” and to work it out for themselves; this is a haphazard constructivist approach where Denise invited the trainee to make sense of their experiences and environment through their own ideas. At one point Denise talks to Paula as she plans her lessons for a group of girls to ensure *they are able to do most of it themselves*. Here Denise used the same phrase to describe a class of girls learning science as the learning of Paula. Perhaps she held the same model of learning for the two or perhaps it was that she was time pressured.

Christine talked about learning to teach in terms of subject knowledge, pedagogic content knowledge and also learning what to focus on or prioritise. She was also able to talk about her own learning, used Kolb’s cycle of experiential learning and how that had been helped and hindered by her own mentor.

Liz, HOD, talked about learning to teach through the lenses of managing behaviour and learning to prioritise. Liz had specific things that she offered beginning teachers around planning and managing behaviour – she was very interventionist and saw that she gave them certain skills. These were behaviour changing interventions and again using a behaviourist model of learning.

The model of workplace learning developed by Hodkinson and Hodkinson (2005) can be applied to compare the workplace learning environment for the beginning teachers and their mentors and this is done in Table 6. It draws together evidence from the key findings above and it shows that broadly the workplace learning environment for the beginning teachers is expansive while that for the mentors tends towards restrictive. However, there was little appetite for more training on mentoring skills. Evans et al. (2006) note that when professional development is offered to teachers, they will typically prioritise

that which will impact on their main practice, teaching pupils, above professional development to support other roles, such as mentoring new teachers.

There are implications for practice as a consequence of these findings. School-based teacher trainers may lack awareness of adult learning and so training of mentors and those leading school-based training should be informed of these useful models. Schools have increased the responsibility of mentors without properly preparing mentors for this increased responsibility. Beginning teachers could also be prepared and encouraged to access both formal and informal training opportunities in the school and prepared for the impact of school priorities on their own training experiences.

### 5.3 The 'community of practice – Beginning teachers' is not as originally perceived.

A community of practice is defined as participants who are mutually engaged in a joint enterprise and have a shared repertoire (Wenger 1998). The beginning teachers could be described as a COP engaged in the joint enterprise of learning to teach and having a shared repertoire. This is not the case for experienced staff (including the mentors) if their involvement with initial teacher training is considered. When the research design for this study was developed, it was important to define the boundary for the case study; in other words what was included and what was excluded. The notion of the community of practice (Wenger, 1998) was used to define the boundaries of the case and the participants as those who were mutually engaged in the joint enterprise of training teachers: the beginning teachers themselves, their mentors, the chief technician, the professional tutor, the university tutor, those with line management responsibility within the school. It was assumed at the planning stage and the review at the end of the pilot study (end of Year 1, June 2014) that teacher training was a joint enterprise of the COP

and there would be a shared repertoire. However, while there is evidence of the beginning teachers having a joint enterprise of learning how to teach and developing a shared repertoire this is not the case for the mentors and other experienced teachers in the department.

Evidence for this emerges in analysis of network maps (Fox and Wilson, 2009) which were constructed retrospectively from the spider diagrams of the learning environment to support learning to teach (drawn by participants in the autumn term of Year 1, see Appendix 8a)), the separate focus groups for mentors and beginning teachers in Year 2 (July 2015) and the one-to-one interviews (autumn 2013 and spring/summer 2015); these showed the networks of support for each participant. These diagrams are in appendix 9 with blue arrows representing support in Year 1 and additional support in year 2 shown in blue; the arrow direction indicates the direction of support (for example, Jo identifies Kelly as a source of support, Jo → Kelly). It is not surprising that beginning teachers had complex networks within the department; their comments in interview included who to choose to go to for support with specific things like SCK, how to teach something (PCK) and how to teach someone. This was triangulated in the focus group in July 2015 when it became clear they also supported one another and sought support from me. The mentors tended to expect support from the professional tutor and the Head of Department (who admitted she was an inexperienced mentor in her one to one interview in Year 2, Jan 2015), the University (and me) but did not seem to have a support network (for mentoring) within the school. The focus group in July 2015 was the first time they had come together to talk about their mentoring roles. The interviews with Denise (Nov 2015, March 2015) described the emails from Kathy, the professional tutor, as mainly information and Kathy herself said she sent emails at key points relating to administrative tasks such as reporting and also got the school mentors together to discuss report writing. As described by Douglas (2014), the administration of the ITT programme can dominate



the mentoring relationship. So, analysis of the network diagrams show evidence that the mentors and the beginning teachers are involved in different enterprises, not a shared, joint enterprise. The network diagram for the beginning teachers show that they are learning how to teach from a wide formal and informal network whereas the network diagrams for the mentors shows line management and information exchange, not support for a joint enterprise of mentoring.

In their focus group in July 2015 the beginning teachers talked about how they had supported one another and it was clear that they were all aware of the need to be careful who to ask for support. They saw each other as safe, that there would not be any being called “tell-tale”. This is similar to findings by Fox and Wilson (2009) that some relationships are safer than others. However, this is further evidence that they were not involved in a joint enterprise with the mentors. Kathy, the professional tutor, said with reference to involvement with ITT that the school wanted to grow its own teachers and that the training became “a long interview” to find out who they would like to apply and who would fit. All three trainee teachers in the study were recruited as NQTs to the science department, Paula and Sally by the end of their first term as trainees and Jo at the end of her second term. Kathy had a view that “rubbing their noses in it” would help establish whether the trainee was right for the school whereas Liz was more specific later in the study about what she was looking for: a trainee teacher who would get fully involved in the department and contribute to the workload of the department. Neither Kathy nor Liz mention the importance of training and learning how to teach as part of the “long interview”; Haggarty et al. (2011) found that fitting in with the department was important for NQTs in their induction year and this is similar to what Liz and Kathy described in Year 1 of this study. It could be argued that the joint enterprise of the HOD, mentors and professional tutor was to recruit science teachers to the department. However, this view is not shared by Denise. In Nov 2013, she said that she did not know

the Headteacher's opinion on the school's involvement in ITT and she sought approval from me to check that she was carrying out her role right.

Another way of analysing the COP is to consider it as a whole and take Eraut's typology of early career learning (2007) which includes three types of learning (work processes, learning activities and learning processes); the beginning teachers do have access to all three types of workplace learning. They are encouraged to participate in a full range of work processes and encouraged with the blue band to engage in 'tackling challenging tasks and roles' (see table 2, p 32), learning activities and learning processes) but the trainee mentor, Denise, said that she did not want the trainees to take up the time of the department, and ask too many questions; she wanted them to just get on. Denise took responsibility for the learning processes or formal learning and encouraged the work processes but she did not recognise the importance of the informal learning described by Eraut as **learning activities**. These were the activities Denise would like to capture in a handbook (one-to-one interview in Year 1) and she was concerned that these activities would have a detrimental impact on the wider department. So, while the beginning teachers have ensured they have access to all three learning activities, this was not encouraged by the mentor.

Wenger (1998), when characterising the community of practice, said that there was a shared repertoire or resources used in the joint enterprise. When experienced mentoring staff talked about learning to teach they did not have a wide repertoire to draw on while the beginning teachers drew on a variety of different resources including models and theories of learning. All three beginning teachers were able to talk about reflection (Schön, 1983) and about Kolb's cycle (Kolb, 1984) and Jo was very explicit that Sally and Paula helped her learn through their questions, pushing her to try things that were different, and she saw this as Kolb's cycle. Jo used the model to identify that she was no good at abstract

conceptualization and trying new things; she was challenged by Sally, Paula and Christine to try things through questioning. They disagreed on whether writing about their reflections on their teaching was helpful but all agreed that talking about their reflections together was helpful.

In contrast, the mentors in their focus group were not fluent talking about mentoring and how to support the beginning teachers learn how to teach. Denise and Liz tended to a behaviourist approach expecting observable behaviour change (Gray and MacBlain, 2012; Miell et al., 2002; Watson, 1914) where Christine took a social constructivist approach (Daniels, 1996). Christine in her interview was able to talk about what she did as a mentor and how this helped them learn how to teach; she described how she co-planned with beginning teachers, how she used questions to get them to think of other ways of working and also how she learnt from working with beginning teachers. Denise, however, was uncertain that she was doing it right in her interviews and felt the beginning teacher's response to criticism (by acting on it) was important. Liz was honest in her interview that she was inexperienced as a mentor and wanted to give something back. The mentors did seem confident that they provided *support* but less confident about *learning*. The mentors talked of offering support with behaviour and coping with the job and how the blue band was used to reinforce the teacher behaviours that were required. They were all able to talk about the blue band and how that was used to make the beginning teachers take responsibility. The mentors here are talking about ways of building the resilience of the beginning teachers. This was a theme in the focus group that they each referred to in their one-to-one interviews. In summary, the mentors have a shared repertoire of support, behaviour and resilience which is different to the shared repertoire of the beginning teachers.

Finally, considering the COP-Beginning teacher through Hodkinson and Hodkinson's model of an expansive and restrictive workplace learning environment (2005) shows that mentors and beginning teachers experience different workplace learning environments as described in Table 6. The mentors experience a more restrictive workplace learning environment and there is little evidence to argue that they are part of a community of practice of mentors as there is no explicit joint endeavour or shared repertoire. It can be argued that their roles as science teachers responsible for their pupils' progress as described above dominates because of the accountability as a consequence of the performativity culture in the school (Ball, 2013).

In summary, I would argue that considering the participants as part of a community of practice shows how the school and the department could improve mentoring and support the practice of mentors. Supporting the mentors to develop a community of practice with a clear explicit joint enterprise, clarifying whether it is to support learning how to teach or recruit new staff, and develop a shared repertoire including models and theories of learning and developing the discourse of pupil progress appropriate for beginning teachers.

#### 5.4 The increased role of the school in school-based teacher education has led to an increased value placed on accountability measures such as formal mentoring activities and formal record keeping.

These formal processes tended to be poor quality and superficial, driven by behaviourist processes rather than social learning or situated learning activities.

Analysis showed how accountability measures for ITT dominated mentoring time in line with Douglas's findings (2014). In addition the institutional accountability to Ofsted

standards and performativity measures also have an impact on the learning environment of the beginning teachers.

With reference to Hodkinson and Hodkinson's model of an expansive/restrictive workplace learning environment (2005), there are a number of key 'expansive' elements in place: each beginning teacher had a named mentor, and each had a scheduled mentor meeting. However, Denise was mentor to both Sally and Paula in year 1 of the study, holding joint mentor meetings and Sally commented in a mentor meeting in November 2013 that 30 mins was not enough. Denise responded that Chris, the University tutor, did not think there were any problems perhaps because the main requirements of a 'mentor' and a 'meeting' were in place. Denise was mentor to Jo during the second year while Paula and Sally moved on to have Liz and Christine as their NQT mentors. Kathy, the professional tutor, was outside the department and had a role with both trainees and NQTs and the support she gave was mainly administrative, reminding them what tasks needed to be done by when, and providing a safe place for discussion of issues particularly behaviour management; this came up in her one-to-one interview in November 2013 and in the interviews of the beginning teachers, and the mentors Denise and Liz. Three mentor meetings with Denise were observed (Nov 2013, Dec 2013, Nov 2014) and in each there was a brief discussion of observed lessons and then most of the time focused on administration activities: evidence for the portfolio, reports, observations in a primary school, second school placement. So, the formal processes of support, such as mentor meetings, lesson observations, writing reports did take place. As Douglas (2014) noted, the time devoted to the administrative 'learning by acquisition' activities (Sfard, 1998) seemed to dominate the formal mentoring times, what Eraut (2007) would call the 'learning processes' in the workplace.

Another element of accountability for ITT were the formal reports and these were considered in this study in July 2014 and July 2015, for both the NQTs and the trainee teachers. Firstly, it was noted that the NQT reports in July 2015, completed by Sally with her mentor Christine and Paula with her mentor Liz, were very different in style. Christine and Sally both said in their interviews that Sally wrote most of the report with Christine checking it and it emerged from the record of their mentor meetings. Liz and Paula both complained that they needed to redo the report three times. Even so, it seemed that completion rather than content was most important as the style and detail of the reports were so different. This final NQT report leads to confirmation of Qualified Teacher Status and for Paula it suggested that her behaviour management skills were an issue as the word behaviour was used 41 times (although this was not the case). Sally's report commented on a much wider variety of skills. It was interesting to reflect that the word resilience appeared in Sally's report seven times but did not appear in Paula's report while the phrase MTFU was used more often by Paula during Year 2 and Paula also had the MTFU T-shirt and the ten commandments (Gore, 2015) above her desk (see photos in Appendix 5). This was likely to be because mentor expectations were different; Christine tended to be collaborative in planning and through questions encouraged Sally to think about the decisions she was making with reference to her practice; Liz would intervene to offer support with pupil behaviour for all beginning teachers. So, it was important that the report was completed but very different styles of mentoring were accepted or tolerated. To refer back to the definition of community of practice (Wenger, 1998), there was no shared repertoire for writing reports.

The progress reports of the trainee teachers (Paula and Sally in Year 1 and Jo in Year 2) were not analysed to any great depth as the comments tended to be generic and bland and the trainee teacher reports seemed to do little to inform the training. The decision not to analyse these reports in depth was made because they did not seem to be important,

beyond completion. Again completion of the report to fulfil the accountability agenda seemed to be most important and this is similar to what Douglas (2014) found where the tools or artefacts of the teacher training programme tended to dominate the formal learning opportunities with mentors and university tutors. This was reinforced by Kathy the professional tutor; her interventions were appreciated by the beginning teachers and the mentors as she kept everyone on track. It should be noted that, in contradiction to Douglas's findings, beginning teachers were included in discussions of teaching and learning as they were welcome at all meetings and encouraged to contribute.

The field observation day in March 2015 showed the accountability measures that are important to this department in the discourse and artefacts in the team room. The wall space in the team room was dominated by a rolling detention list on a whiteboard, reminders and deadlines and a weekly break down of the term that was marked off as the weeks progressed. These two displays highlighted that managing behaviour and managing time were very important to this team; the team were time-poor. The wall displays in the corridor indicated that this was a science area with famous scientists, physicists and engineers and links with school or university science activities. This science identity was less clear in the team room where desks were piled high with papers, folders, resources, personal belongings and mugs and food. Although science teaching as a focus for this team became clear in the discourse in the room, it was mainly functional and instrumental, about managing pupils studying science individually or as groups and particularly managing science assessments for GCSE and post 16 (ISAs and CCAs). So, the generic discourse of managing time, behaviour and pupil progress were strong emergent themes of the field observation, and these are discussed further below.

Pupil progress is part of the institutional performativity culture in schools, the "regime of accountability that employs judgments, comparisons and displays as means of control,

attrition and change” (Ball, 2013). The mentors, Liz, Christine, and Denise, focused particularly on the beginning teachers being able to show that pupils made progress in their lessons. Both Sally and Jo admitted to struggling with understanding what was meant by pupil progress in their interviews and it was not surprising as the word was used to mean a wide variety of things. Here are comments from the transcripts over two years:

“I was thinking progress through the lesson not progress in their learning.” (Jo)

“...it was very hard to actually make good progress in checking progress.” (Jo)

“I need go and see some of that and some progress checking and things like that.”

(Jo)

“I managed to get the behaviour bit sorted and then it was just working on progress which has been my problem the whole year.” (Jo)

“...some of those more difficult ones are around understanding student progress.”

(Sally)

Jo asks Christine to observe her so she has evidence of progress checks.

“Now for me the progress during that lesson was good.” (Chris to Jo)

“We know that you can teach now and you need to move that step further focus on the students and what they are learning and the progress they are making.”

(Denise to Jo)

“...one of them was showing progress of learning in books.” (Sally)

“... you’ve got to show that they’ve made progress in every lesson.” (Sally)

“... she came and saw I’d done some work with my students on progress.”

(Christine)

“... you can go round and show progress by talking to the students.” (Christine)

“We keep strong tabs on their progress.” (Liz about the beginning teachers)

“...you want them to progress and you’re doing stuff.” (Denise with Paula)



“I want her to focus on showing progress.” (Denise on Jo)

“...if you can show at the end that they can understand it and write it down then you’ve achieved and they’ve progressed and understood it.” (Denise with Sally)

Sometimes the word progress is used about the beginning teachers learning but typically it is used about the students and students’ learning; sometimes it is used as a noun, sometimes a verb and sometimes in a phrase like ‘progress check’. Experienced teachers know that they are accountable for the progress of the pupils they teach. However, the mentors assumed that the beginning teachers understood pupil progress as their confusion was either kept hidden or ignored. Mentors and the visiting University tutor, were making judgements about the beginning teacher’s practice on the basis of the progress of pupils in their lessons.

So, the impact of the culture of performativity, described by Ball (2013) as a “regime of accountability” emerges as a focus on pupil progress. A search of interview transcripts shows the word progress being used in a wide variety of ways; it can refer to the learning of the pupils or the learning of the beginning teacher; progress can be shown in exercise books, through talking to pupils, through pupils writing, and through doing progress checks. The beginning teachers are expected to show that pupils make progress in every lesson, show that they understand progress and work with pupils on progress. The importance was emphasised by the extensive tracking of pupil progress using departmental spread sheets. This was triangulated with evidence from the field observation day in March 2015 where folders of PSAs and CCAs were being compiled and checked by Mary, the chief technician, when tiers of entry were being reviewed and the set lists of pupils in GCSE groups were being reviewed according to their assessments. The beginning teachers were immersed in this high-stakes discourse whilst they were not clear what it meant.

In addition, pupil progress was something that needed to be *seen* in lessons, an observable behaviour change. The NQTs had termly lesson observations as part of monitoring their development as teachers and both Sally and Paula had a Requiring Improvement judgment. Here, the perceived Ofsted grading was being used as another institutional accountability measure. For Paula, this judgement was partly because she did not show enough progress in the lesson and therefore was asked to organise a brief lesson observation for Liz where she was able to show pupil progress (field observation, March 2015). So pupil progress was linked to showing observable behaviours in the class when observed by your mentor, HoD or Headteacher. Liz called this ‘ticking the right boxes’. For Sally, the issue was her marking which was not showing evidence of pupil progress (interview, Jan 2015). Again, a focus on observable behaviour change is a behaviourist model of learning (Douglas, 2014; Miell et al., 2002; Watson, 1914). In both of these examples, the school is using an interpretation of the Ofsted School Inspection Framework (Ofsted, 2015c) which is incorrect. Ofsted published clarification (Ofsted, 2015b) to state that individual lessons were not judged anymore and that they did not expect to see a particular style or frequency of marking of pupil work; the focus is on pupil progress over a longer time frame not in individual lessons.

