Research Aim:
To explore outstanding teaching potential in early career teachers on their personal and professional journey to becoming newly qualified teachers.

IRENA GROUNDS

Document 5: A thesis submitted

in partial fulfilment of the requirements of Nottingham Trent University for the award of

Doctor of Education

January 2016

Professional Doctorate Programme

Document 5:
Dissertation based on primary research underpinned by themes identified in research documents 3 and 4.

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Submitted by
Irena Grounds
St Mary's University, Twickenham TW1 4SX
Irena.grounds@smuc.ac.uk
NTU Registration ID: NO360228.

Supervisors:
Dr Sheine Peart (Nottingham Trent University)
Sheine.peart@ntu.ac.uk

Dr Linda Saunders (St Mary's University)
Linda.saunders@smuc.ac.uk

Programme Leader:
Dr Helen Boulton
Nottingham Trent University
Helen.boulton@ntu.ac.uk

Submitted to
Dawn James
Graduate School Administrator, Nottingham Trent University Graduate School, Burton Street- Chaucer 4711 Nottingham NG1 4BU (Tel: 0115 848 88154)
Dawn.james@ntu.ac.uk

10th January 2016
Irena Grounds NTU registration ID: N0360228

Professional Doctorate: Document 5

Dissertation based on primary research underpinned by themes of subject knowledge development during training and transition into the workplace as newly qualified teachers, identified in supporting research documents (3 and 4).

Research Aim: To explore outstanding teaching potential in early career teachers on their personal and professional journey to becoming newly qualified teachers.

Abstract

This longitudinal study takes an interpretive approach to investigating the personal and professional journey of six outstanding early career teachers. Aspects which will be investigated include the ITT pre-selection procedure, an examination of the university based training programme, the contextual features of the trainees' school experience and the participants' own beliefs that impact on their professional identity development through the training year and into their induction as newly qualified teachers (NQTs).

The qualitative methodology used shares characteristics with a case study approach and utilises procedures associated with grounded theory. Data were systematically gathered over a three-year period including documentation collected at key transition points throughout the training year. A culminating semi-structured interview produced an illustrated timeline of the year charting participants' increase or decrease in confidence in the training environment with time. A similar time-line was produced to summarise the NQT experience one year later. The collected data were analysed, coded and categorised, and the explanations and theory that emerged from this process were grounded in the data.

Two principal investigations support the main thesis. The first is located at the beginning of the teaching journey and focuses on the importance of subject knowledge on trainees' outcome achievement (DfE, 2011a). The second study follows trainees into their first teaching post and considers factors supporting or impeding successful transition into teaching. It acts as a pilot for the main investigation.

This thesis provides a comprehensive and nuanced view of how beginning to teach is experienced and interpreted by potentially outstanding trainees. It paints a complex picture of the relationship between biography, beliefs, preparation and context in the process of learning to teach. The study contributes to the literature on the recruitment, education and retention of beginning teachers in the scarcely researched area of outstanding trainee achievement and its impact on transition into the workplace and early career progression and retention. It highlights the need to develop a shared understanding amongst policy makers, teacher educators and schools regarding the multiplicity of factors that influence and determine the development and transition of early career teachers giving an insight into the complexity of the 'outstanding teacher' achievement.

Contents

Note:

In this document, the voices of individual participants in the research are given in italics.

Abbreviations:

DfE Department for Education

IOB Institute of Biology

IOP Institute of Physics

ITE Initial Teacher Education

ITT Initial Teacher Training

NCTL National College for Teaching and Leadership

NQT Newly Qualified Teacher

OFSTED Office for Standards in Education

PGCE Post/Professional Graduate Certificate in Education

RSC Royal Society of Chemistry

RQT Recently Qualified Teacher

CHAPTER 1

INTRODUCTION

The main thesis is a longitudinal, qualitative, exploratory, theory generating case study (Stake, 1995). It takes an interpretive approach to investigate the personal and professional journey of six beginning teachers classed as outstanding (grade 1) at the end of their PGCE training year from the standpoint of the beginning teacher. Aspects which will be investigated include the ITT pre-selection procedure, an examination of the university based training programme, the contextual features of the trainees' school experience and the participants' own beliefs that impact on their professional identity development through the training year. Each participant is tracked into their induction year as a newly qualified teacher (NQT) to ascertain if their progress continues to be classed as outstanding and whether they remain in the teaching profession as recently qualified teachers (RQTs) for the following five years. Any link between outstanding trainee achievement and successful and long term transition into the workplace is missing from current research and literature.

The qualitative methodology employed in this thesis is aligned with case study method and uses procedures associated with grounded theory. The research was framed around three questions:

- What are the accepted factors and predictors that contribute to early career teachers being identified as outstanding?
- What conditions and interventions during their early career could aid more beginning teachers to gain and sustain outstanding achievement outcomes?
- How does personal and professional identity affect outstanding teaching potential in the early career years?

Two supporting investigations supported the main thesis. The first (document 3) is located at the beginning of the teaching journey and investigates entry requirements at interview for the PGCE course, focussing on the importance of subject knowledge on trainees' outcome achievement (DfE, 2011a). The second supporting study (document 4) follows the trainees into their first teaching post and considers whether outstanding trainees continue as outstanding newly qualified teachers (NQTs) and are retained in the profession as RQTs. It acts as a pilot study for the main research.

First supporting research study (Document 3)

Document 3 is a longitudinal explanatory research project incorporating numeric (confirmatory) data in tandem with narrative (exploratory) data. The main question in this research was:

- To what extent is good subject knowledge indicative of outstanding teaching potential in trainee teachers?

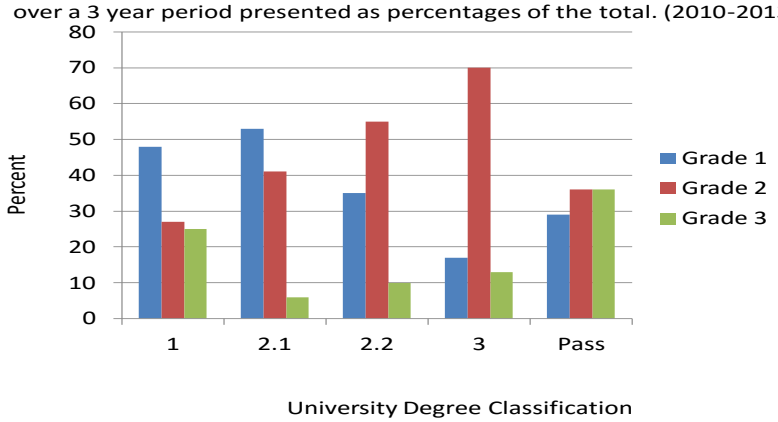
The motivation for this principal research focus was initiated by the previous Secretary of State for Education, Mr Michael Gove, who linked outstanding teacher potential on entry to an initial teacher training programme solely on obtaining a first class honours degree qualification at university (DfE, June 2011). This government document states that Mr Gove wishes to incentivise the best people into teaching with financial reward. He identifies the best people as those with the highest degree classification which he equates to good subject knowledge. Any evidence exclusively linking high degree classification with the outcome of an outstanding teacher is not included in this government document and cannot be found in literature to date (Smithers and Robinson, 2010).

> *We have been surprised by the lack of research into the qualities found to make for effective teaching, including any potential link between degree class and performance* (House of Commons Education Committee, 2012:20)

My personal observations as a teacher educator contradict Mr. Gove's assertions. I have never solely linked the highest academic achievement at degree level with the most effective teacher outcomes. Investigating a causal link between high academic entry qualifications and outcome achievement was the initiator of my study, however, the remit widened to incorporate trainee teachers' consideration of how good subject knowledge in the wider sense contributed to outstanding teaching potential.

The government's assumption that there is a direct causal link between the classification of a trainee teacher's first degree and their ability to teach was explored using data correlation techniques. The degree classification of each trainee teacher at the start of the PGCE course was collated against the outcome achievement grade awarded at the end of the course. The total secondary cohort for each year was approximately 150 trainees who over a three-year period produced 450 entry and exit awards to display in a table of results (Appendix 1&2).

Chart 1: Degree classification versus exit grades achieved for whole cohort over a 3 year period presented as percentages of the total. (2010-2013)



If the government's premise is correct then those trainees who started their PGCE course with first class degrees or PhDs, should achieve outstanding exit grades. Those with lower degree classifications should achieve lower exit grades.