Both NQTs received an Ofsted ‘Requiring Improvement’ lesson observation judgement, Sally for her lack of marking and Paula for a lack of pace and progress in the lesson. Despite Ofsted clarification (Ofsted, 2015b) stating that individual lessons are not judged anymore, these RI judgments were critical incidents for the two NQTs. In both cases, they changed their behaviour by ‘ticking the right boxes’ showing the model of resilience of disruption, reintegration to a new state of balance described by Richardson (2002). Paula organised a short observation from Liz where she showed pace and pupil’s making progress and Sally worked out how to cut corners in her marking. It was to ensure her

marking would pass scrutiny and she learned how to mark strategically and realised that more experienced teachers were doing this already.

There was a misinterpretation of the Ofsted framework of inspection for schools (Ofsted, 2015c) by the mentors, HoD and senior staff. The Ofsted framework for ITT states that lesson observations of NQTs teaching is to evaluate their contribution to the learning of pupils (Ofsted, 2015a). This is more complex than showing observable behaviours during lesson observations. The ensuing culture of performativity contributed to the behaviours of addictive presentism (Hargreaves, 2010) where short term interventions were sought to improve pupil results; these short term interventions include marking strategically rather than for pupil learning, learning how to manage an observation so it appears pupils are making progress, have short mentor meetings that have a concrete checklist as an outcome. Liz, as HoD, admits to being time pressured and not having time to reflect.

The focus on pupil progress seems to have been successful for the department as the results of pupils have been good and the department is highly regarded in the school. However, this narrow focus on pupil progress has led to behaviours that could be described as addictive presentism (Hargreaves, 2010), short term activities to improve results (data). This is instead of undertaking long term changes to curriculum, teaching and learning, assessment or pedagogy. These findings also show that these opportunities tended to emphasise behaviour management and particular teaching and marking approaches that make the progress of pupils explicit or observable. Examples include Liz's behaviour management interventions discussed by Paula and the mentors together in their focus group (July 2015), the feedback from Denise to both Paula (Nov 2013) and Jo (Nov 2014) that the teaching was fine, and now they needed to show pupil progress, and for Sally, the focus on her marking of books.

Resilience as a personal attribute of beginning teachers was raised by Tasha (deputy head) and Kathy, professional tutor, at start of the 2014 academic year, the second year of data collection, asking me how we (the HEI) made sure trainees were resilient enough. During the autumn term all senior staff seemed to be in agreement that the resilience of beginning teachers was an important attribute, trait or quality of new recruits to the school, similar to that described by Jacelon (1997). Jo as a trainee noted in spring 2015 that “resilience is the new big thing” and all three beginning teachers talked about it in their interviews during the second year. It is interesting to explore what the beginning teachers and the mentors thought resilience meant in the context of working in the department. As Chris, the visiting University tutor, said “it is all focused on Ofsted.” In the second year of data collection Liz is more specific about her expectations of the recruited NQTs: she wanted them to ‘tick the boxes’ which included showing pupil progress in lessons and marking books, managing pupil behaviour and taking ownership for their classes. Here, the trait of resilience is being linked to behaviours that could be considered addictive presentism (Hargreaves, 2010), short term interventions to improve results or contribute to institutional accountability measures. There was a narrow focus on current institutional priorities that mattered to the department.

However, the situation for mentors was different as there was a functional approach to their needs as mentors: they were given information and reminders and it was assumed that they knew what they were doing or that the HEI would be meeting their learning needs. As a consequence, the formal mentoring opportunities offered were often dominated by administrative ‘accountability’ activities. With the policy change that teacher training should be school-led, the status of the learning offered by the HEI is however being challenged.

Analysis shows that accountability measures in ITT, Ofsted and performativity have an impact on the learning experiences of the beginning teachers. This suggests that modifications to the expansive/restrictive model of Hodkinson and Hodkinson (2005) for schools is appropriate; the wider challenges of teacher training for schools now makes it appropriate for modification particularly being clear about 'offering support' and 'offering professional learning' and making explicit the informal learning described by Eraut as 'learning activities', which would recognise the place of listening, observing, reflecting in 'learning to teach' while in placement opportunities. These findings have particular implications for mentor selection, preparation and training. The impact of policy of accountability of schools on the experience of new entrants to the teaching profession is likely to be an unintended consequence so these findings suggest that a review of policy on ITT is appropriate.

#### 5.5 There is a dissonance between what the beginning teachers are experiencing and what the mentors and institution think is happening with respect to learning how to teach in the workplace. This led to an additional dissonance between values and practices.

The spider diagrams constructed in year 1 (Appendix 8a and 8b) indicated that the experienced staff wanted to offer a wide range of experiences, a supportive environment with flexibility, a safe place to share, with easy access to the information including schemes of work, and what Tasha, the deputy, described as "an encouragement to explore". So, in Year 1 of the study, the experienced teachers hoped to offer a learning environment to beginning teachers that was expansive and included the informal learning opportunities described by Eraut (2004). However, analysis shows that there is a dissonance between what the experienced teachers said at this point (autumn 2013) and observed practice in Year 2 (Nov 2014 to July 2015). In interviews in year 1, the importance of the 'learning processes' was recognised in the spider diagrams that each interviewee constructed (see Appendix 8) by naming a mentor and having explicit

learning focused activities. Only Sally mentioned “guided reflection”. The range of experiences listed in Eraut’s **work processes** (2007) were also listed in these spider diagrams. However, the informal **learning activities** were not recognised, particularly by the mentors, as readily; Christine did probe how beginning teachers were thinking about their practice but this happened in a 30-minute mentor meeting usually once a week. **Learning activities** were similar to professional vision as described by Goodwin (1994) and were what Eraut had described earlier (2004) as informal learning. This informal learning includes listening, observing, reflecting, giving and receiving feedback, and learning from mistakes. This did happen, however, but these activities occurred in a time-pressured environment, particularly for the named mentors. ‘Learning activities’ drew in many other staff in the department in the work with the beginning teachers. Denise said that she would have liked a handbook so the trainee teachers did not have to bother the teachers; Liz says she was too busy to reflect or think about how to support Denise, mentor and both Denise and Christine were part-time.

It was noted during the field observation day that the physical environment of the team room was inclusive of the beginning teachers; the trainee teachers have desks the same as established members of staff and they also have access to the shared computers. Figure 5 shows that Jo, as trainee, and Sally and Paula, NQTs, are situated in the centre of the team room while their mentors Liz, Christine and Denise are situated along the wall with their backs to the door. This allowed the beginning teachers to take on a science teacher identity (Pedretti et al., 2008) when they were allocated their workstation or desk and the expectation that they would get stuck in was clear from the beginning of their time in the school. In her one-to-one interview, Sally noted that she enjoyed being included in the very first training day at the start of her training year and also included as an active participant in department meetings; Paula similarly liked being asked to contribute to extra-curricular activities including a club for gifted and talented pupils. Other indicators

during the field observation were the discussions of social activities that suggested that many members of the team, including the beginning teachers, socialize outside of work. Liz, the head of department, said in her interview that the beginning teachers were included and invited to share in all activities of the department including meetings and social activities. There is certainly full involvement of all beginning teachers in **work processes** (Eraut, 2007); there was encouragement from the very beginning of the placement to get involved in all activities from teaching to meetings to clubs to enrichment activities.

However, the beginning teachers in their interviews said it was hard to find schemes of work and they did not understand the departmental systems. Sally said the “IT system was all over the place”. All beginning teachers found the support of the technicians with guidance on ‘what to teach’ invaluable. The chief technician, Mary, recognised that she answered questions that the beginning teachers may be reluctant to ask the experienced teachers or their mentors, and she provided a lot of day-to-day information about the routines of the department (where to find things, how to set a detention); it was hard to know if this was a planned support mechanism or filling a gap in a time-poor teaching team. Beginning teachers valued this support but Sally learnt that Mary’s advice may not always be right as she was not a teacher. Denise, as trainee teacher mentor, did check with Mary how the trainees were managing with practical work but this arrangement led to the beginning science teachers having discussions about SCK (and PCK) with technicians rather than with experienced teachers. This is part of their negotiating their developing science teacher identity through informal arrangements with a non-teacher.

It was notable that there was little discussion about PCK or SCK observed with the beginning teachers. The observed mentor meetings with Denise did not touch on SCK and there was little discussion of PCK as the meetings concentrated on evidence that the class

pupils had made progress and other administrative matters relating to the course. During the field observation day, subject content was raised with Jo by a class teacher, Tessa, who was not her mentor. The discussion did not challenge Jo to think or reflect about her SCK or PCK which shows that the department team did not have a shared approach to learning how to teach. It should be noted that all beginning teachers had identified specific teachers as SK experts. So, analysis shows that the beginning teachers turned to specific teachers and the technicians for support with SCK and PCK in the first instance and mentor meeting time was not used for this. The question of what mentor time was used for is discussed further below.

It is discussed above that pupil progress in lessons was being seen as a proxy for beginning teacher progress in their learning to teach. Chris, the University tutor was present in one mentor meeting, and said afterwards that the school staff were skilled at identifying pupil learning but poor at identifying trainee learning. In the meeting, Jo was asked by Chris how she knew that the pupils were learning in the class. Jo was uncertain what he meant and the discussion then moved on, once again, to administrative checks about the training programme and a target was recorded for Jo to factor in opportunities to check pupil progress in the lesson. This observation was in November 2014 and this topic came up in her final interview in July 2015, when Jo said “it was hard to make progress in checking progress”. The paradox for Jo was that everyone was talking about pupil progress but no-one could explain it to her, yet expected her to know what it meant. As Douglas (2014) describes, it was prioritising administrative processes of the ITT course over discussions about pupil learning in November which may have helped. Pupil progress was described as a very difficult concept by both Sally and Jo in their discussion together and both found it hard to discuss this in depth with their mentors.



Paula and Sally were both career changers and were able to access a wide variety of support in the department and the school. The network maps shown in Appendix 9 (Fox and Wilson, 2009) and their spider diagrams in year 1 (appendix 8) show a wide network of support (a range of science teachers, support staff and technicians). Jo had not had paid employment before and drew on the other trainees in other departments and the newly qualified teachers in the department as a source of support. Jo was occasionally puzzled by expectations (about her written reflections, about progress checks, her timetable) and asked for help explicitly. Typically, she was told she was fine and she did her best to fit in. Sally, Paula and Jo identified sources of support with SCK and Mary was there to answer any questions if they were unsure. However, there was little evidence of explicit reference to developing SCK in the department.

The beginning teachers were able to discuss a wide range of learning approaches both in the focus group in July 2015 and in their individual interviews. 'Learning by acquisition' (Sfard, 1998) emerged as a strong theme for all three as they needed to get evidence of good practice in observed lessons. They needed to collect evidence whether they were trainee teachers or NQTs and there were times when they were focused on getting the right kind of evidence. 'Learning by participation' (Sfard, 1998; Wenger, 1998) was also important; Sally and Paula talked in their individual interviews of making the most of the opportunities the school offered with Paula particularly valuing being asked to contribute to the gifted and talented science club and Sally valued participating in all the meetings and discussions held in the department. Jo saw herself as an extra pair of hands and offered to help, with less thought about what she was gaining but how she was easing pressures for others. They were able to use the models of Kolb (1984) and Schön (1983) and were beginning to recognise how they were becoming teachers through participatory appropriation (Rogoff, 1995) or 'learning by becoming' (Hager and Hodkinson, 2009). The dissonance was that the mentors lacked a shared discourse about learning to teach except

for the need to be tough, to be resilient. 'Learning by acquisition' and 'learning by participation' (Sfard, 1998) were strong shared metaphors but it was not apparent that the mentors had a shared model or models of 'learning to teach'.

Analysis using Eraut's two triangle model (see p 33) with three learning factors (challenge and value of the work, feedback and support, confidence and commitment/personal agency) and three context factors (allocation and structuring of work, encounters and relationships with people at work, individual participation and expectations of their performance and progress) reveals that the beginning teachers were certainly challenged by the breadth and diversity of opportunities and they had or developed the confidence and commitment to make the most of the opportunities. Feedback and support was available but focused mainly on formal opportunities (named mentor, mentor meetings) while the informal learning opportunities were underdeveloped (reflecting, observing, and listening). Considering the context factors, the allocation and structuring of work maintained the challenge and value of the work, brief encounters with key staff and formal mentoring relationships were in place. However, there was anxiety amongst the beginning teachers about expectations of their performance and progress and there were concerns that asking for support may be interpreted as not coping. This was emphasised by a narrow focus on showing resilience and showing evidence of pupil progress. This shows a dissonance between their experience and what Liz, as HOD, had hoped. She wanted the beginning teachers to feel like 'one of us', to see that they all learn together (Nov 2013) and that experienced staff struggled with classes too (Jan 2015). So analysis using Eraut's two triangle model (2007) reveals dissonance between what mentors think is happening and what the beginning teachers are experiencing.

Eraut's typology (2007) is designed for early career learners and it is not easy to see how it could apply to the COP-beginning teacher more widely. However, the model developed

by Hodkinson and Hodkinson allows the learning environment for the beginning teachers to be evaluated and also for the mentors and allows the question 'what is the learning environment for the mentors learning how to support beginning teachers?' to be asked. Using the model to evaluate the learning environment for the beginning teachers and also their mentors shows a difference. Table 6 shows how expansive or restrictive the learning environment is for each of these two groups in the COP-beginning teacher. The beginning teachers experienced an environment where their status as learners was recognised and explicit opportunities for learning and support were offered and named mentors were in place. The areas for development included recognising the value of boundary crossing for both mentors and beginning teachers and explicitly recognising the informal learning opportunities highlighted by Eraut's typology above. However, the learning environment for the teachers as mentors tends towards restrictive with their needs not explicitly recognised and addressed. This is an additional dissonance between values and practices.

Childs et al. (2013) argue that a welcoming team room that encourages discussion may also indicate balkanisation of the department from the whole school. This is another example of dissonance between values and practice as access to the science team-room showed how the science department operated differently or was balkanised from the rest of the school (Hargreaves and Macmillan, 1992). At Birchbrook, during the field observation in March 2015 it seemed that those with science business were welcome in the team room while others did not stay. A-level students came into the room and talked with their teachers, even sat to work on their personal statements to support applications to university whereas members of teaching staff popped in and left promptly, not stopping for a chat. It felt like a very clear boundary although this was not made explicit. The incident with the injured pupil and the ignored request by a member of staff for help or a first aider (during the field observation, March 2015) seemed to show that the department

had time for 'their' students but not all students, time for those staff who had business with the science team but not a warm welcome.

In contrast, the team room was equipped for making hot drinks and there was a fridge and microwave and many of the team ate and drank and carried out personal activities such as drying hair in this space indicating strong personal identification with the science community, another characteristic that Hargreaves and Macmillan (1992) argue defines a balkanised culture.

Dissonance between values and practice was also shown when the blue band was used. The mentors used the blue band to clearly state one quality that was needed to 'learn to teach' and that was that you needed to be tough enough, resilient enough and man the f\*\*\* up. The 'Man the f\*\*\* up' (MTFU) blue wrist band and phrase was used to make the beginning teachers see what they must let go ("Let it go" (Christine)) in order to be able to move on; to warn them not to waste time on things that you can't change (Paula); don't get bogged down and waste time on things that are done. The blue band was given to the teacher who needed to man up – this included Christine and Liz (and Kelly for a short period) as well as the three beginning teachers, Sally, Paula, Jo, in the study. It became a shorthand to:

"get on with it" (Sally)

"take responsibility" (Denise)

"give it back when the problem's solved" (Liz)

"it's a physical thing about owning the problem" (Liz)

No discussion was needed but instead there was a physical prompt to take action. The blue band was being used to test or build the resilience of the beginning teachers. All three beginning teachers wore the blue band at some point and agreed that it helped them

prioritise actions and move on; and it gave them the drive to get on and face challenging situations – with positive outcomes. This is similar to the model of resilience developed by Richardson (2002) where disruption is followed by a new sense of balance.

Additionally, in the mentor focus group in July 2015 Christine said she thought Denise should be harder but Liz said that Denise could be too hard and there have been tears. In the focus group, it seemed that being hard was not seen as a bad thing nor as a good thing, more a necessity. Paula was bought a MTFU t-shirt by her mentor Liz (Dec 2014) and had the ten commandments for reducing stress (Gore, 2015) above her desk which she had amended with the MTFU slogan (see Appendix 5). In the focus group in July 2015 the beginning teachers said they found the blue band to be helpful as well as harsh. They said it helped them move on and realise how there was little to be gained by worrying over things they could not change. Jo, in her interview in April 2015, linked the blue band with her moving on from her 'wobble' in March. It started her thinking and made her review her lesson plans to be more effective. For Paula (July 2015), it helped her focus on what was important and helped her prioritise. For Sally (July 2015) it helped her see what she needed to focus on and stop wallowing on her problems or challenges; it helped her take action. The beginning teachers were describing the disruption and a new sense of balance as they develop resilience (Richardson, 2002); it could also be described as participatory appropriation which is the term used by Rogoff (1995) for how the individual changes their involvement at an interpersonal level to become part of the community, to fit in. However, the blue band was used to further challenge the beginning teachers to take responsibility and own their practice and be more involved in 'work processes' in an aggressive and blunt way that many would find unacceptable.

## 5.6 Summary

Analysis of the data collected shows five main findings:

1. There is considerable tension in the mentor's professional life.
2. The role of the mentor and the learning needs of the mentors were poorly understood.
3. The 'community of practice – Beginning teachers' is not as originally perceived. The beginning teachers could be described as a COP but the experienced staff (including the mentors) were not.
4. The increased role of the school in school-based teacher education has led to an increased value placed on accountability measures.
5. There is a dissonance between what the beginning teachers were experiencing and what the mentors and institution thought was happening. This led to an additional dissonance between values and practices.

These findings are interconnected; the accountability measures arise out of the culture of performativity that is driven by institutional drivers beyond the department. This has led to behaviours of addictive presentism in the science department which contributes to the tension in the mentors' professional lives and the dissonance between values and practice. Addictive presentism is institutionalised in the school and department while the deep understanding of pedagogy, PCK and SCK is more serendipitous.

The culture requires beginning science teachers to show resilience if they are to meet the expectations of the department and fit into this culture. The model of resilience has similarities with several described in the literature; the simple model of resilience as a personal trait dominates the discourse in the department but the use of the blue band and

the way Liz offers specific interventions with behaviour until either the beginning teacher or the pupils have learnt the expectations shows a process model (Fletcher and Sarkar, 2013; Jacelon, 1997). This culture is shaped by the limited time and the limited repertoire of support available. The critical model of resilience of Price et al. (2012) links the need for teachers to be resilient with the performativity culture that has developed alongside the neo-liberal marketization of education. The resilience culture fostered by the blue band was perhaps part of their constructed beliefs about what it is to become a teacher or science teacher. Ball (2013) may be right when he argues that the identity of what it means to be a teacher is being challenged.