Analysis of the numeric data (Gagné,1989) indicated there was no association between the incoming degree classification of secondary trainee teachers on a PGCE course and the outcome exit grades at the end of the training year (Appendix 1&2). This data demonstrates that having a first class degree or PhD is not a predictor of outstanding outcome potential. My findings were supported by Clarke and Pye (2013) who also found no correlation between incoming degree classification and outgoing teaching grades for their Mathematics cohort. My data and Clarke and Pye's study (2013) were considered in the light of the huge under-recruitment of mathematics and physics trainee teachers nationally for the academic year 2013-2014 at the Science Tutors' London Providers meeting held at the Institute of Physics. Within one month of this meeting, Hurst (2013) wrote in the Times "Graduates with third class degrees will be offered £9000 to train as teachers in key subjects as recruitment shortfalls force the Government to lower its threshold" (Times Newspaper, 18.10.2013: 46). The consequence of bursary withdrawal from applicants with lower class degrees had resulted in a reduction in physics and mathematics applications by a quarter. The situation was further aggravated by institutions which accepted 'self-funders' with lower degrees being penalised in the league tables of ITT providers (Smithers and Robinson, 2012).

In tandem with the numeric data analysis described above, eight science trainees who had first class honours degrees or PhD qualifications were recruited to the investigation in the first week of their PGCE course and asked if they believed there was any link between good subject knowledge and potential outcome achievement (Group A). The choice of the science group was pragmatic, as they were the trainees I had most direct contact with. These trainees were interviewed at the beginning of the course following a preliminary questionnaire and again at the end of the course once their outcome grades had been discussed and agreed. The interviews were exploratory, in an attempt to identify perceived factors relating their high degree classifications to their perceived progress and outcome (Appendix 3).

Analysis of the semi-structured interviews for Group A produced the following common themes (Braun and Clarke, 2006).

- Positive work ethic: All participants had stated that single-mindedness, dedication and determination to succeed had contributed to degree success.
- Deep interest in their chosen science degree: This was considered to be intrinsic to high academic achievement at university; however, the very narrow degree content imposed needs for further study before starting the course.
- Appreciation of the higher bursary for higher qualifications was a financial incentive.

- Relevant personal attributes: All participants identified excellent communication skills, kindness and enthusiasm for sharing science concepts as important attributes for success.
- Time related concerns: Age and length of time since study were concerns
- Creative approaches to teaching: Half the group identified a lack of creativity as a perceived weakness and something they hoped to develop during the year.

A detailed analysis of the identified common themes is found in Appendix 4.

The final exit grades for this academically high achieving group resulted in three participants receiving Grade1 (outstanding) awards, one achieving Grade 2 (good) and three achieving Grade 3 (satisfactory). One participant withdrew from the course after his first school placement. High academic achievement prior to starting an ITT course was not shown to automatically result in outstanding teaching achievement. The relationship between subject knowledge acquisition and translation into pupil learning in the classroom is very complex. This premise was further explored by investigating a second focus group from this cohort of trainees (Group B).

While collecting and analysing the correlation data between incoming degree classification and outgoing achievement grades the data indicated that trainees who had successfully completed a six months full-time subject knowledge enhancement (SKE) course tended to complete their training with the highest exit grades (Group B). They were confident from the very beginning of the course applying advanced pedagogical teaching and learning skills to their preliminary microteaching presentations. They were already steeped in educational jargon that others on the course were not yet familiar with. I was interested to see if there was a link between long SKE completion and high outcome achievement.

	Total from 2008-2013						
SKE	**Grade 1**	**% G1**	**Grade 2**	**% G2**	**Grade 3**	**% G3**	**Total Number**
12 unit	17	**58.62**	12	**41.37**	0	**0**	**29**
0 unit	7	**41.17**	7	**41.17**	3	**17.64**	**17**

Table 1.1: To show grades achieved at the end of the PGCE course by those successfully completing a six months SKE in science prior to starting the course and those who did not attend any formal SKE provision before starting their PGCE course. Those requiring no formal SKE were deemed to have sufficient subject knowledge from their academic background to start the PGCE with no SKE condition set prior to starting the course.

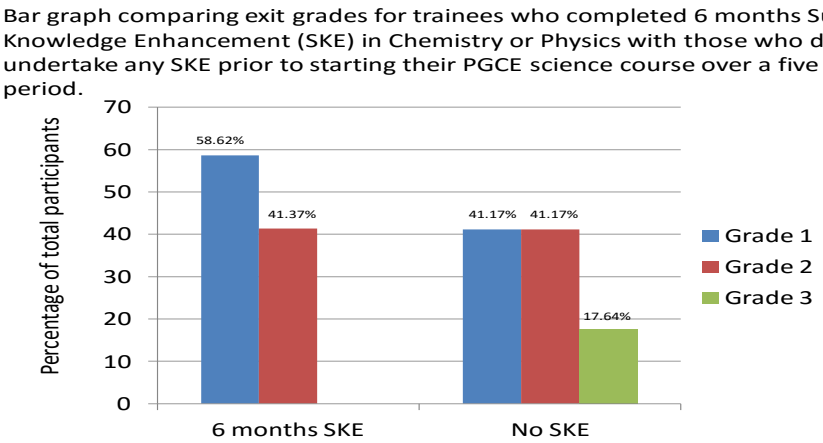


Chart 1.2: Bar graph to show grades achieved at the end of the PGCE course by those successfully completing a six months SKE in science prior to starting the course and those who did not attend any formal SKE provision before starting their PGCE course.

The numeric data display (Appendix 5) indicated that the trainees who successfully completed the long subject knowledge enhancement courses in physics and chemistry did better than any other group of science trainees analysed. If specifically compared with those trainees who were deemed to have sufficient and appropriate science qualifications, their exit grades were higher as a percentage of the whole. Two thirds of long SKE participants in my institution enter the teaching profession as 'outstanding' teachers and none of them was awarded a grade 3 exit award. This compared with 18% of trainees who do not undertake formal SKE of any sort obtaining a grade 3 exit award.

Stevenson (2010) compared 'in-depth' mathematics understanding between mathematics trainees who had completed a Mathematics Enhancement Course and those who had not. She concluded that:

> *Mathematics enhancement courses (MEC) stand up to scrutiny when compared with traditional degree pathways and provide successful alternative route onto a PGCE courses* (Stevenson, 2010:81).

My study looked further than the development of subject content knowledge during long SKE courses. In addition to subject knowledge enhancement per se, three aspects of personal growth and development were exhibited by the entire SKE group (Group B) but absent from the responses of those who had First Class Degrees or PhDs (Group A).

The first aspect of personal growth was appreciating the value of collaborative working encapsulated by one trainee.

> *We already know each other well from the SKE course and we would catch each other's eye during microteaching. We know each other's teaching styles. We shared and collaborated throughout the SKE course and this has continued during the PGCE.*

Another respondent said,

> *We opened up a 'drop-box' so sharing and being there for each other has continued after the SKE course. It was confidence building to be surrounded by other people in the same situation. It developed camaraderie and a support network.*

The second was a confirmation of commitment to teaching as

> *'It showed I had a commitment to wanting to be an excellent teacher'* and 'Giving *up 6 months of your life and a well-paid job shows true commitment'.*

Thirdly, critical reflection and an awareness of one's own capabilities was voiced through comments like:

> *The course has given me the extra time to understand exactly what is required from me as a teacher*; *also it developed a self-awareness and reflective practice. I had to consider where my weaknesses were and how to address them.*

A combination of subject knowledge awareness and personal growth during the course resulted in high personal confidence. This was the resultant confidence I had observed in this group each year which led me to investigate the impact of the long SKE course on trainees. A more detailed analysis of the findings is located in Appendix 6.

This final recommendation for the long SKE course summarised very succinctly all the advantages of such a course and explained why these participants felt so well prepared for their PGCE year.