There are policy implications for these findings in that they may be unintended consequences, focusing these early career practitioners on resilience, pupil progress and performativity measures; however, if it is an intended consequence then the training offered to beginning teachers by the school and the HEI needs to be reviewed to better prepare the beginning teachers.

In addition, the culture in the department closely matches a balkanised department as described by Hargreaves and Macmillan (1992). There was a very strong culture of working together as a team and many members described not leaving the department much (Jo, Sally, Paula, Liz, Denise, Chris); the science department was very important to their identity (Pedretti et al., 2008). The science team room contributed to these practices in providing a physical space. The beginning teachers experienced an inclusive physical environment in a department that had characteristics of a balkanised culture, separate from the whole school. The strong sense of community and the strong leadership of Liz contributed to the balkanization as they knew she would protect, defend and fight for the needs of the team with the senior staff. This was shown particularly in the support she gave to ensure high behaviour management standards. However, in the time-poor day-to-

day working, becoming a science teacher was defined by perceived Ofsted expectations and the backwash of the performativity culture that was shaping the behaviours of experienced teachers and those that were accountable for pupil progress. The important informal learning processes of Eraut (2007) were poorly developed and the mentors in particular experienced a restrictive workplace learning culture to support their learning to mentor.

The next chapter, conclusions, comprises a summary of the discussion from this chapter, implications for theory, policy and practice, suggestion for further research and dissemination of the study, and finally my own reflections.



## 6 Conclusions

The overarching research question for this study was ‘what is the nature of the learning environment of a science department for beginning teachers?’ In summary, the key findings of this study are:

1. There is considerable tension in the mentor’s professional life: for example, mentor vs science teacher, accountable for teaching and the results of pupils.
2. The role of the mentor and the learning needs of the mentors were poorly understood.
3. The ‘community of practice – Beginning teachers’ is not as originally perceived. A COP is defined as participants who are mutually engaged in a joint enterprise and have a shared repertoire (Wenger, 1998). The beginning teachers could be described as a COP but the experienced staff (including the mentors) were not.
4. The increased role of the school in school-based teacher education has led to an increased value placed on accountability measures such as formal mentoring activities and formal record keeping. These formal processes were poor quality and superficial, driven by behaviourist processes rather than social learning or situated learning activities.
5. There is a dissonance between what the beginning teachers were experiencing and what the mentors and institution thought was happening with respect to workplace learning how to teach. This led to an additional dissonance between values and practices

The research design for this study is an illuminative and descriptive case study so the conclusions consider what has been illuminated by the study. Chapter 4 is offered as a rich description of the case so that it is recognisable by others familiar with the field. There is then the potential for generalization to similar cases (Basse, 1999). This is

followed by the implications for theory, policy and practice and then suggestions for further research, suggestions for dissemination and finally my own reflections.

## 6.1 What has been illuminated by this study?

Parlett and Hamilton (1987) described an illuminative case study as information gathering and evaluative in the sense of shining a light on the case to reveal what has not been seen before. This case study is not evaluative by design but some of the findings do have implications for policy, theory and practice. The key findings listed above come from consideration of the subsidiary research questions; these subsidiary questions are answered here.

### 6.1.1 RQ 1 What is the nature of the learning environment experienced by beginning teachers in the science department?

Considering the lived experience of the beginning teachers shows some striking contradictions and paradoxes in the learning environment as experienced by the beginning teachers. It is an intense emotional, mentally, and physically demanding time negotiating one's place in the team and within the profession, working out what is valued and what is expected. The physical environment was inclusive of the beginning teachers and quickly offered them an identity as 'beginning teacher'. This included having access to experienced teachers to discuss their practice, access to resources, and the opportunity to observe others. The lived experience of those learning to teach is characterised by fitting in to the very hectic schedules of time pressured mentors. The expected themes in learning to teach of managing pupil behaviour (Czerniawski, 2010; Haggarty et al., 2011), fitting in to the department (Haggarty et al., 2011; Hagger et al., 2008) and the importance of the team room (Childs et al., 2013; Douglas, 2014) did feature strongly in the learning environment while development of SCK and PCK (Shulman, 1986; Shulman and Shulman, 2004) did not feature prominently in the interviews, perhaps developing informally.

Formal mentoring activities were dominated by administrative tasks and a focus on pupil progress or evidence of pupil learning. This seemed to be taken, by the mentors, as a proxy for beginning-teacher-learning whilst beginning teachers were muddled about what was meant by pupil progress.

The need for beginning teachers to demonstrate they were resilient is shown by the introduction of the blue band. This band was given to beginning teachers to tell them 'to move on', 'to take responsibility', 'to man the f\*\*k up'. The blue band was not given to punish a trainee teacher but was given with care, to help them cope, sometimes given with love. It is worth noting that relationships were strong and the blue band typically had a positive effect on the recipient, despite some initial hesitation. However, the blue band is an example of the dissonance between values and practice that the beginning teachers experienced.

#### 6.1.2 RQ 2 How is 'learning to teach' articulated by members of the science department, including beginning teachers and their mentors?

The discourse about 'learning to teach' by members of the science department showed a difference between the mentors and the beginning teachers. The beginning teachers drew on several metaphors to describe how they learn to teach and what helps and meets their needs. They used the metaphors of learning by acquisition, by participation and by construction (Hager and Hodkinson, 2009; Sfard, 1998). They comfortably discussed the learning models provided (Hodkinson and Hodkinson, 2005; Kolb, 1984; Sfard, 1998), relating them to their developing practice and they knew whether writing or talking about their practice was most effective for reflection.

Learning by participation was a dominant metaphor for mentors and they ensured a wide range of opportunities or experiences for all beginning teachers to participate in activities

in the department. Mentors and the Professional Tutor shared in the view that beginning teachers needed to become resilient first and this seemed to be the main quality that would ensure they would be accepted into the team. Mentors themselves did not have a shared discourse of learning to teach and had little time to reflect on this, an aspect of the dissonance between values and practice. They had a well-developed discourse around the beginning teachers developing practice but it was influenced by an interpretation of the discourse of Ofsted and what it meant to be 'Good'. The need to meet institutional requirements of reports, through 'acquisition' of evidence, seemed to be a tick box exercise with little regard for the content. It could be argued there was a strong theme of 'learning by administration' (which is not learning) by the mentors, including the University Tutor, as considerable time in formal mentoring meetings was given to administration (Douglas, 2014).

Perceived accountability measures shaped the mentors' perception of what it is for a beginning teacher to teach to a 'Good' standard. So, when a beginning teacher was able to talk about pupil progress or show it in a lesson, this became a proxy for that beginning teacher doing well or making progress in 'learning to teach'. In contrast, beginning teachers were able to talk about how they learn to teach, what mattered, what helped them. They were able to use and recognise a number of models of learning. Only one mentor linked the models to her practice as a mentor. Judgements of the trainees tended to be based on observable behaviours rather than in-depth discussion about decisions they made in lessons. As a consequence, being able to teach was reduced to a set of observable behaviours.

### 6.1.3 RQ 3 How do models of work place learning reveal the culture of learning in the science department?

The theories of workplace learning of Eraut (2007) and Hodkinson and Hodkinson (2005) showed a difference in experience for the mentors and the beginning teachers. The professional learning for the mentors to understand their mentoring role was underdeveloped with no school-based policy or school-based training (beyond administration) and a reliance on the training offered by the HEI. Hodkinson and Hodkinson (2005) model of expansive and restrictive workplace learning environments showed that the *aspiration* of the COP-beginning teacher, in Year 1 of the study, was for an expansive environment but, in reality, it was restrictive in a number of ways. There was an emphasis on the need to meet government and school agendas of pupil progress and resilience and there was little encouragement for boundary crossing. Formal learning processes did take place for beginning teachers but the informal processes (work processes and learning activities in Eraut, 2007) were not explicitly encouraged and the beginning teachers did not get much time to reflect with experienced teachers on their work processes. The mentors did not have a strong support network for their mentoring role while the beginning teachers had an extensive support network for learning to teach. As a consequence, it seems that the beginning teachers were in a community of practice with a joint enterprise and a shared repertoire; however, this was not the case for the mentors. The learning needs of the mentors, to be effective mentors, was poorly understood.

The lack of boundary crossing by the members of the department is a restrictive aspect and contributes to the characteristics of the department as balkanised from the school (Hargreaves and Macmillan, 1992). Team members were not encouraged to have wider involvement with the school, and they were not interested in the wider experiences gained by the beginning teachers, for example through their pastoral roles. The culture of the team room was that of 'mucking in together' and this at times was harsh even brutal.

Being able to manage classes was key to being accepted; support was offered by the HOD, Liz, to make sure they did things right. The blue band was used as a tool and an identifier for those who needed to own their problems and get on and solve them. The paradox of the blue band was that it was offered with considerable care and concern as it was a commonly shared belief that you would not survive as a teacher unless you could move on, “don’t waste time and energy on the things you can’t solve” but intervene and solve it.

#### 6.1.4 RQ 4 What are the wider factors that are affecting the learning environment for beginning teachers?

Analysis shows that wider factors such as performativity and the expectations of Ofsted, outside of the department, are having an impact on the workplace learning environment of the beginning teachers.

There were wider factors having an impact on the learning environment in the department. The performativity culture had led to particular expectations of beginning teachers, particularly tracking pupil progress, on the school. Hargreaves coined the term ‘addictive presentism’ (2010) to describe how teachers engage in short term interventions that yield immediate results, typically to improve results. This can be supported by evidence from the case study; a move from a reflective approach to a behaviourist check list that has a relentless pace and focus on pupil progress (therefore ‘addictive’ presentism). Recent changes to the Ofsted School Inspection framework (2015c) were interpreted locally, despite the clarification document (Ofsted, 2015b), such as judging individual lessons and pupil progress to be demonstrated through marking and behaviours in lessons. This local interpretation contributed to the expectation that all beginning teachers had to show first they were resilient and tough enough to do the job. It could be argued this impact on the beginning teachers was an unforeseen consequence of the performative culture created in school by recent policy change.

There was pressure in the department for all teachers to be judged 'Good' when lessons were observed by school leaders despite Ofsted not judging individual lessons any more. This pressure focused particularly on teachers showing that pupils were making progress. Book scrutiny (or marking) was also a priority because this again was interpreted as pupil progress. The department is locally a very good department with very good results in science. The team were clearly experts in 'pupil progress' and particular types of pupil learning; however, the models they hold for pupil learning tended to be used with the beginning teachers. Setting the beginning teachers short term targets and then expecting them to show how they were changing their practice and acting on advice is a behaviourist model of learning that is out of step with the social theory of learning (Lave and Wenger, 1991; Wenger, 1998).

## 6.2 Implications for theory

An implication of this study for theory is that the expansive restrictive continuum of workplace learning developed by Hodkinson and Hodkinson (2005) can be revised to explicitly refer to both the formal and informal learning (Eraut, 2007) and to distinguish between support and professional learning. The main findings that formal accountability measures of ITT, performativity and Ofsted suggest that the value of informal processes should be included in the 'expansive' descriptors. In addition, explicit reference to the mentor training needs is also included. I suggest the following amendments indicated by *italics* in Table 7.

Table 7 Revised expansive restrictive continuum based on Hodkinson and Hodkinson (2005)

Expansive	Restrictive
Close collaborative working with colleagues <i>which encourages learning through work processes</i>	Isolated, individualist working
<i>Formal learning processes for mentors and beginning teachers that encourage discussion of practice.</i>	<i>Formal learning processes for mentors and trainee teachers that focus on administrative matters.</i>
Out-of-school educational opportunities, including <i>opportunities informal learning activities including reflection and thinking differently</i>	No out-of-school educational time to stand back, only narrow, short training programmes
An explicit focus on the <i>informal activities of</i> teacher learning, as a dimension of normal working practices	No explicit focus on teacher learning, except to meet crises or imposed initiatives
Supported opportunities for personal development that goes beyond school or government priorities	Teacher learning dominated by government and school agendas
Colleagues are mutually supportive in enhancing teacher learning	Colleagues obstruct or do not support each other's learning
Opportunities to engage with other working groups, inside and outside the school	Work restricted to "home" departmental teams, within one school
Opportunities to extend professional identity through boundary-crossing into other departments, activities, and schools	The only opportunities for boundary-crossing come with a major change of job
Support for variations in ways of working and learning, for different teachers and departments	Standardized approaches to teaching and teacher learning are proscribed and imposed



Teachers use a wide range of learning approaches	Teachers use a narrow range of learning approaches
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This study shows a link between the performativity culture which is acting at an institutional level, the behaviours of addictive presentism which are acting at an interpersonal level and the requirement for beginning teachers to show resilience at an intrapersonal level. This supports Ball's suggestion (2013) that the performativity culture is changing the identity of teachers by changing what it is to be a teacher. The driver for this is the enactment of recent education policy.

### 6.3 Implications for, and contributions to, policy

The Education Act (DFE, 2011a) emphasised and prioritised school-led initial teacher training over HEI-led teacher training. The findings of this case study indicate that what school-based mentors consider to be important in learning to teach is influenced by the accountability measures of ITT, the perceived Ofsted agenda (described in Ofsted (2015c), informed by DFE (2015) but clarified by Ofsted (2015b)) and the pervasive performativity culture. At Birchbrook this seems to have had the effect of prioritising formal mentoring processes and encouraging particular observable behaviours linked to pupil progress and resilience over a deep understanding of pedagogical content knowledge and subject content knowledge. Prior to this policy shift, the partnership that existed between the HEI and the school valued the unique contribution that each brought to the trainee teacher learning to teach, a balance between workplace learning, developing an awareness of the school priorities and a deep understanding of PCK and SCK that underpinned practice. This may be an unintended consequence of the policy prioritising school-led ITT or it could signal that what it means to be a teacher is changing: to be resilient; show behaviours of addictive presentism; willing to take on tips and hints to captivate your learners; ensure you can show pupils making progress during a brief lesson observation.

These findings do suggest that it is appropriate to review the policy with regards to school-led ITT.

The recent introduction of non-statutory standards for school based ITT mentors (Teaching Schools Council, 2016) suggests an awareness that mentors need support. It is vital that the professional learning needs of school-based mentors are prioritised; Birchbrook did not have a school-based policy for ITT and did not offer additional professional learning for mentors; this would be a local policy recommendation arising from this study.

#### 6.4 Implications for practice

Those involved with ITT whether HEI or school-based will need to consider the professional learning needs of trainee teachers, school-based mentors and school leaders. The key finding that mentor training needs are poorly understood indicates that this area must be revisited by the HEI, whilst recognising the considerable tensions in school-based mentors' professional roles. There is value in being explicit about the expertise that teacher educators have in adult learning and how the role of a teacher educator working in partnership with a school-based mentor can be complementary.

The findings of this study are relevant to those involved with training beginning teachers in the following ways: to emphasise formal and informal ways of learning in the workplace; to explore what pupil progress means for beginning teachers; to raise awareness about the particular priorities in school (pupil progress, resilience).

Professional development to meet the needs of school-based mentors in school should be addressed in the following ways: also emphasise informal and formal learning opportunities (Eraut, 2007), the place of administration, and what pupil progress and resilience might mean for beginning teachers. Consideration of learning theories such as behaviourism and constructivism could also include workplace learning models.

At an institutional level, the impact of the perceived Ofsted agenda and the introduction of School Direct on how beginning teachers are experiencing learning to teach needs to be considered. If the role of schools in ITT continues to grow, it is important to consider what it means to learn to how to teach, and what the training needs may be for those involved in mentoring beginning teachers. This needs to be done in the reality of the challenges and pressures on teachers' time. The introduction of School Direct and an emphasis on school-led teacher training at the same time as changing the Ofsted framework, academisation and increased financial pressures on schools are having unforeseen consequences on the quality of training experienced by beginning teachers in the school placements.

At a personal level, the impact of the research on my own practice and new role as an academic developer is as follows:

- Being explicit about the different roles of the work-based mentor and the HEI based mentor. I do this by emphasising the expertise of the work-based mentor in particular and the tension of their roles in the workplace ( to be a mentor and also fulfil their 'day job' role).
- I have shared theoretical models of workplace learning particularly Fuller and Unwin's expansive/restrictive workplace learning environment and Eraut's typology of early career learners. I particularly take time to consider the tension

between the accountability measures of formal mentoring processes and the impact of informal processes on workplace learning.

- I am also working to prepare colleagues for offering degree apprenticeships and this route to a degree will have 80% workplace learning and so this study has been vital in preparing me.

## 6.5 Further areas for research

This is a case study of one science department at a particular time. A similar study in different subject departments situated now, two years on from the data collection, would explore whether the learning environment at Birchbrook has similarities with other schools and other subject departments.

Three other areas for research arising from this study are:

- Exploring interpretations of pupil progress with beginning and experienced teachers.
- A qualitative study of perceptions of 'resilience' in beginning teachers.
- An action research project with school-based mentors to develop their professional learning and explore formal and informal learning for beginning teachers (Eraut 2005, 2007) considering the findings of this study. During this study, Denise asked for feedback of her mentoring and this was given; she has changed her practice as a result, asking more questions in mentor meetings and thinking more about trainee learning. This suggests that this support is likely to be valued and to explore it with school-based mentors would be more appropriate to a partnership model of beginning teacher learning.

## 6.6 Suggestions for dissemination of the findings

Dissemination of the findings of this study to teacher educators would contribute to the debate of the role of teacher educators based in HEIs and in schools. I intend to submit an abstract to the British Educational Research Association for their Annual conference in the autumn 2018. I am considering the following journals: 'Teaching and Teacher Education' and the 'Journal of Education for Teaching' both publish research that focuses on teacher education and initial teacher education while the journal 'Teachers and Teaching' publishes articles on teaching as work and the 'Journal of Workplace Learning' focuses on learning in the workplace. There is the potential to develop at least two papers from this study, one that focuses on learning to teach and another that considers the science department as a site of workplace learning. A third paper could consider the impact of policy on beginning teachers and this again could be submitted to the first two journals.

Similarly, dissemination of the findings of this study to institution leaders (Headteachers or those with key roles in academy chains) could highlight unintended consequences of the marketization of education and the introduction of School Direct. The challenge of the recruitment crisis remains and some solutions may be effective in the short term but lacking in depth for the long term. Dissemination to this group may be through the Universities Council for the Education of Teachers annual or a local HEI-based conference.

I also intend to disseminate the findings to the school that participated in the study and I would like to encourage joint presentation and joint publishing of some aspects of the findings to a professional rather than academic audience. The use of the blue band to encourage behaviour change for the beginning teachers makes the site of the study identifiable; it is an aspect of the study that is worthy of wider dissemination and I am interested in exploring dissemination, including publishing, with the involvement and agreement of key participants in the school.

## 6.7 Reflections

This is a small-scale study of one school during 2013-15 and the study that is presented here is my interpretation. It presents one construction of the science department as a site of workplace learning and I recognise and accept that my interpretation will be different to the interpretations of the participants in this study who were working in the department at that time. I hope that I have shown how I have arrived at this interpretation through my reference to theoretical, policy and research literature and by showing my data collection and data analysis.

It should be noted that Birchbrook has a strong and successful science department. Is training to become resilient a feature of this school and this department? From discussion with my peers it seems that resilience is also important in other school settings but that training at Birchbrook is particularly explicit in the way it was characterized by the blue band at the time of the study. It could be argued that it is a way of determining who fits that science department, a way of determining who has the resilience to survive or a way of encouraging the beginning teachers to confront the challenging situations and learn from them.

Coming to the end of this study has provoked me to reflect on what it is to be a science teacher educator now, in the current policy context of school-led teacher training. The case study of the department has shown me that resilience and performativity are key factors for many beginning teachers and teacher educators need to respond to this. However, the behaviours of addictive presentism do not feature in the studies of Marie (Deneroff, 2016) and Donna (Blake, 2002), both expert science teachers. The case for short term hints and tips to sustain a career in teaching is not convincing.

I have reflected on what has been omitted in this study that is included in the transcripts. Several long discussions or anecdotes offered by the beginning teachers about particular lessons or pupils or activities that are described in detail and there is considered 'reflection on action' (Schön, 1983). It is not appropriate to give these space in this study but they should be mentioned. These discussions emerged as the beginnings of professional vision (Goodwin, 1994). The beginning teachers had an appetite for discussion of this nature and their school placement typically did not provide the time for this within the formal and informal activities of the school day. These discussions have an important place for beginning teachers and the opportunity to provide space for this needs to be considered.

In contrast to the above, I was concerned by the amount of time in formal 'learning processes' or mentor meeting time that was given to administration. I would like to offer a further metaphor of 'learning by administration' which is clearly farcical, to highlight how valuable workplace learning time is wasted on the needs of forms and administration.

My engagement with this study has been transformative and my professional practice is changed as a result. Although I am no longer working as a teacher educator but as an academic developer, supporting academics in the same HEI to become better teachers, much of the theoretical and research literature has relevance and policy is changing such that this study has flagged up the potential unintended consequences of increased performativity in Higher Education.

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- Amos, S. (2014). *Teacher educators in higher education: a study of their practice and contribution during school placement visits*. (Doctorate in Education (EdD)), The Open University.
- Ball, S. J. (2013). *The education debate* (2nd ed.). Bristol: Policy Press.
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York: W H Freeman.
- Bassey, M. (1999). *Case Study Research in Educational Settings*. Buckingham: Open University Press.
- BCS. (2016). *Teaching scholarships*. Retrieved from <http://academy.bcs.org/content/apply-bcs-teaching-scholarship>
- Beauchamp, G., Clarke, L., Hulme, M. and Murray, J. (2013). *Policy and practice within the United Kingdom*. UK: BERA.
- Bell, J. (2014). *Doing Your Research Project* (6th ed. ed.). Maidenhead: McGraw-Hill Education.
- Blake, R. W. (2002). *An Enactment of Science: A Dynamic Balance Among Curriculum, Context, and Teacher Beliefs*: Peter Lang.
- Bronfenbrenner, U. (1979). *The Ecology of Human Development*. Cambridge, MA: Harvard University Press.
- Bryman, A. (2008). *Social research methods* (3rd ed.). Oxford: Oxford University Press.
- Burn, K., Hagger, H., Mutton, T. and Everton, T. (2000). Beyond Concerns with Self: the sophisticated thinking of beginning student teachers. *Journal of Education for Teaching*, 26(3), 259-278. doi: 10.1080/02607470020004378
- Childs, A., Burn, K. and McNicholl, J. (2013). What influences the learning cultures of subject departments in secondary schools? A study of four subject departments in England. *Teacher Development*, 17(1), 35-54. doi: 10.1080/13664530.2012.753945

- Childs, A. and McNicholl, J. (2007). Science Teachers Teaching outside of Subject Specialism: Challenges, Strategies Adopted and Implications for Initial Teacher Education. *Teacher Development*, 11(1), 1-20
- Cobb, P. (1994). Where Is the Mind? Constructivist and Sociocultural Perspectives on Mathematical Development. *Educational Researcher*, 23(7), 13-20
- Cohen, L., Manion, L. and Morrison, K. (2007). *Research Methods in Education* (6th ed.). Abingdon: Routledge.
- Czerniawski, G. (2010). Constructing and Deconstructing Newly-qualified Teachers' Values in an Urban Context. *At the Interface / Probing the Boundaries*, 60, 83-100
- Daniels, H. (1996). *An introduction to Vygotsky*. London: Routledge.
- Day, C. (2002). School reform and transitions in teacher professionalism and identity. *International Journal of Educational Research*, 37(8), 677-692. doi: [http://dx.doi.org/10.1016/S0883-0355\(03\)00065-X](http://dx.doi.org/10.1016/S0883-0355(03)00065-X)
- Deneroff, V. (2016). Professional development in person: identity and the construction of teaching within a high school science department. *Cultural Studies of Science Education*, 11(2), 213-233. doi: 10.1007/s11422-013-9546-z
- Denovan, A. and Macaskill, A. (2013). An interpretative phenomenological analysis of stress and coping in first year undergraduates. *British Educational Research Journal*, 39(6), 1002-1024. doi: 10.1002/berj.3019
- DES. (1985). *Science 5-16: a statement of policy*. London: HMSO Retrieved from <http://www.educationengland.org.uk/documents/des/science5-16.html>
- DFE. (2010). *Academies Act 2010*. Retrieved from <http://www.legislation.gov.uk/ukpga/2010/32/contents>
- DFE. (2011a). *Education Act 2011*. Retrieved from <http://www.legislation.gov.uk/ukpga/2011/21/contents/enacted>
- DFE. (2011b). *Teachers' Standards*. GOV.UK website: Retrieved from <https://www.gov.uk/government/publications/teachers-standards>.

- DFE. (2011c). *Training our next generation of outstanding teachers: Implementation Plan*. London: Department for Education.
- DFE. (2013a). *The national curriculum in England: Framework document*. Open Government Licence.
- DFE. (2013b). *Statistical First Release: School workforce in England November 2012*. (SFR 15/2013). London: DFE Retrieved from <http://www.education.gov.uk/researchandstatistics/statistics/a00223460/school-workforceengland-nov-2012>.
- DFE. (2015). *2010 to 2015 government policy: academies and free schools*. Retrieved from <https://www.gov.uk/government/publications/2010-to-2015-government-policy-academies-and-free-schools/2010-to-2015-government-policy-academies-and-free-schools>
- DFE. (2016a). *Educational Excellence Everywhere*. HMSO.
- DFE. (2016b). *Statistical First Release: School workforce in England November 2015*. London: DFE Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/223587/SFR15\\_2013\\_Text\\_withPTR.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/223587/SFR15_2013_Text_withPTR.pdf).
- DFEE. (1998). *Teaching and higher education act*. London: The Stationery Office Retrieved from <http://www.educationengland.org.uk/documents/acts/1998-teaching-and-higher-education-act.pdf>.
- Douglas, A. S. (2014). *Student teachers in school practice: an analysis of learning opportunities*. Basingstoke: Palgrave MacMillan.
- Driver, R., Squires, A., Rushworth, P. and Wood-Robinson, V. (1994). *Making sense of secondary science : research into children's ideas*. London: Routledge.
- Edcoms. (2010). *Science Teachers' retention survey*.
- Education Committee. (2013). *Great teachers follow up: School Direct (uncorrected transcript)*. London: HMSO.
- Ellis, V. and McNicholl, J. (2015). *Transforming teacher education*. London: Bloomsbury.

- Eraut, M. (2004). Informal learning in the workplace. *Studies in Continuing Education*, 26(2), 247-273. doi: 10.1080/158037042000225245
- Eraut, M. (2007). Learning from other people in the workplace. *Oxford Review of Education*, 33(4), 403-422. doi: 10.1080/03054980701425706
- Evans, K., Hodkinson, P., Rainbird, H. and Unwin, L. (2006). *Improving workplace learning*. London: Routledge.
- Finlay, L. (2009). Debating phenomenological research methods. *Phenomenology and Practice*, 3(1), 6-25
- Flach, F. F. (1980). Psychobiologic resilience, psychotherapy, and the creative process. *Comprehensive Psychiatry*, 21(6), 510-518. doi: [http://dx.doi.org/10.1016/0010-440X\(80\)90054-1](http://dx.doi.org/10.1016/0010-440X(80)90054-1)
- Fletcher, D. and Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, 18(1), 12-23. doi: 10.1027/1016-9040/a000124
- Floyd, A. and Arthur, L. (2012). Researching from within: external and internal ethical engagement. *International Journal of Research and Method in Education*, 35(2), 171-180. doi: 10.1080/1743727x.2012.670481
- Fox, A. and Wilson, E. (2009). 'Support our networking and help us belong!': listening to beginning secondary school science teachers. *Teachers and Teaching*, 15(6), 701-718. doi: 10.1080/13540600903357025
- Fraser, B. J. and Tobin, K. (1989). *Exemplary Science and Mathematics Teachers*. Curtin Univ of Tech: Perth National Key Centre for Science and Mathematics.
- Fry, H., Ketteridge, S. and Marshall, S. (2009). *A handbook for teaching and learning in higher education: Enhancing academic practice* (3rd ed.). Abingdon: Routledge.
- Fuller, A. and Unwin, L. (2003). Learning as Apprentices in the Contemporary UK Workplace: Creating and managing expansive and restrictive participation. *Journal of Education and Work*, 16(4), 407-426. doi: 10.1080/1363908032000093012

- Fuller, C. (2012). *Sociology, gender and educational aspirations: girls and their ambitions*. . London: Continuum.
- Furlong, J. (2005). New Labour and teacher education: the end of an era. *Oxford Review of Education*, 31(1), 119-134. doi: 10.1080/0305498042000337228
- Furlong, J. (2013). Globalisation, Neoliberalism, and the Reform of Teacher Education in England. *The Educational Forum*, 77(1), 28-50. doi: 10.1080/00131725.2013.739017
- Gillard, D. (2016). *Education in England: a brief history*. Retrieved from <http://www.educationengland.org.uk/history>
- Goodwin, C. (1994). Professional Vision. *American Anthropologist*, 96(3), 606-633
- Gore, A. (2015). 10 Commandments for Reducing Stress. Retrieved from <http://amandagore.com/10-commandments-for-reducing-stress/>
- Gove, M. (2010). *National College Annual Conference*. gov.uk: Open Government Licence Retrieved from <https://www.gov.uk/government/speeches/michael-gove-to-the-national-college-annual-conference-birmingham>.
- Gray, C. and MacBlain, S. (2012). *Learning theories in childhood*. London: SAGE.
- Griffiths, M. (2009). Critical approaches in qualitative educational research: The Relation of Some Theoretical and Methodological Approaches to these Issues. 1-33
- Gu, Q. and Day, C. (2007). Teachers resilience: A necessary condition for effectiveness. *Teaching and Teacher Education*, 23(8), 1302-1316. doi: <http://dx.doi.org/10.1016/j.tate.2006.06.006>
- Hager, P. and Hodkinson, P. (2009). Moving beyond the metaphor of transfer of learning. *British Educational Research Journal*, 35(4), 619-638. doi: 10.1080/01411920802642371
- Haggarty, L., Postlethwaite, K., Diment, K. and Ellins, J. (2011). Improving the Learning of Newly Qualified Teachers in the Induction Year. *British Educational Research Journal*, 37(6), 935-954

- Hagger, H., Burn, K., Mutton, T. and Brindley, S. (2008). Practice makes perfect? Learning to learn as a teacher. *Oxford Review of Education*, 34(2), 159-178. doi: 10.1080/03054980701614978
- Hammersley, M. (1990). *Classroom ethnography : empirical and methodological essays*. Milton Keynes: Open University Press.
- Hammersley, M. (1992). *What's wrong with ethnography? : methodological explorations*. London: Routledge.
- Hammersley, M. (1997). Educational research and teaching: a response to David Hargreaves' TTA lecture. In M. Hammersley (Ed.), *Educational research and evidence-based practice* (pp. 18-42). London: The Open University.
- Hargreaves, A. (2010). Presentism, Individualism, and Conservatism: The Legacy of Dan Lortie's Schoolteacher: A Sociological Study. *Curriculum Inquiry*, 40(1), 143-154. doi: 10.1111/j.1467-873X.2009.00472.x
- Hargreaves, A. and Macmillan, R. (1992). *Balkanized Secondary Schools and the Malaise of Modernity*. American Education Research Association, San Francisco.
- Hargreaves, D. H. (1996). Teaching as a research-based profession: possibilities and prospects. In M. Hammersley (Ed.), *Educational research and evidence-based practice* (pp. 3-17). London: The Open University.
- Hellawell, D. (2006). Inside-out: analysis of the insider-outsider concept as a heuristic device to develop reflexivity in students doing qualitative research. *Teaching in Higher Education*, 11(4), 483-494. doi: 10.1080/13562510600874292
- Hodkinson, H. and Hodkinson, P. (2005). Improving schoolteachers' workplace learning. *Research Papers in Education*, 20(2), 109-131. doi: 10.1080/02671520500077921
- Hollway, W., Lucey, H. and Phoenix, A. (Eds.). (2007). *Social Psychology: Matters*. Maidenhead: Open University Press.
- Horn, I. S. and Little, J. W. (2010). Attending to Problems of Practice: Routines and Resources for Professional Learning in Teachers' Workplace Interactions.

*American Educational Research Journal*, 47(1), 181-217. doi:

10.3102/0002831209345158

Howson, J. (2016, 30th August). Come clean on teacher recruitment. Retrieved from

<https://johnohowson.wordpress.com/>

Howson, J., Ostely, T. and Chivers, J. (2016). *TeachVac*. Retrieved from

<http://www.teachvac.co.uk/>

IMA. (2016). *Mathematics Teacher Training Scholarships*. Retrieved from

[http://www.ima.org.uk/careers/teacher\\_scholarships.cfm.html](http://www.ima.org.uk/careers/teacher_scholarships.cfm.html)

Inhelder, B., Caprona, D. and Cornu-Wells, A. (1987). *Piaget today*. Hove: Lawrence

Erlbaum.

IOP. (2016). *IOP Teacher Training Scholarships*. Retrieved from

[http://www.iop.org/education/teach/itts/page\\_52632.html](http://www.iop.org/education/teach/itts/page_52632.html)

Jacelon, C. S. (1997). The trait and process of resilience. *Journal of advanced nursing*, 25(1),

123-129. doi: 10.1046/j.1365-2648.1997.1997025123.x

Jarvis, P. (2014). From adult education to lifelong learning and beyond. *Comparative*

*Education*, 50(1), 45-57. doi: 10.1080/03050068.2013.871832

Johnson, B. and Down, B. (2013). Critically re-conceptualising early career teacher

resilience. *Discourse: Studies in the Cultural Politics of Education*, 34(5), 703-715.

doi: 10.1080/01596306.2013.728365

Kamler, B. and Thomson, P. (2014). *Helping doctoral students write; pedagogies for*

*supervision* (2nd ed.). Abingdon: Routledge.

King, N., Carroll, C., Newton, P. and Dornan, T. (2002). "You can't Cure it so you have to

Endure it": The Experience of Adaptation to Diabetic Renal Disease. *Qualitative*

*Health Research*, 12(3), 329-346. doi: 10.1177/104973202129119928

Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and*

*development*. Englewood Cliffs: Prentice-Hall.

Kvale, S. and Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research*

*interviewing* (2nd ed.). Los Angeles: Sage.

- Langdridge, D. (2007). *Phenomenological psychology: Theory, research and method*. Harlow: Pearson.
- Lave, J. (1996). Teaching, as Learning, in Practice. *Mind, Culture, and Activity*, 3(3), 149-164. doi: 10.1207/s15327884mca0303\_2
- Lave, J. and Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.
- Little, J. W. (1982). Norms of Collegiality and Experimentation: Workplace Conditions of School Success. *American Educational Research Association*, 19(3), 325-340
- Mansfield, C., Beltman, S. and Price, A. (2014). 'I'm coming back again!' The resilience process of early career teachers. *Teachers and Teaching*, 20(5), 547-567. doi: 10.1080/13540602.2014.937958
- McDowell, L. (1992). Multiple voices: speaking from inside and outside 'the project'. *Antipode*, 24(1), 56-72
- McLachlan, E., King, N., Wenger, E. and Dornan, T. (2012). Phenomenological analysis of patient experiences of medical student teaching encounters. *Med Educ*, 46(10), 963-973. doi: 10.1111/j.1365-2923.2012.04332.x
- McNicholl, J., Childs, A. and Burn, K. (2013). School subject departments as sites for science teachers learning pedagogical content knowledge. *Teacher Development*, 17(2), 155-175. doi: 10.1080/13664530.2012.753941
- Miell, D., Phoenix, A. and Thomas, K. (Eds.). (2002). *Mapping Psychology 1*. Milton Keynes: Open University.
- Mutton, T., Burn, K. and Hagger, H. (2010). Making Sense of Learning to Teach: Learners in Context. *Research Papers in Education*, 25(1), 73-91
- NCTL. (2013a). *School Direct management information: Recruitment for academic year 2013 to 2014*. London: Department for Education.
- NCTL. (2013b). *School Direct: Operations Manual academic year 2013 to 2014*. London: Department for Education.