> *I would recommend the six months SKE course as it provides a supportive environment, working with committed like-minded people, and develops an awareness of pedagogy as well as basic subject knowledge. It builds confidence in preparation for your PGCE year.*

Each trainee's journey is unique and offers insights into personal and professional challenges leading to transformational learning (Illeris, 2014) through experience and reflective practice. From the group who started their training with outstanding academic records (first class degrees), I chose to interview two trainees who offered different experiences of the routes into teaching. One undertook a long SKE; the other undertook no formal SK enhancement prior to starting. The former was graded as outstanding at each stage of the course and the latter had several professional and personal critical crises,

persevered and was awarded a satisfactory pass by the end of the course. These trainees were not selected as representative of the whole cohort; rather I intended to use their diverse experiences to illuminate the range of possible outcomes. Their own evaluations of their progress, or lack of it, may give some insights into the relative importance of good subject knowledge for professional development (Appendix 7).

The personal reflections of these two trainee teachers constitute a small part of the whole picture of their professional development. However, even from these snapshots of information, they identify that some factors influenced their professional progress more than others. They both concurred that subject content knowledge (SCK) as exhibited by high academic qualifications does not automatically produce an outstanding teacher. Pedagogic content knowledge (PCK) is equally important (Shulman, 1987) and is developed at various stages on the learning journey. When PCK is combined with SCK prior to starting the PGCE course, as in an SKE programme, professional progress can be accelerated. Strong support networks and school experiences that match a trainee's core beliefs promote personal and professional coherence (Alsup,2008).

How the inter-relationship of all these factors contributes to outstanding teacher potential is the focus of my main research project. The spoken interview procedure is used alongside other ways of capturing people's thinking and experiences, for example, by producing diagrammatic and pictorial representations of important milestones in a professional and personal journey. How this information could be best interpreted was piloted in the second supporting study (document 4) as a contrasting methodological approach to analysis of numeric and narrative data.

Second supporting research study (document 4)

The second study (document 4) followed the trainees into their first teaching post and attempted to answer the question:

> Do outstanding trainee teachers become outstanding NQTs?

This research enquiry focused on the process of transition and development of ten newly qualified outstanding science teachers (NQTs) during their induction year in their first teaching post, to see if outstanding trainees continued as outstanding NQTs. This qualitative study used interpretative thematic analysis (Braun and Clarke, 2006) and acted as a pilot for the main research. It aimed to question some of the current political directions in initial teacher education drawing on wider research into success in the workplace as newly qualified teachers and retention rates for the first five years.

> *The loss of 50% of early career teachers in the first five years of teaching in England (Burghes et al., 2009) is a shocking indictment of failure to provide a nurturing environment for our early career teachers.*

The participants' individual narratives were captured through audio-taped semi-structured interviews. The journey was summarised as an illustrated timeline of how confidence can be affected by significant milestones throughout the year. Professional and personal confidence was compared throughout.

Findings indicated that university training was an important influence on developing reflective practice and alerting trainees to the type of school environment they felt would support their own values and beliefs regarding professional practice.

> *This school ethos suits me. There is a good supporting system and it is not only for new staff but for more experienced staff who struggle from time to time. It is a nurturing environment which focuses on the positive but ensures you are aware of ways to improve. (Ar)*

The choice of first-post school was central to whether they continued as teachers. A supportive induction programme with experienced mentors and an empathetic senior management structure was necessary throughout the year. The opportunities to observe excellent practitioners and be observed in turn, receiving constructive and sensitive feedback established an ethos of professional development and personal confidence.

> *I had an observation from my mentor or PCM every half term and they were very positive and constructive and showed that I was making progress. We would agree on targets together and I would try to address them. There was always open communication. (Br)*

Coherence must exist between the teacher's philosophy of education and practice and that of the school and department in which they work. An overwhelming workload of planning and assessment requirements plus expectations outside the classroom resulted in early career teachers experiencing an unacceptable work/life balance especially in the first term.

> *My confidence is very low because there is so much to do from day 1. Lots of meetings, exam results to discuss, improvement plans; pressure from exam classes and OFSTED. The coming focus on vulnerable pupils, challenging the more able. Pay attention to this, this, this..... Massive pressure. Energy levels were so low. Finish school, go home, go to bed, consistently tired. School took over my life. I did not have a social life at all. (Na)*

This theme of overwhelming workload was present for all the participants in this supporting study, especially during the first term of teaching. Fortunately, through discussion with mentors, other colleagues and peers, they established more manageable routines and the period of disillusionment gave way to rejuvenation and anticipation of what lay ahead.