- NCTL. (2014, May 2016). *Qualified teacher status (QTS): qualify to teach in England*. Retrieved from <https://www.gov.uk/guidance/qualified-teacher-status-qts>
- NCTL. (2015a). *Funding: initial teacher training (ITT), academic year 2016 to 17*. Retrieved from <https://www.gov.uk/guidance/funding-initial-teacher-training-itt-academic-year-2016-to-17>
- NCTL. (2015b). *Newly Qualified Teachers: Annual Survey 2015* (Report No. DFE- RR483). Crown [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/477461/Newly\\_Qualified\\_Teachers\\_Annual\\_Survey\\_2015.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/477461/Newly_Qualified_Teachers_Annual_Survey_2015.pdf)
- Nott, M. and Wellington, J. (1993). Your nature of science profile: an activity for science teachers. *School Science Review*, 75(270), 109-112
- Nott, M. and Wellington, J. (n.d.). Development of subject knowledge and pedagogical knowledge. In J. Wellington and G. Ireson (Eds.), *Science Learning, Science Teaching* (3rd ed.). London: Routledge.
- Ofsted. (2015a). *Initial teacher education inspection framework*. (150033). Manchester: Open Government Licence,.
- Ofsted. (2015b). *Ofsted inspections - clarification for schools*. (140169). Ofsted.
- Ofsted. (2015c). *School Inspection Handbook*. (150066). Crown.
- Orr, K. and Simmons, R. (2011). Restrictive Practice: The Work-Based Learning Experience of Trainee Teachers in English Further Education Colleges. *Journal of Workplace Learning*, 23(4), 243-257
- Osborne, J. and Dillon, J. (Eds.). (2010). *Good Practice in Science Teaching: What Research Has to Say* (2nd ed.). Maidenhead: McGraw-Hill Education,.
- Parlett, M. and Hamilton, D. (1987). Evaluation as Illumination: A new approach to the study of innovatory programs. In R. Murphy and H. Torrance (Eds.), *Evaluating Education: Issues and Methods* (Vol. 1st, pp. 49--56). London: Harper and Row.
- Pedretti, E. G., Bencze, L., Hewitt, J., Romkey, L. and Jivraj, A. (2008). Promoting Issues-based STSE Perspectives in Science Teacher Education: Problems of Identity and Ideology. *Science and Education*, 17(8), 941-960. doi: 10.1007/s11191-006-9060-8

- Price, A., Mansfield, C. and McConney, A. (2012). Considering 'teacher resilience' from critical discourse and labour process theory perspectives. *British Journal of Sociology of Education*, 33(1), 81-95. doi: 10.1080/01425692.2011.614748
- Ravitch, D. (2013). *Reign of Error; The hoax of the privatization movement and the danger to America's public schools*. New York: Alfred A. Knopf.
- Richardson, G. E. (2002). The Metatheory of Resilience and Resiliency. *Journal of Clinical Psychology*, 58(3), 307-321
- Rogoff, B. (1995). Observing sociocultural activity on three planes: participatory appropriation, guided participation and apprenticeship. In J. V. Wertsch, P. Del Rio and A. Alvarez (Eds.), *Sociocultural Studies of Mind* (pp. 139--164). Cambridge: Cambridge University Press.
- Rogoff, B., Matusov, E. and White, C. (1996). Models of teaching and learning: Participation in a community of learners *Handbook of education and human development* (pp. 388-414). Oxford: Blackwell.
- Ross, K., Lakin, L., McKechnie, J. and Baker, J. (2010). *Teaching secondary science: constructing meaning and developing understanding* (3rd ed.). Abingdon: Routledge.
- Rossmann, G. B. and Rallis, S. F. (2010). Everyday ethics: reflections on practice. *International Journal of Qualitative Studies in Education*, 23(4), 379-391. doi: 10.1080/09518398.2010.492813
- Royal Society. (2007). *The UK's science and mathematics teaching workforce: A 'State of the Nation' report 2007*. London.
- RSC. (2016). *RSC Teacher Training Scholarships*. Retrieved from <http://www.rsc.org/awards-funding/funding/teacher-training-scholarships/>
- Rubin, H. J. and Rubin, I. S. (2005). *Qualitative interviewing: The art of hearing data*. (2nd ed.). California: Sage.
- Schön, D. (1983). *The Reflective Practitioner*. London: Temple Smith.

- Schön, D. (1987). *Educating the reflective practitioner - transcript of presentation*.  
Washington.
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one.  
*Educational Research*, 27(2), 4-13
- Sherin, M. G., Russ, R. S., Sherin, B. L. and Colestock, A. (2008). Professional Vision in  
Action: An Exploratory Study. *Issues in Teacher Education*, 17(2), 27-46
- Sherin, M. G. and van Es, E. A. (2009). Effects of Video Club Participation on Teachers'  
Professional Vision. *Journal of Teacher Education*, 60(1), 20-37
- Shulman, L. S. (1986). Those Who Understand: Knowledge Growth in Teaching.  
*Educational Researcher*, 15(2), 4-14
- Shulman, L. S. and Shulman, J. H. (2004). How and What Teachers Learn: A Shifting  
Perspective. *Journal of Curriculum Studies*, 36(2), 257-271
- Sikes, P. (2009). Will the real author come forward? Questions of ethics, plagiarism, theft  
and collusion in academic research writing. *International Journal of Research and  
Method in Education*, 32(1), 13-24
- Silverman, D. (2013). *Doing qualitative research* (4th ed.). London: Sage.
- Smith, J. A., Flowers, P. and Larkin, M. (2009). *Interpretative Phenomenological Analysis:  
Theory, Method and Research*. London: Sage.
- Stake, R. E. (1995). *The Art of Case Study Research*. London: Sage.
- Stenhouse, L. (1978). Case Study and Case Records: Towards a Contemporary History of  
Education. *British Educational Research Journal*, 4(2), 21-39. doi:  
10.2307/1501118
- Stenhouse, L. (1987). The study of samples and the study of cases. In R. Murphy and H.  
Torrance (Eds.), *Evaluating Education: Issues and Methods* (pp. 74--80). London:  
Harper and Row.
- Stürmer, K., Könings, K. D. and Seidel, T. (2013). Declarative knowledge and professional  
vision in teacher education: effect of courses in teaching and learning. *British*

*Journal of Educational Psychology*, 83(3), 467-483. doi: 10.1111/j.2044-8279.2012.02075.x

- Teaching Schools Council. (2016). *National Standards for school-based initial teacher training (ITT) mentors*. OGL Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/536891/Mentor\\_standards\\_report\\_Final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/536891/Mentor_standards_report_Final.pdf).
- The Open University (Producer). (2013). Pat Sikes video about research ethics. *EDD-PW Programme Resources*. Retrieved from <https://learn2.open.ac.uk/mod/subpage/view.php?id=255962>
- Thomas, G. (2009). *How to do your research project*. London: Sage.
- Thomas, G. (2011). *How to do your case study : a guide for students and researchers*. London: SAGE.
- van Es, E. A. and Sherin, M. G. (2002). Learning To Notice: Scaffolding New Teachers' Interpretations of Classroom Interactions. *Journal of Technology and Teacher Education*, 10(4), 571-596
- Watson, J. B. (1914). *Behavior : an introduction to comparative psychology*. New York: H. Holt and Co.
- Wellington, J. and Ireson, G. (2012). *Science learning, science teaching* (3rd ed.). London: Routledge.
- Wenger, E. (1998). *Communities of Practice: Learning, meaning and identity*. New York: Cambridge University Press.
- Wertsch, J. V., Del Rio, P. and Alvarez, A. (1995). *Sociocultural Studies of Mind*. Cambridge: Cambridge University Press.
- Yin, R. K. (2013). *Case study research : design and methods* (5th ed.). Los Angeles: SAGE.

## 9 Appendices

### 9.1 Appendix 1: Hodkinson and Hodkinson's model of expansive/restrictive learning environments for teachers (2005)

<b>Expansive</b>	<b>Restrictive</b>
Close collaborative working with colleagues	Isolated, individualist working
Out-of-school educational opportunities, including opportunities to reflect and think differently	No out-of-school educational time to stand back, only narrow, short training programmes
An explicit focus on teacher learning, as a dimension of normal working practices	No explicit focus on teacher learning, except to meet crises or imposed initiatives
Supported opportunities for personal development that goes beyond school or government priorities	Teacher learning dominated by government and school agendas
Colleagues are mutually supportive in enhancing teacher learning	Colleagues obstruct or do not support each other's learning
Opportunities to engage with other working groups, inside and outside the school	Work restricted to "home" departmental teams, within one school
Opportunities to extend professional identity through boundary-crossing into other departments, school activities, and schools	The only opportunities for boundary-crossing come with a major change of job
Support for variations in ways of working and learning, for different teachers and departments	Standardized approaches to teaching and teacher learning are proscribed and imposed
Teachers use a wide range of learning approaches	Teachers use a narrow range of learning approaches

## 9.2 Appendix 2: One-to-one semi-structured interview questions.

### First cycle of data collection

“Thank you for agreeing to do this. (Brief reminder of ethics and confidentiality and how it is not an evaluation of the dept or the school or the trainees).”

#### 1. *Settler and context questions* –

HOD, Senior staff (PT, deputy)	HOD? Mentor and classroom teachers	Trainee teachers
Tell me about your role and experience in the school.  Tell me about the background of science trainees in the department. Why does the school do it?	Tell me about your role and experience in the school.  Tell me about the background of science trainees in the department. Why does the department do it?	Tell me about the background of you coming into teacher training and why this school

#### 2. *Questions relating to the understanding and impact of the School Direct policy*

RQ Does the implementation of the School Direct policy impact on the science department?

- a) how is the School Direct policy of teacher training understood by members of the school science department?
- b) how does it impact on the learning environment?

HOD, Senior staff (PT, deputy)	Mentor and classroom teachers	Trainee teachers, Beginning teachers
How do you understand the School Direct policy of teacher training? What does it mean for you and the school?  Do you think SD has affected the ‘learning environment’ of those working in the science department?	How do you understand the School Direct policy of teacher training? What does it mean for you and the department?  Do you think SD has affected the ‘learning environment’ of those working in the science department?	How do you understand the School Direct policy of teacher training? What does it mean for you?  What do you think about the ‘learning environment’ of those working in the science department?

3. Questions based on Fuller and Unwin's framework (2003)

RQ Is the learning environment of the science department 'expansive' or 'restrictive' (Fuller and Unwin 2003)?

From F&U	HOD Senior staff (PT, deputy)	Mentor and classroom teachers	Trainee teachers Beginning teachers
P	In what ways are science trainee teachers encouraged to participate in the school? How do your expectations change?	In what ways are science trainee teachers encouraged to participate in the department?  How do your expectations change?	In what ways are you encouraged to participate?
Pd	What professional development is offered to the science trainees? To the department and mentor?	What professional development is offered to the science trainees? To the department and mentor?	What professional development have you had or know you will have?
I	How is the school organized to support the needs of the trainees? (eg roles, resources, space, documents etc)	How is the department organized to support the needs of the trainees? (eg...)	What is in place in the science department to support you as a science trainee? (eg ...)

.4 Questions

RQ How is 'learning to teach' understood by members of the science department including trainee teachers and their mentors?

HOD? Senior staff (PT, deputy)	HOD? Mentor and classroom teachers	Trainee teachers
Define the phrase 'learning environment' so it is clear we are discussing the learning environment for adults/adult learners.  In your experience, what is important?  How do you feel about what the school offers?  Explore specific examples	Define the phrase 'learning environment' so it is clear we are discussing the learning environment for adults/adult learners.  In your experience, what is important?  How do you feel about what the department offers?  Explore specific examples	Define the phrase 'learning environment' so it is clear we are discussing the learning environment for adults/adult learners.  In your experience, what is important?  How do you feel about what is offered?  Explore specific examples

*5. Closing comments.*

“Thank you very much for your time. I will now transcribe your interview and I will analyze it alongside the others and the other data collected. Can I remind you that your anonymity is assured, the department and the trainees are not being evaluated. Do you have any questions regarding the study?”



Second cycle of data collection: Questions about the experience of working with or becoming beginning teachers of science

HOD, Senior staff	Mentors	Beginning teachers
Tell me about your experience of learning to teach?	Tell me about your experience of learning to teach?	Tell me about your experience of learning to teach?
Tell me about your experiences of working with beginning teachers?	Tell me about your experiences of working with beginning teachers?	Tell me about your experiences of becoming a science teacher?
What makes you a good person to be involved	What makes you a good person to be involved	What helps you?
Tell me about how the workplace environment contributes to/affects your role		
What in your experience really helps teachers learn to be a teacher?		
Are there any other things that can make a difference in your experience?		

These questions are informed by a phenomenological approach.

PROMPT “Tell me more about that”

### 9.3 Appendix 3a: Information letters and consent forms for participants

Further information (Q&A) about **Participation in a one to one interview** for the research project:

A case study of a science department as a setting for trainee science teachers in the light of School Direct

#### What is the aim of this research?

The purpose of this study is to understand how the implementation of the School Direct Policy of teacher training impacts on a science department. The study will focus particularly on the key factors of the learning environment for trainee and beginning teachers

#### Who is conducting the research and who is it for?

I am carrying out this research as a pilot study in year 1 of my Professional Doctorate in Education (EdD). I have experience in Research Methods in Education settings and I recently successfully completed a Masters-level module in 'Educational Enquiry'.

#### Why are you being invited to participate in this research?

The science department of your school has been approached to be the location of the pilot study because it has a strong history of working with University of Reading science trainee teachers and successfully recruiting science NQTs. You are a member of the science department and for this reason I would like to invite you to participate in my research.

#### If you take part in this research, what will be involved?

I will be conducting one to one interviews during late October 2013 to early January 2014. The one to one interviews will take approximately 30-40 minutes and would be conducted at school in a private space or in my office at the London Road campus of the University of Reading, at a date and time that is convenient to you. I will be making a digital audio recording of the meeting, transcribing what is said and the files will be stored in a locked filing cabinet securely on a hard disk. The file of the original recording will be destroyed after my research is completed (1 year).

#### What will the interview be like?

The interview will be informal and I will ask a few questions around the aim of the study to explore your views and your experiences of working with beginning and trainee science teachers.

#### Is it confidential?

Your participation will be treated in **strict confidence** in accordance with the Data Protection Act (1998) and follow the ethical guidelines of BERA (<http://www.bera.ac.uk>). No personal information will be passed to anyone other than my supervisor. I will ask you for your voluntary informed consent to proceed via the attached consent form and you retain the right to withdraw your consent at any time. I

will write a report of the findings from this study, but no individual will be identifiable in published results of the research.

### **What happens now?**

Over the next few weeks, I will contact you by telephone or email to ask if you would like to take part and, to arrange a time for an interview. Your participation is entirely voluntary.

### **What if I have other questions?**

*If you have any other questions about the study I would be very happy to answer them. Please contact me on 0118 378 2679 or by email to [debheighes2@me.com](mailto:debheighes2@me.com).*

Consent form for

**Participation in a one to one interview**

A case study of a science department as a setting for trainee science teachers in the light of School Direct

Name of participant:

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Name of researcher: Deb Heighes

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1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written statement in plain language to keep.
2. I understand that my participation will involve a **one to one interview** and I agree that the researcher may use the results as described in the plain language statement.
3. I acknowledge that:
  - (a) the possible effects of participating in this research have been explained to my satisfaction;
  - (b) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided by contacting the researcher via email or phone (see below);
  - (c) the project is for the purpose of research towards a Professional Doctorate in Education (EdD);
  - (d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;
  - (e) I have been informed that with my consent the data generated will be stored in a secure filing cabinet and will be destroyed after five years;
  - (f) if necessary any data from me will be referred to by a pseudonym in any publications arising from the research;
  - (g) I have been informed that a summary copy of the research findings will be forwarded to me, should I request this.

I consent to this **one to one interview** being audio-recorded

**yes**    **no**  
(please tick)

I consent to anonymised quotes being used in the project report

**yes**    **no**  
(please tick)

I wish to receive a copy of the summary project report on research findings

**yes**    **no**  
(please tick)

Participant signature:

Date:

---

Further information (Q&A) about **Observation of a meeting for the research project:**

A case study of a science department as a setting for trainee science teachers in the light of School Direct

### **What is the aim of this research?**

The purpose of this study is to understand how the implementation of the School Direct Policy of teacher training impacts on a science department. The study will focus particularly on the key factors of the learning environment for trainee and beginning teachers

### **Who is conducting the research and who is it for?**

I am carrying out this research as a pilot study in year 1 of my Professional Doctorate in Education (EdD). I have experience in Research Methods in Education settings and I recently successfully completed a Masters-level module in 'Educational Enquiry'.

### **Why are you being invited to participate in this research?**

The science department of your school has been approached to be the location of the pilot study because it has a strong history of working with University of Reading science trainee teachers and successfully recruiting science NQTs. You are a member of the science department and for this reason I would like to invite you to participate in my research.

### **If you take part in this research, what will be involved?**

I will be conducting observations of meetings during late October 2013 to early January 2014. I will be making a digital audio recording of the meeting, transcribing what is said and the files will be stored in a locked filing cabinet securely on a hard disk. The file of the original recording will be destroyed after my research is completed (1 year).

### **What will you be observing?**

I will be observing meetings that have a focus on the theme of the study: such as a meeting about School Direct and trainee teachers, a meeting between the science mentor and a trainee teacher or the ITT coordinator and the mentor or trainee. I will contact you to identify these meetings and agree the timing and location to ensure your routine work is not disrupted.

### **Is it confidential?**

Your participation will be treated in **strict confidence** in accordance with the Data Protection Act (1998). and follow the ethical guidelines of BERA (<http://www.bera.ac.uk>). However absolute confidentiality cannot be guaranteed because of the nature of meetings. I will write a report of the findings from this study, but no individual will be identifiable in published results of the research. No personal information will be passed to anyone other than my supervisor. I will ask you for your

voluntary informed consent to proceed via the attached consent form and you retain the right to withdraw your consent at any time.

### **What happens now?**

Over the next few weeks, I will contact you by telephone or email to ask if you would like to take part and, to arrange a time for an interview. Your participation is entirely voluntary.

### **What if I have other questions?**

*If you have any other questions about the study I would be very happy to answer them. Please contact me on 0118 378 2679 or by email to [debheighes2@me.com](mailto:debheighes2@me.com).*

**Consent form for**  
**Observation of a meeting**

A case study of a science department as a setting for trainee science teachers in the light of School Direct

Name of participant:

---

Name of researcher: Deb Heighes

---

1. I consent to participate in this project, the details of which have been explained to me, and I have been provided with a written statement in plain language to keep.
  
2. I understand that my participation will involve me **being observed in a meeting** and I agree that the researcher may use the results as described in the plain language statement.
  
3. I acknowledge that:
  - (a) the possible effects of participating in this research have been explained to my satisfaction;
  
  - (b) I have been informed that I am free to withdraw from the project at any time without explanation or prejudice and to withdraw any unprocessed data I have provided by contacting the researcher by email or phone (see below);
  
  - (c) the project is for the purpose of research towards a Professional Doctorate in Education (EdD);
  
  - (d) I have been informed that the confidentiality of the information I provide will be safeguarded subject to any legal requirements;
  
  - (e) I have been informed that with my consent the data generated will be stored in a secure filing cabinet and will be destroyed after five years;
  
  - (f) if necessary any data from me will be referred to by a pseudonym in any publications arising from the research;
  
  - (g) I have been informed that a summary copy of the research findings will be forwarded to me, should I request this.

I consent to this **observation** being audio-recorded

**yes**    **no**  
(please tick)

I consent to anonymised quotes being used in the project report

**yes**    **no**  
(please tick)

I wish to receive a copy of the summary project report on research findings

**yes**    **no**  
(please tick)

Participant signature:   Date:

---

## 9.4 Appendix 3b: HREC Approval



From Dr Duncan Banks  
Chair, The Open University Human Research Ethics Committee  
Email duncan.banks@open.ac.uk  
Extension 59198

To Deborah Heighes, FELS

Subject *"A case study of a science department as a setting for trainee science teachers in the light of School Direct."*

Ref HREC/2013/1562/Heighes/1  
Red form n/a  
Submitted 22 October 2013  
Date 24 October 2013

## Memorandum

This memorandum is to confirm that the research protocol for the above-named research project, as submitted for ethics review, **has been given a favourable opinion** by the Open University Human Research Ethics Committee.

Please make sure that any question(s) relating to your application and approval are sent to [Research-REC-Review@open.ac.uk](mailto:Research-REC-Review@open.ac.uk) quoting the HREC reference number above. We will endeavour to respond as quickly as possible so that your research is not delayed in any way.

At the conclusion of your project, by the date that you stated in your application, the Committee would like to receive a summary report on the progress of this project, any ethical issues that have arisen and how they have been dealt with.

Regards,

Dr Duncan Banks  
Chair OU HREC



## 9.5 Appendix 4: Brief biographies of participants

Name	Role	Biographical notes
Tasha	Deputy Head	Chemistry teacher. Line managed the Professional Tutor in year 1 and beginning of year 2. Represented school in local School Direct Alliance
Kathy	<b>Professional Tutor</b>	Music teacher who has <b>oversight of all trainee teachers and NQTs</b> in school. Works with HEI music trainees too
Denise	Science <b>Mentor</b> for trainee teachers including Sally, Paula, Jo and Victoria	Career changer into teaching. Denise was also trained by me with the HEI
Liz	Head of science and <b>Mentor</b> to Paula as an NQT	Career changer into teaching.
Paula	<b>Trainee teacher</b> in year 1 <b>NQT</b> in year 2	Career changer into teaching.
Sally	<b>Trainee teacher</b> in year 1 <b>NQT</b> in year 2	Career changer into teaching.
Jo	<b>Trainee teacher</b> in year 2	Graduate entrant
Christine	Biology teacher. <b>NQT Mentor</b> for Sally	Used to be mentor to trainee teachers.  Most experienced mentor.
Mary	Science technician	Chief technician

Kelly	Beginning teacher in the department	NQT in year 1 NQT+1 in year 2 Kelly also trained by me with the HEI.
Tessa	Chemistry teacher in the dept. Paula's NQT Mentor for a short time.	Although Tessa was a Mentor for a short time, she was not interviewed
David	Physics teacher – very experienced	
Colin	Chemistry teacher	Trained by me with the HEI.
Jonathan	Biology teacher – used to be mentor of trainee teachers	Experienced mentor.
Greg	Science teacher	Member of senior leadership team
Chris	Visiting <b>University Tutor</b> for the trainee teachers Sally, Paula, Victoria, Jo	Also visited Denise, Kelly and Colin while on placement in the department

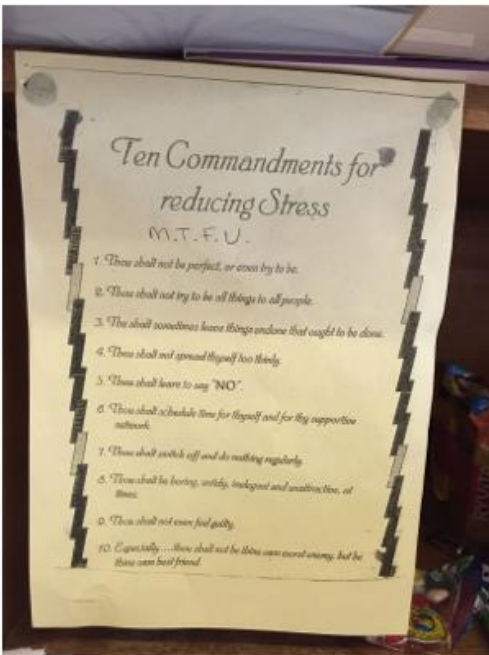
9.6 Appendix 5: Photographs of MTFU band, ten commandments for reducing stress and t-shirt



MTFU band

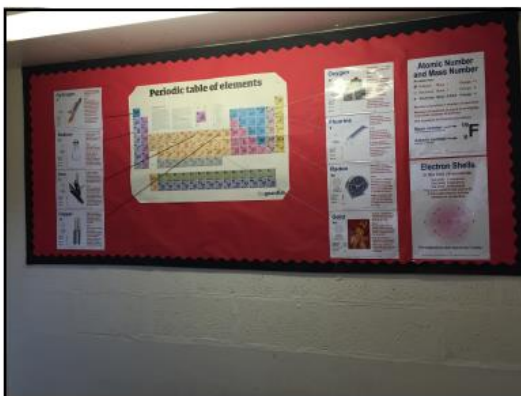


MTFU t-shirt



Gore: Ten commandments for reducing stress

9.7 Appendix 6: Photographs of the corridor taken during the field observation.



9.8 Appendix 7: Photographs of team room taken during field observation



1 Stations of Kelly then Sally



2 Under Christine's station



3 Station of David



4 Under David's station

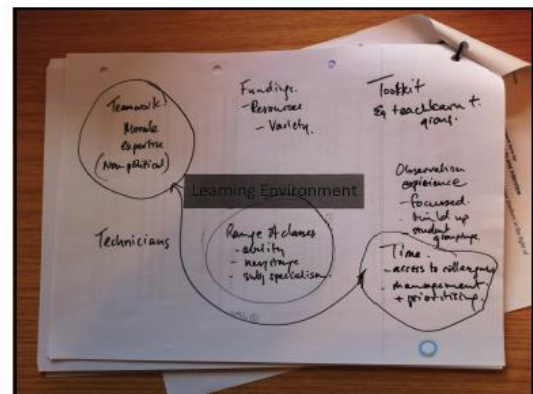
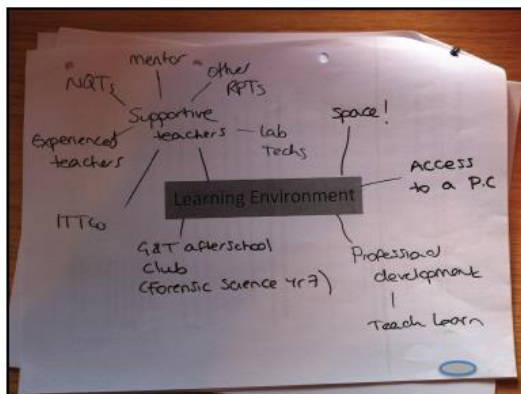
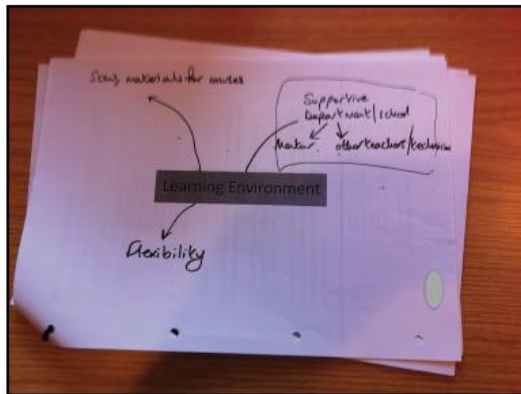
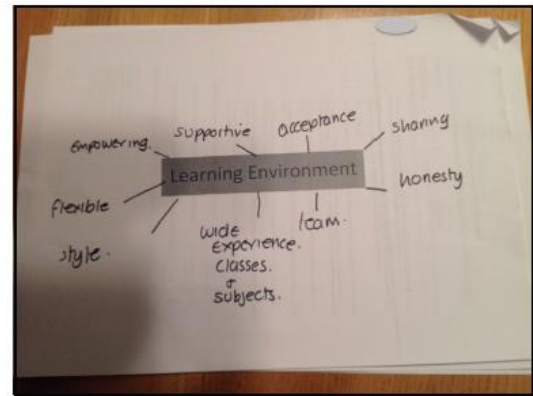
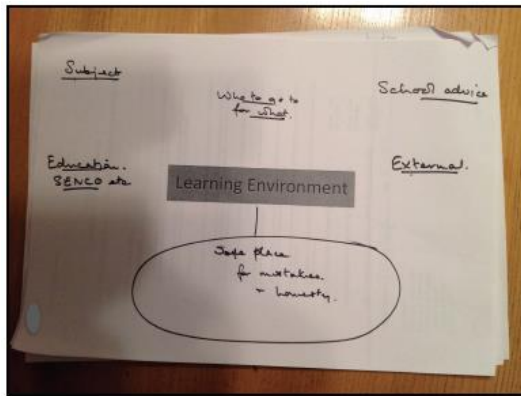


5 Bank of six filing cabinets that bisect the room



6 The food and drink area behind the filing cabinets

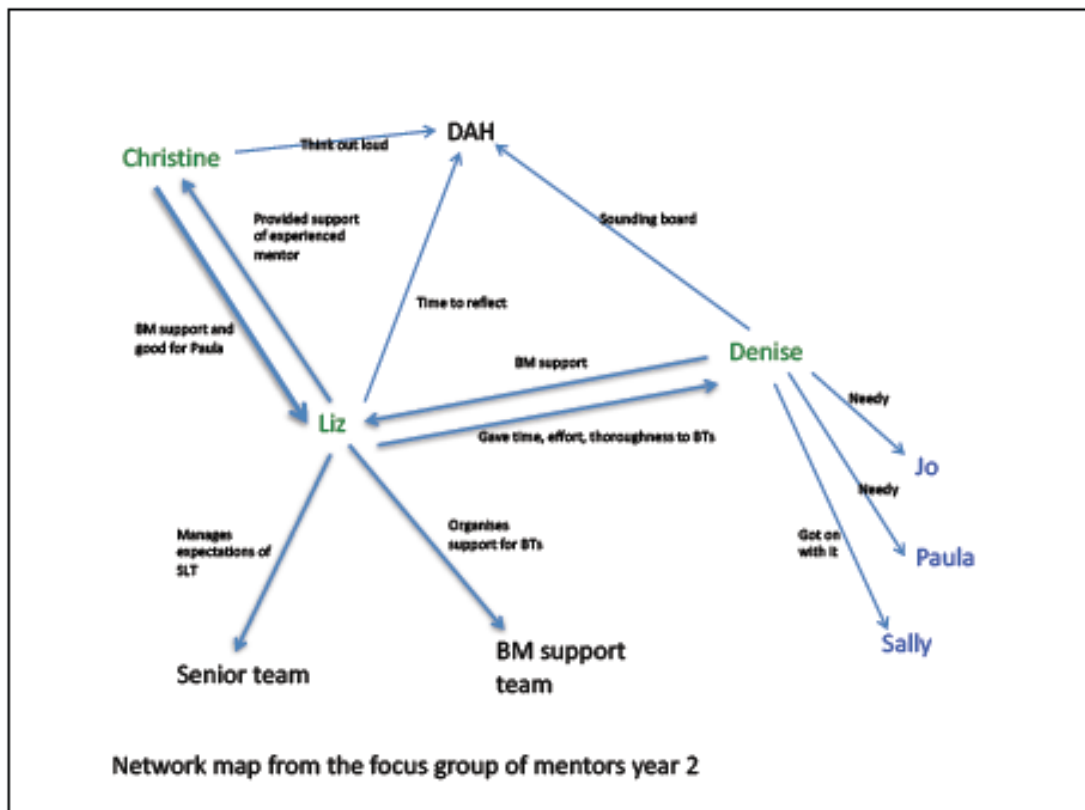
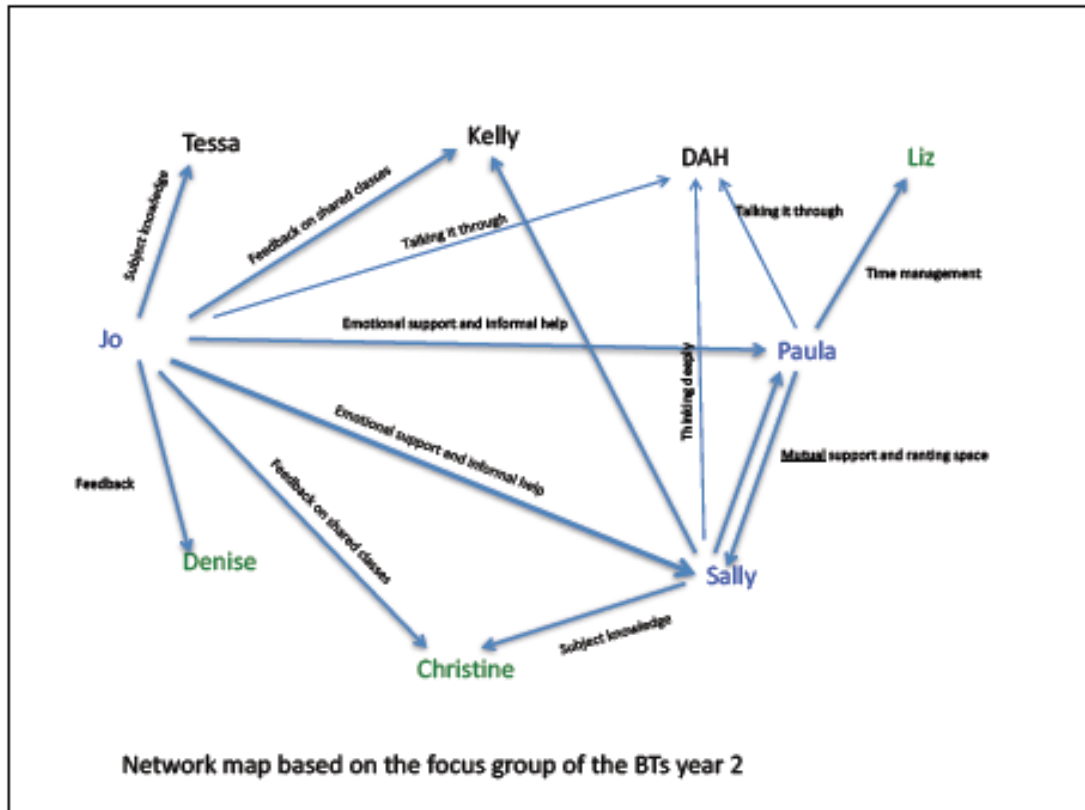
## 9.9 Appendix 8a: Spider diagrams from year 1



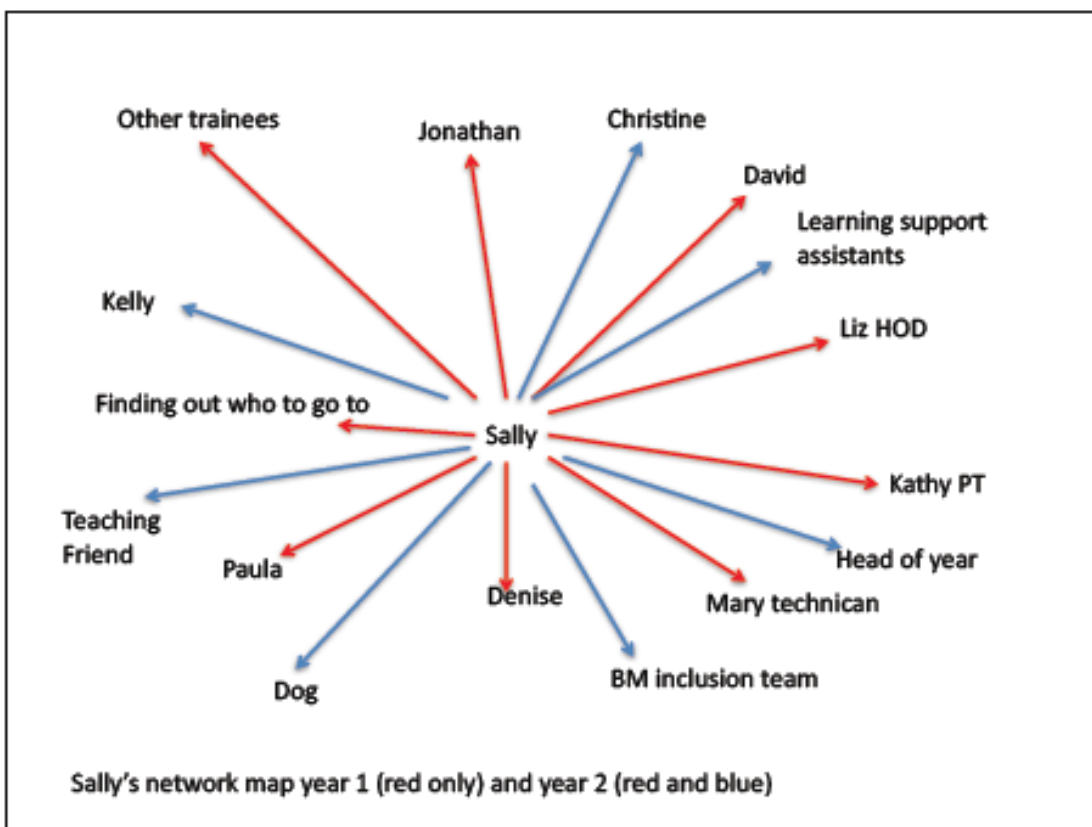
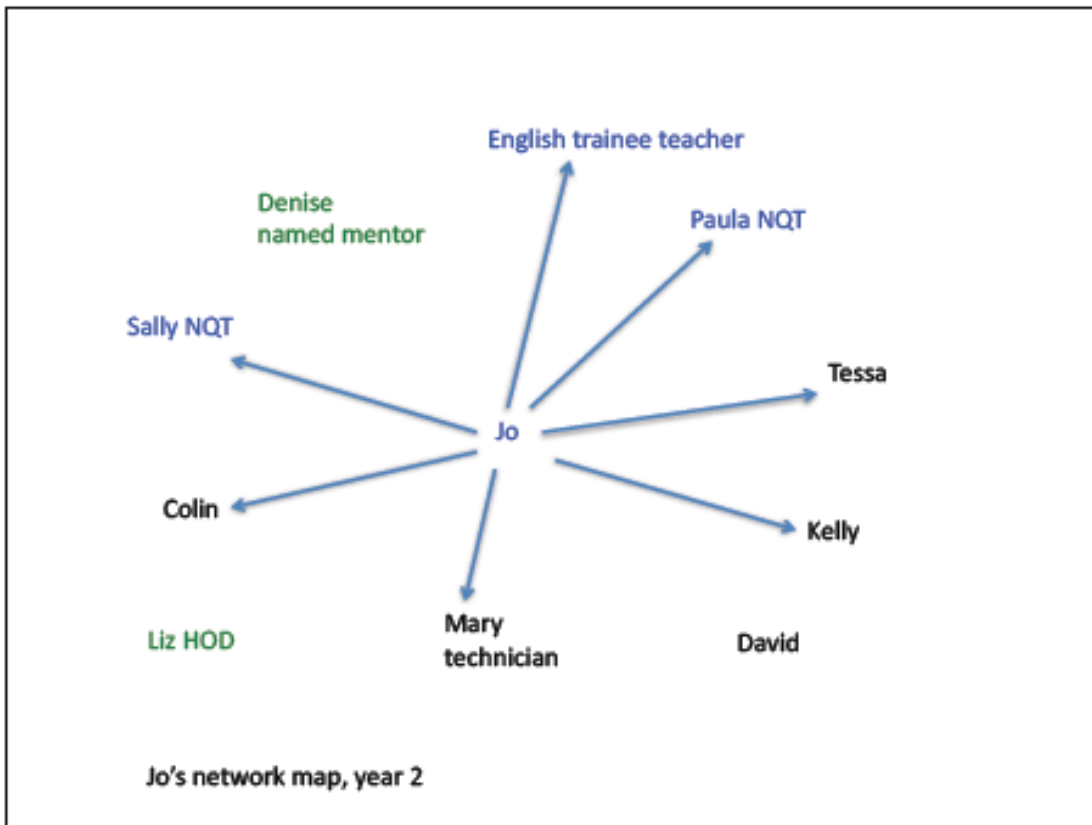
## 9.10 Appendix 8b: Summary of spider diagrams under themes