> *As an NQT from March onwards I have really enjoyed my year and though I have had highs and lows I have worked really hard and taken pleasure in watching my groups*

progress and grow. It sounds a bit cheesy and a bit of a cliché but that is what I think. (Lk)

This supporting study showed that outstanding trainees did become outstanding newly qualified teachers and were retained within the profession for at least four years if a positive nurturing environment was provided (Appendix 8). A continuation of this premise was developed as part of my main research thesis and involved comparing retention rates of outstanding (Grade 1) NQTs with those awarded lower outcome grades as part of the longitudinal study. In my reading so far, I have not discovered correlation studies linking outcome achievement and retention rates, though there is a body of literature on professional transition from trainee teacher to NQT (Jensen, Sandoval-Hernandez, Knoll and Gonzalez, 2012; Haggarty and Postlethwaite, 2012; Jones, 2003; Capel, 1998).

Using the theory of how to develop best practice with a view to enhancing and impacting on teaching and learning in early career teachers, I analysed the factors and predictors that contributed to trainee teachers being identified as outstanding and the conditions and interventions during the training that could aid more trainees to reach outstanding achievement and continue into the workplace as outstanding NQTs. Through reflective dialogue and observation of their best practice a mechanism to show case expertise may emerge.

The structure of the main thesis

The thesis is made of 6 chapters.

Chapter 1 is the introductory section which presents the context within which this study is located and shows how the two supporting studies underpin the main research questions.

Chapter 2 is the literature review and examines the research and other literature that is directly relevant to this study. The critiqued literature includes teacher training and preparation, outstanding teaching potential, transition and development and the role played by values, beliefs, biography and identity in learning to teach.

Chapter 3 describes the research context and the environment in which the research is taking place. Government involvement, international comparisons and collaborative research of colleagues in the field are included in aspects of the discussion.

Chapter 4 describes the methodology and the methods used in the thesis. It presents and justifies the use of qualitative interpretative research design that aligns with a case study approach and draws on thematic analysis principles associated with grounded theory. The participants, data collection methods and data analysis strategies are described and the ethical considerations that guide the research are included.

Chapter 5 presents a discussion of the findings emerging from the data. The analysis of the data falls into three sections; the factors that contribute to the trainees being identified as

outstanding; conditions and interventions that may influence more trainees reaching outstanding awards; aspects of how personal and professional biographies and beliefs shape how early career teachers construct themselves as outstanding teachers.

Chapter 6 provides a summary of the study's key findings and the conclusion discusses implications for policy and practice. Limitations of the study and possible further developments are identified.

CHAPTER 2

LITERATURE REVIEW

This literature review considers research which focuses on aspects of exemplary practice in teaching. The critiqued literature includes investigation into outstanding teaching potential; teacher training and preparation, encompassing the importance of subject knowledge development and reflective practice, followed by transition into the workplace of early career teachers. The interplay between personal and professional identity in developing progress is a key element in this research literature.

Outstanding potential and exemplary practice

Since the 1990s, there has been an increase in investigations which focus on exemplary practices in educational research (Alsop, Bencze and Pedretti, 2005). Such studies reject the utility of examining large groups of average practitioners to focus on small studies of highly effective individuals and the impact they have on practice. One of the first and most extensive examinations of exemplary practices in education was the Search for Excellence in Science Education (SESE), sponsored by the US National Science Teachers' Association (Penick and Yager, 1983). The SESE culminated with a multi-volume set of case studies of excellence each in a particular area of science accompanied by a set of recommendations and generalisations resulting from the study. It was the first time that such recommendations from science research experts could be put into practice in real world school classrooms.

In Australia, a related project, a search for Exemplary Science and Mathematics Education (ESME) (Tobin and Fraser, 1987) grew out of the SESE project. The ESME investigators asked educators to nominate outstanding teachers of science and mathematics and to defend their choices. The goal was to construct case studies of these individuals based on reviews of interviews, lessons and curriculum materials to define the state of exemplary practice in science education (Tobin and Garnett, 1988; Tobin and Fraser, 1990).