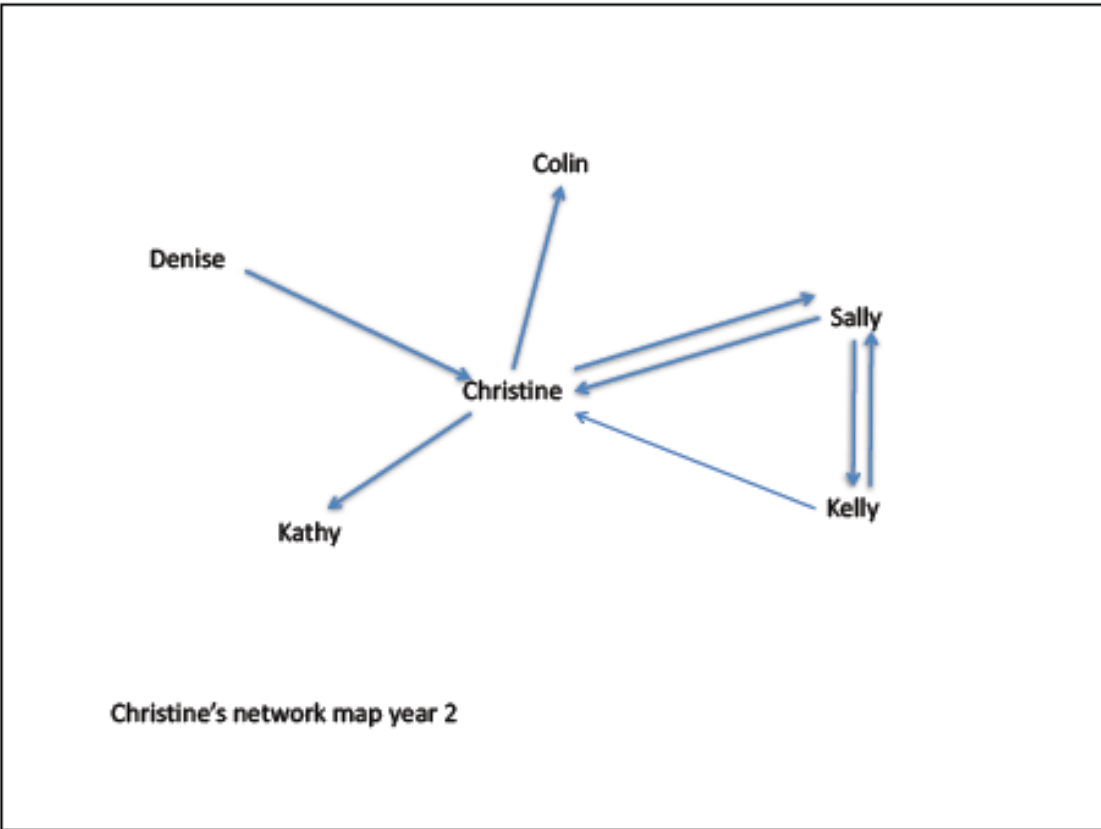
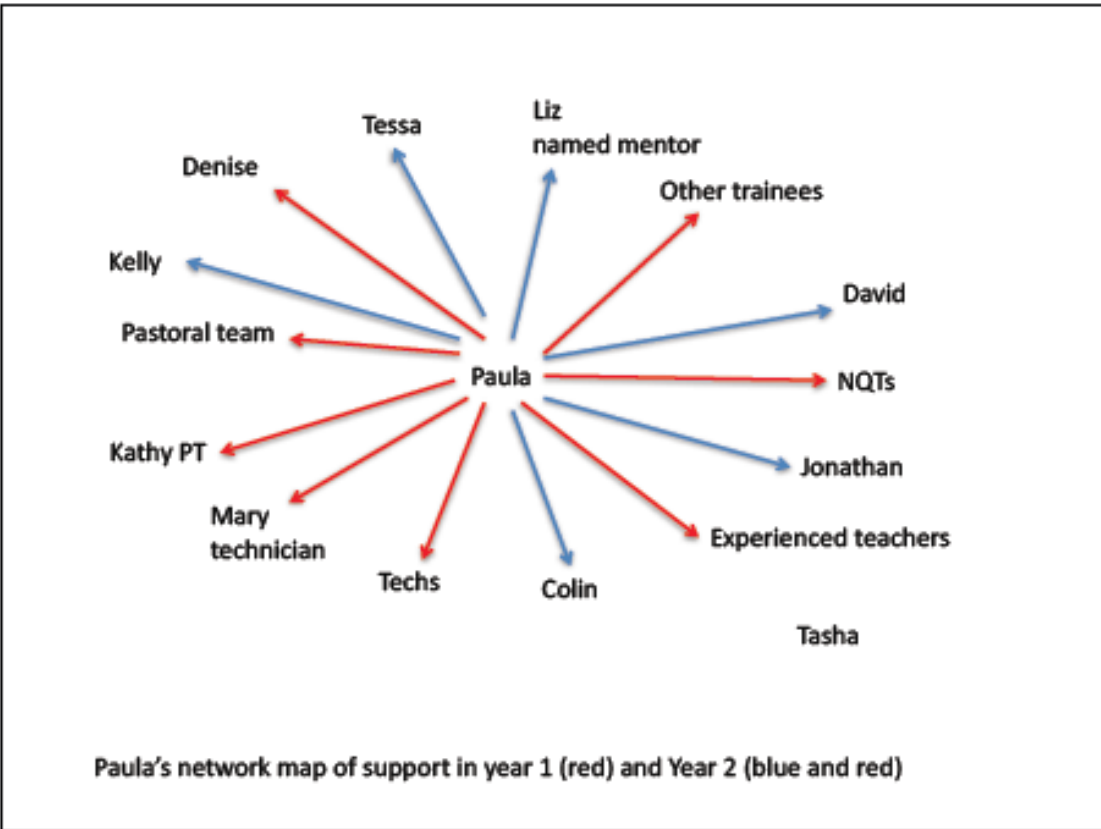
	People	Places	Information/resource	Experiences	Qualities	Negatives
<b>Kathy</b> 10 General	Subject staff Who to go to for what SENCO EAL leaders	Safe place "Comfortable place" School advice	"behaviour management" School advice	External	Honesty	
<b>Liz</b> 11 General	Team			Wide range of classes Wide range of subjects "wide range of ability"	Sharing Acceptance Supportive Honesty Empowering Flexible Accept own style	
<b>Denise</b> 8 General	Other teachers Technicians Mentor		Schemes of work Materials for courses		Supportive Flexibility "understanding"	
<b>Sally</b> 36 Specific	Mentor Named bio teacher Named phys teacher Names Hod Named ITTCO Names technicians "teachers around the school" "other trainee in the dept"	Desk Shelves Quiet place	About the school Practicals Where things are "feedback" Data IT	First INSET day Time to talk Observations Pastoral role "Specific pupil interactions" "department meetings" "staff meetings" External "EAL, SENCO sessions in PS" "guided reflection"	Noise Chatter Trainee leaving Busy No shelves "Lack of time with mentor" "IT all over the place" "resources, materials all over the place" "small desk" "three trainees in science"	
<b>Paula</b> 17 Specific	Mentor Other trainees NQTs Experiences teachers Lab techs ITTCO "Pastoral role teachers"	Space Access to a PC "Desk"		Professional development Teach/learn G&T afterschool club "School trips" "Department meetings"	Supportive "Network of support"	
<b>Tasha</b> 28 General	Technicians "Team" "Who to go to"		Funding Resources Variety How to manage things How to prioritise "G&T, EAL" "issues in school"	Teach/Learn group Observation Range of student groups Range of ability Range of keystage Range of subjects	Teamwork Morale Expertise Non-political Focused build up Time Access to colleagues "enthusiastic team" "open mindedness" "encouragement to explore"	"Tensions in team re staffing issues" "Cynicism in the department"

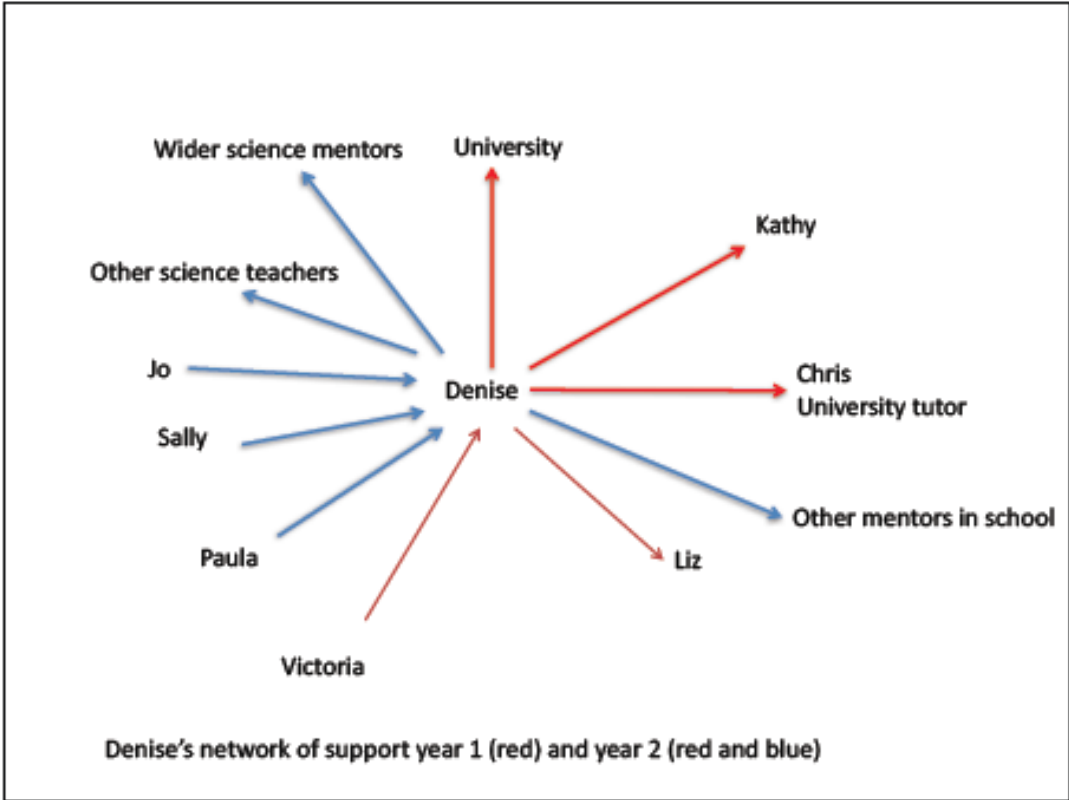
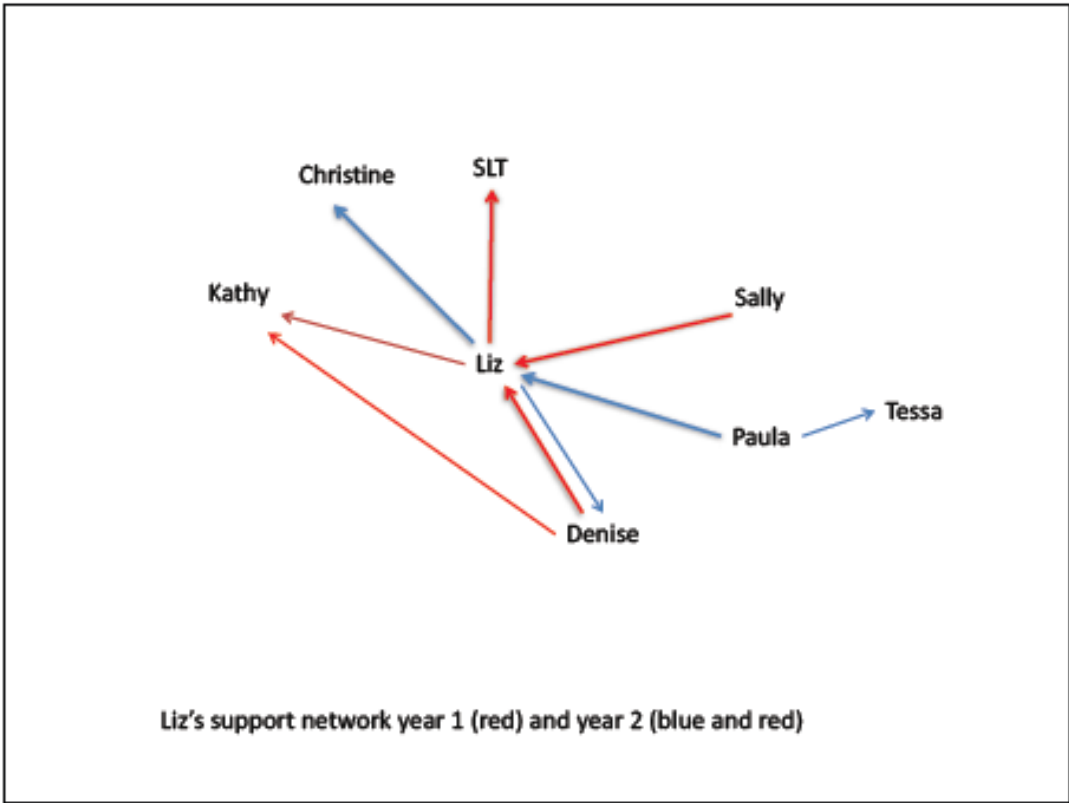
9.11 Appendix 9: Network maps











9.12 Appendix 10: Copies of learning theories shared with the department and the participants

## Metaphors for learning

- Learning as acquisition – ‘ticking’ evidence keeps coming up in the interviews!
- Learning as participation – this has been a theme of mentor training this year
- Learning as construction – working with trainees; we are always encouraging talk and joint construction

1

## Kolb's experiential learning cycle



2

### 9.13 Appendix 11: An example of a transcript

This is the transcript of the focus group of the beginning teachers Sally, Paula and Jo (July 2015).

Jo	Deleted our whole second interview.	
DH	<b>Yes, I pressed the button that would, deleted the entire thing. Anyway, I think it's Thursday 9<sup>th</sup> July. At Birchbrook School and I'm with Jo, so say hi Jo.</b>	
Jo	Hello.	
DH	<b>Say a bit more so that, because might somebody else might transcribe this so they need to know your voice.</b>	
Jo	OK, hi I'm Jo.	
DH	<b>Excellent, yeah and Sally?</b>	
Sally	Hi, I'm Sally, I've nearly finished my NQT.	
DH	<b>Yeah.</b>	
Paula	Hi, I'm Paula and I'm about to leave teaching, about to finish my NQT.	
DH	<b>Have you finished your NQT? Yeah. The reason for this interview is, and you've been involved this year, you two have been involved for?</b>	
Paula	Two.	
DH	<b>Two years, yeah, 18 months, two years. And I just wondered if being involved, the focus of the research is about this science department as a place to learn to become a teacher, about the science, learning to teach science here, and I just wondered if being involved in the research project had made any difference to you?</b>	
Jo	I think it probably helped me a little. Some of the questions you asked were quite tricky to get my head round, and then when you were asking about who was helping and all of the people, it was quite good to just think about that for a little bit and go, actually yeah, this is what's helping quite a lot and it made me actually realise as well, which I hadn't fully realised before. Yes, you two got mentioned a lot.	

Sally	It's a good therapy session and I think as a reflective practitioner, it helps me structure my reflective thoughts. So, and to think a bit more deeply or just have that time out to think about how I was learning to become a teacher, and I'm not sure I would have necessarily had that prompt having not had the interview.	
Paula	I think I was putting myself in a situation where I thought it was all doom and gloom and everything was going wrong and couldn't handle it, I couldn't take the pressure, there's too much to do, and then when I talked about it I realised actually it's not that bad, I'd just focussing on what I've got to do rather than what I've done. So it's more like realising the to do list is not the end of the world if you don't do it. Do your priorities and then forget about it, turn it off, go out for the evening, go for a swim, go for a run. I think before I started talking about it, I think I was just spiralling into a state of I can't do this, I'm too stressed but.	
<b>DH</b>	<b>So that was this year?</b>	
Paula	This year, I've just	
Sally	You've been very chilled recently.	
Paula	Very chilled recently.	
Jo	After the last couple of months you've been just zen.	
Paula	I know, but that's because I've realised that actually I can be more ... with my time and I've been using a lot of TES resources, but tweaking them for my classes. And a lot of my teaching before was me leading it, so instead of spending just that little bit extra time on the planning and making it so the kids do, now I'm not doing, I feel much better.	
<b>DH</b>	<b>So are you saying that you're, the time that we interviewed, it actually just made you that talking it through, just?</b>	

Paula	Just, yeah, just talking it through made me stop, sit back and go, well, hang on a minute I'm doing all the work here, that's not going to happen for much longer, stop.	
Jo	I think it was also good to talk to someone who's not our school based mentor.	
Paula	Yes.	
Jo	Or tutor here.	
Paula	Have a good old rant.	
Jo	It's just someone else who knows what we're all coming through, just to talk to who's not linked to us in any professional or training capacity. That was quite nice and refreshing. I did rant at you a bit, didn't I?	
<b>DH</b>	<b>I think all of you have just a little.</b>	
Jo	Just a little bit.	
<b>DH</b>	<b>But I think that's fine, I think that's.</b>	
Sally	It is useful to take that away from, because it is difficult sometimes. Although you've got your mentor, you can't really, you've got to.	
Paula	You've got to be careful what you say.	
Sally	You've got to filter what you say a bit to your mentor.	
Paula	Yeah, because they're signing your NQT report at the end of the week. You don't want them to think that you're not coping, so if you're showing signs of not coping to your mentor, they're going to be putting in potentially a cause for concern. You don't want that, so you always put on the brave face to make it look like you're coping in front of your mentor. As much as you may like your mentor, at the end of the day, do you want to look like you're not coping?	
Jo	Yeah, you hated that ...	



<b>DH</b>	<b>You've said that recently, haven't you? I just wonder if you felt that because you're still in the training year?</b>	
Jo	A little. Maybe a little, but I think for me I knew it was going to happen, I knew I was going to have a mega wobble and then when it happened, I didn't realise it was happening until now, and now I look back I go, I was really a state. Sally can say when I had the biggest one. So, made me tea and when I cried for about an hour, and it was actually just talking it through with Sally when I, as well, when I went, OK, yeah, because we had quite a long discussion about mentors and things as well and that sort of thing.	
<b>DH</b>	<b>Are your mentors the person that's made the most difference to you learning to become a teacher, do you think?</b>	
Jo	I think it's actually, Sally and Christine.	
<b>DH</b>	<b>So two people are pointing at Sally at this point.</b>	
Jo	I think Sally and Christine and Paula, as well, have actually done.	
Paula	Sally's been my rock. She's the one person that I can say exactly how I feel. I can rant and rant and rant at her, I can cry, I can tell her, I'm not coping, I could steal resources off of her and have her come into my lessons and pretty much run my lesson because I haven't coped, and she won't go and telltale on me and say I'm not coping, and I won't get that awkward chat.	
Jo	Yeah, I think with me, it was mostly Paula and Kelly at the start of the year, and then it shifted more towards Sally and Christine towards the end of the year, and I think that was partly because of what classes I was teaching as well, and the subject I was teaching.	
Sally	We've kept each other afloat all year, haven't we?	
Paula	Yeah.	
Jo	Yeah.	

Paula	Thanks Sally.	
Sally	Thank you Paula.	
Jo	Thanks both.	
Sally	Those moments, Paula was in there with me on Monday when I was having rant and she was pointing out the positives and things I had done, not what I hadn't done.	
Paula	Yeah, I walked in and the room was calm. I was like, what are you stressed about, they're fine, they're doing the work, nobody's hit anyone and no one's crying.	
<b>DH</b>	<b>So what has the mentor done because your mentor is?</b>	
Paula	Liz.	
<b>DH</b>	<b>Liz now?</b>	
Paula	Liz set me my time management thing, which is, along with me sitting back and realising I was doing too much, Liz sat back and went, what are you doing with your time, tell me, what are you doing with your time? And I realised that I was so stressed out, I spent half of my free time writing to do lists and then they got buried in the pile of paper and I wrote another to do list, then I lost that one, so I wrote another to do list, and I realised I hadn't actually done anything. And Liz sat me down and she did this Excel sheet, Monday, period one, two, three, four, five, and then she only gave me two hours after school, and she broke down all of my free time and said, right you're going to do this for that hour only, therefore you want to get started quick. And then you've got two hours after school where you're going to do this and you're going to go out and do something for yourself, you're going to go and exercise and you're going to go to bed before this time. And I stuck to it.	
<b>DH</b>	<b>So she gave you that time management thing?</b>	
Paula	Yeah, yeah. At first it was difficult to break out of the routine of writing to do lists. She pretty much banned to	

	do lists. Now I'm, I know how to use my time more wisely and I, definitely, it's changed me.	
Sally	Yeah, you've, I was, one of the Teachmeet sessions we had here, when you came away and you stuck that bit of paper up about being stressed teachers, no it wasn't the stressed teacher bit, you came back from that and you went, I'm not going to do this anymore, I learnt from that.	
Paula	Oh, the thing I stuck on my desk?	
Sally	Yeah, Yeah.	
Paula	Yeah, the rules for stress management. Rule number one, MTFU. General rules and one of them says, thou shall say no.	
Sally	Yeah, and that was the turning point for you, yeah.	
Paula	I stuck it up and I just look at it. Literally it's where I sit, it's right in front of me.	
<b>DH</b>	<b>Yeah, I saw it on your desk, I think actually I've got a photograph of it. What about you because your mentor is Christine this year, isn't it?</b>	
Sally	Yeah. I've used Christine selectively. We've had regular, regular meetings. She's been good at directing me with some particular difficult classes and giving me advice on those individuals. In terms of the day to day stuff, the person that I've most used has been Kelly. I've worked most closely with Kelly.	
<b>DH</b>	<b>Right</b>	
Jo	She's good.	
Sally	Because she's right in the lab next to me, she's teaching biology. So she's now head of key stage three, so.	
<b>DH</b>	<b>That sounds good.</b>	

Sally	Yeah. So Christine's been great and she's been ever so supportive, and particularly when you have a wobble, she's just, go on, it's fine, it's.	
Paula	Empty a few.	
Sally	And normalises it. So this week, I've had some awful girl, issues with girls, just shocking issues with girls.	
Paula	They have been horrible.	
	They have been vile.	
Jo	They are vile, they were, a couple of in there, anyway.	
<b>DH</b>	<b>Is it a girls' group?</b>	
Jo	No, it's a ...	
Sally	But we've reset for the end of the year 10, ready for year 11, and we've just got these five girls who are in together and then a couple of hangers on, and.	
Paula	They just didn't like the change, did they?	
Sally	They didn't like the change. I was the first teacher teaching them from the change and it was me and Christine teaching them, and then we've got a couple of shift boys in there as well, so up until that point the class had been fine, put those extra girls in and the dynamics of the classroom went.	
Jo	Change of balance.	
Paula	And as soon as one of them showed any dislike towards Sally, the rest of them just shadowed, joined in and as soon as one of them did something naughty, it was a trap, Sally was in a trap. Basically they were pushing, pushing, pushing, pushing, being naughty. Sally tells them off, so then now they're going, she's this, she's that, and it's hang on a minute, you were naughty, she told you off, end of story, surely?	

Sally	Yeah. You're withdrawn.	
Paula	Yeah.	
Sally	You're withdrawn.	
Paula	And now they hate her because she withdrew them because they were naughty. They were vile.	
Sally	They've been vile. Absolutely vile.	
<b>DH</b>	<b>But Christine was a real support?</b>	
Sally	Christine's been really supportive, yes. Yeah, she's been really good and I'm not in tears about it. I've had a little, LIKE, am I going to wobble, but it's, no.	
Paula	You didn't <i>gaffe</i> .	
Sally	So, yeah, Christine, it's been, yeah, no, it's been fine. She's been really supportive and when we've sat down and had chats, I feel really, she's been very good at spotting what the next thing I need to do is.	
<b>DH</b>	<b>Right, and you've kept that regular meeting?</b>	
Sally	Yeah, yeah.	
<b>DH</b>	<b>I'll just check that this is going, it's my, I'm paranoid about it now. And what about doing your NQT reports and stuff, that's all been straightforward?</b>	
ALL	[Respondents laugh]	
Sally	Go on.	
Paula	I'm not saying.	
Jo	I'll say for you, they hated them, every second of them. So when they were due in is, all I saw Paula doing was typing her flipping report out for the sixth version and the sixth time because it wasn't the right version.	

Sally	Mine was fine but then Christine wrote, well I kept my evidence going. The one thing I say, keep your evidence going as you go and those regular meetings with Christine, she was really good at making sure I'd done my evidence, so making sure as it goes along, and then at the end, it was, it wasn't a problem. And then Christine just summarised it and wrote me a report, it was fine.	
<b>DH</b>	<b>And what was the issue with yours?</b>	
Paula	[Respondent laughs]	
Jo	She had about four versions of the same report.	
Paula	Yeah.	
ALL	GIGGLING	
<b>DH</b>	<b>Shall we move on?</b>	
	Yeah.	
Paula	Basically I don't actually see the value in it. To be honest, who is actually going to read these? Genuinely?	
<b>DH</b>	<b>I've read yours.</b>	
Paula	Yeah, but, who needs to read these and what becomes of them, what changes because of the existence of these things?	
<b>DH</b>	<b>Do you change because you've written it?</b>	
Paula	No. I got more of a headache. What changes me is somebody watching me teach and somebody talking to me about how I feel. They're the two things that matter. What does it matter if you've got a piece of paper saying, evidence? No, what you need is a good teacher that's happy. End of, surely, no?	
Sally	I found it use, I found it a useful process to go through.	

Paula	I found it pointless.	
<b>DH</b>	<b>The process was useful?</b>	
Sally	I found the process useful.	
Paula	Completely pointless.	
Sally	And I enjoyed the, I enjoyed that structure of reflection.	
Paula	I didn't.	
Jo	See you two think in very different ways, though.	
Paula	I think, personally, I would rather somebody came in, observed my teaching for a couple of lessons, so over a variety, to see that I'm not just panicked, I never prepare differently for an observation lesson. If somebody's observing me, I'd just do what I'd normally do because I think to myself, I want to know if I'm doing it right and that's what I'd normally do, so if I'm doing it right when I normally do it, then I, I'm OK.	
Sally	Whereas I spend hours and hours preparing for my observation lesson.	
Paula	But that's, and then you get stressed about it.	
Sally	Yeah, which is really ridiculous because.	
Paula	Because your teaching's fine normally, so why do you need to stress about it?	
Sally	Well.	
Paula	Why do teachers feel the need to prepare so in depth for an observation lesson when the whole point of an observation lesson is to see if you're doing OK or not for the kids?	
Sally	Yeah, yeah, I.	

Paula	What's the point in changing it and falsifying it, it's no good.	
Sally	I agree to a certain extent, but I've found spending that in depth time planning a single lesson helped me in my overall planning, because what it meant was that I developed some standards type lessons for different things. So I've now got a standard practical lesson with all of the differentiation done, which I can now slot in for any kind of practical lesson, and I've.	
Jo	Right, can I have that?	
Sally	Yeah. And I've now got	
<b>DH</b>	<b>You said it was the process though of.</b>	
Jo	Giggling	
Sally	Yeah. And I've thought that process of thinking about how you're using the resources. So you know when you go back to your first year, when you spend a lot of time planning individual lessons?	
DH	Yeah.	
Sally	I found doing that was	
<b>DH</b>	<b>We need to get the Jo involved.</b>	
Sally	I did, I found it useful, I found I learned from it and reflected on it. But, and I don't have that amount of time to give to. The only one I spent a ridiculous amount of hours was when Emma observed me.	
Paula	I got a requires improvement from the Headteacher.	
<b>DH</b>	<b>Yeah, no I remember that. Jo, what about you?</b>	
Paula	I was quite angry about that.	
Jo	Which bit? We've talked about a lot.	



<b>DH</b>	<b>Talking about, first of all we go back to Denise as your mentor because you've all had Denise?</b>	
Jo	Yeah. When I had my mega wobble, that was one of the things Sally and I talked about. She's great, she's really good at picking out all the things you need to improve but she's very blunt about it sometimes, which is good, if you're not about to breakdown entirely. But then I broke down entirely and I just wept on Sally's shoulder for a bit, and she was, yeah, but it is good and you'll think back on it and you'll realise that actually you needed that push, but at the time, it feels really horrible.	
Sally	Yeah.	
Jo	And you're feeling that she's actually just trying to push me further than I can actually go, but now I'm looking back and going, her advice at the time, if I'd actually started working on it a bit earlier, I would have done much better I think, and actually I needed that push to actually improve.	
Paula	Sometimes you need the MTFU band, picked at, pinged at you.	
Jo	And flinged at my head, yeah. That was needed.	
Paula	Wear it.	
Jo	I had it on for two days and then I was, yeah I feel a lot better now.	
<b>DH</b>	<b>What helped you learn, Sally's said that actually the deep reflection actually, thinking about lessons in depth, you said it's actually talking with somebody after you've had an observation really helps you?</b>	
Jo	I think for me actually, it sounds really weird, but actually having the breakdown helped, having those moments where I actually let myself go I can't do this, and then talking about it, I think that actually helped me more. It was the discussion that came from that and writing it down did nothing for me. I don't get the whole, you write it down and process it. I'm a bit Paula like that, I think.	

DH	You need to talk it through?	
Jo	I have to talk it through it because then I can process it as I talk. So I found talking about it with Christine and Sally and Kelly and Denise, so much better than writing out my weekly reflections.	
Paula	I think that's where the training, the teacher training, is bad in a sense because there's no differentiation for the way people learn. There is a set way, you must do a ROP, you must do report three, you must do this, and it's, well what about some do it as weekly reflection that's a verbal weekly reflection?	ROP Record of progress
Jo	I'd actually rather do that, just record my conversation because then it's done, I can just chuck it in a folder, and actually I probably realise that I've done a lot more if I go back and listen to what I was saying and how I said it, than just reading back what I've written.	
Sally	Well, what I found in that NQT year was doing, having, doing that, doing the reflection was part of consolidating the conversations and the discussions that you'd had, so it was, and they don't have to, I think looking back now there's no reason, no I didn't need to write pages and pages and pages.	
Paula	But it felt good at the time.	
Sally	It felt good at the time.	
Paula	Checking through my essays, I had a few five pagers.	
Sally	Yeah, but just putting a few bullet points of what they, of just putting that full stop there, going right, that's where I am now, so then you can look back and you can go, oh actually yeah, oh no, I have made progress, because I think it's sometimes difficult on that kind of continuum to think oh actually.	
Paula	Yeah, I think the issue with some people with the ROPs was they're trying to put what they think somebody wants to read. So they're trying to show that they're making progress, they're trying to prove evidence of this and evidence of that. Whereas my weekly ROP was saying about how I hated this certain child's behaviour	

	and how I couldn't deal with it, rather than picking out the evidence.	
Jo	Yeah, mine got a bit like that.	
Paula	So my ROPs were pretty useless as far as evidence was concerned, but I felt good writing them because I had a good old rant. Chris didn't like that, he had to read them.	
Jo	He gave up reading ours, I think. He read three of mine that I know of and that was only because I emailed him telling him I felt really, really horrible, and he emailed me back saying it's not as bad as you see, think it is, trust me, and yeah, so yeah.	
<b>DH</b>	<b>What about doing the reports for you because you've not had an NQT report but you've had to do your reports too?</b>	
Jo	I quite liked the spreadsheet, it's not, I found that actually more useful than the ROPs because then I had to actually think about what I had done over the term and then I looked back at some of my original lesson plans and things and went, oh my God, this is terrible, and it was only when I started looking at, for evidence and things for my report that I realised how much I'd progressed, so I don't know, they were all right. It was quite nice and straightforward to do as well, so it didn't take hours. Not for me, anyway, but.	
<b>DH</b>	<b>And have you had support through this month, have you had a mentor this month?</b>	
Jo	Sort of, it's been a bit of everyone, I think. So I've had a lot of talking with Sally and I've had a lot of talking with Tessa, but a lot of the classes I've got I know what I'm doing with them. So the year nines, I am teaching exactly the same stuff as I've been teaching for the last ten weeks of my placement, and then year ten, we're doing control assessments, so it's just talking to Sally, finding out what the plan is, supporting Sally, and then leading some of those sessions, but yeah, I just talk to everyone.	
<b>DH</b>	<b>Who will be your mentor next year then?</b>	
Jo	Denise. She's a bit reluctant with the idea because she's got the RPTs as well, so.	

Sally	And she's part time. She's only <i>point six</i> isn't, she?	
Jo	And she's part time. She's only three days a week next year, so.	
Paula	I'm not sure how she's going to fit that in, if I'm honest.	
Jo	I'm, I don't know how she's going to do it, but Colin can't do it, he's got too much on and then the only other chemist who's here at all really is Tasha, and of course.	
Paula	She's never in.	
Jo	She's never in because she's doing all her ...	
Sally	Does it have to be a chemist?	
Jo	Yeah, apparently. But Christine said she's not doing it next year because she hated your reports with a passion. Sorry.	
Paula	You've put her off, what have you done?	
Jo	Sorry, Sally.	
Sally	She hated my reports?	
Jo	She hated, no she hated writing them. They were terrible, she hates doing all the paperwork. Liz wasn't going to do it again either, so I'm a bit stuck really, and then with [teacher 1] and [teacher 2], they were going to have too much to do settling in to really mentor someone else, so I'm kind of stuck with Denise again, which is good, I think it'll be really good because I know Denise now and I know how she operates and she knows how I operate, so we'll probably get, be a bit better next year.	
Sally	It's less intense as well.	
Jo	Yeah.	
Sally	Because you're more on your own and she'll only, she'll observe, what, four lessons, three lessons, four lessons?	

Jo	Yeah, so I think it'll be all right and I'll probably lean on you quite a lot, just because we're teaching quite a lot of classes together. Half our classes I think.	
Sally	Yeah.	
<b>DH</b>	<b>But Christine's stopping because she hates the paperwork, why's Liz stopping?</b>	
Sally	I suppose too busy.	
	Yeah, in principle.	
Jo	Probably head of department stuff. She took it on because Tessa was busy I'm assuming.	
Paula	Yeah, Tessa was my mentor before and then when she fell pregnant, she handed over to Liz.	
<b>DH</b>	<b>Yeah.</b>	
Jo	As part of slowing down.	
<b>DH</b>	<b>OK. We can stop there because it really was just your thoughts on being involved. I don't know if there's anything you want to add?</b>	
Sally	It's been good to have that extra continuum of contact with you. I've enjoyed that.	
Jo	Yeah, I've quite liked that.	
<b>DH</b>	<b>Bless you</b>	
	Even though I've had you all year.	
<b>DH</b>	<b>I've enjoyed it as well, I have enjoyed it.</b>	
Sally	And I suppose I've just taken it, not taken it for granted, but it's always been there, so if it wasn't there, I think I'd miss it.	
Paula	I'm going to miss it next year.	

	Yeah.	
<b>DH</b>	<b>I should come and see you, just come and see you in your house.</b>	
Paula	Come up to Borsetshire.	
Jo	You have to come visit us next year as well. I'm assuming you will.	
<b>DH</b>	<b>Yeah.</b>	
Sally	So had we have been in another school, it would have just been a complete separation from the university?	
<b>DH</b>	<b>Yeah.</b>	
Jo	I think I'd feel a bit out of my depth without somebody familiar if I was at a new school.	
Sally	Yeah. And I was reflecting on it when I sent the feedback back to [course leader] on, she was looking for feedback.	
Paula	I haven't done mine yet.	
Sally	And actually in terms of thinking about that, it was, it's actually, it doesn't feel that different to me because I'm still in the same school and I'm still being mentored by the same people and you guys are still around	
<b>DH</b>	<b>Still around, yeah.</b>	
Sally	And I still have a sit and a chat with you every now and again, so it feels like it's in place.	
Jo	It's one of the reasons I want to stay is because I saw how well you two were doing and you had all the support and you under stress but there were people there.	
Paula	It's good here.	
Paula	As a department it's. The department's amazing.	
Jo	Yeah.	

Paula	We have a right hoot.	
Jo	I am so glad I'm staying and I can't wait for Brighton next weekend.	
<b>DH</b>	<b>Right, shall we stop there, then? Thank you very much ladies. I've really enjoyed it.</b>	
	<b><i>END OF DISCUSSION</i></b>	

## 9.14 Appendix 12: PDFs of Notes and Quotes worksheets from the data analysis workbook