In the same period similar research projects were started in other disciplines including mathematics (Driscoll 1985) leading Berliner to state that "the study of expert teachers can provide useful case material from which we can learn" (1986:9). Alsop, Bencze and Pedretti (2005) continued using case study methods as an interactive discourse between educators and researchers resulting in exemplification of high quality teaching analysed by expert opinions from researchers in related fields. They acknowledge that there is no one best practice in the complex area of science education, however, if there are small groups of procedures and orientations that can be shown to be more effective than others in practice and pedagogy, there is a justification for calling them exemplary or outstanding.

Using the findings of the case studies of Alsop, Bencze and Perdetti (2005) to develop further insight into exemplary teaching practices Wilson and Mant led an empirical study involving 5044 Year 8 (age 12 years) pupils in Oxfordshire using pupil questionnaire responses to identify "exemplary science teachers"(2011b:115). They combined the large scale empirical studies that Alsop criticised with smaller scale exploratory group methods. The uniqueness of the study lay in its initial large scale data gathering exercise and in using pupils' "voice" to explore exemplary practice and identify exemplary teachers. These teachers met for a one-day forum to explore their perspective on "exemplary" teaching. The methods used to collect the data from the practising teachers produced key characteristics of exemplary practice. These key characteristics related to teacher attitudes and beliefs, relationships between teacher and pupil, pupils as active learners and well planned contextualised lessons featuring discussion, practical work and limited focussed recording. This outcome was compared to the pupils' voices regarding their perception of exemplary teachers. The key characteristics matched in all but one aspect. Pupils identified the ability to explain clearly as a core element within exemplary teaching and the teachers themselves did not explicitly mention it. Wilson and Mant (2011b: 118) suggest aspects of explaining become "intuitive" and in some ways unconscious skills for these exemplary teachers. The important question arises as to how the skill is acquired and how it can be developed in trainee and novice teachers.

Berliner (1994) describes five stages in the journey from novice to expert teacher.

- Novice
- Proficient beginner,
- Competent teacher
- Advanced teacher
- Expert teacher

Each of the stages is characterised by distinctive features. These differences centre round the ways teachers at various levels of experience and expertise interpret classroom phenomena. Novices have trouble interpreting events, until episodic knowledge is built up and similarities can be recognised across contexts. Experts are more likely to discern what is important and what is not and they show more effortless performance and rely more on experience for interpreting information. The effortless and fluid performance often characterising the expert's performance may be due in part to routines, expectations and emotional investment they make in their work developed over time. The length of time for teachers to advance to the next stage varies with those graded as outstanding beginning to behave as competent or proficient teachers rather than novices. How they reach these more advanced performance levels is at the heart of my investigation. In my study I wish to analyse the factors and predictors that contribute to a trainee teacher being identified as outstanding and the conditions and interventions during their training year and into the workplace that could aid more trainees to reach this standard of achievement.

Hattie's (2012) evidence-based research into what actually works in schools to improve learning identifies five major dimensions of excellent or "expert" teachers (2012:27). Experts have high levels of knowledge and understanding of the subjects that they teach, can guide learning to desirable surface and deep outcomes and can successfully monitor learning and provide feedback to assist students to progress. They attend to the more attitudinal attributes of learning, including pupil self-efficacy and mastery of motivation plus they provide defensible evidence of positive impacts of teaching on student learning. Through 900+ meta-analyses Hattie has produced a data-base of specific outcomes and the influences on that outcome which result in visible teaching and learning. Learning is a very personal journey for both teacher and student. It requires much skill for the teacher to show the student that they understand their perspective, give valuable feedback and demonstrate interest and concern for the student and their progress. By entering into a dialogue where trainees are encouraged to reflectively share their perceived best practice, a mechanism to showcase their expertise may emerge.

In education today, discussions of teaching effectiveness have become bound to a series of external measurements and evaluations. The language of accountability, in the form of 'competencies' and 'achievement standards', shapes contemporary education policy (Teaching Standards, 2011). Successful teaching has become eminently quantifiable, clustered into a series of discrete themes which might be practised at university and tried out in the classroom, constantly observed and monitored. In contrast, for Schön (1987) the very essence of successful teaching resides not in the external but in the internal processes of self-reflection *in* practice and *on* practice. Survival in what he describes as "the intermediate swampy zones of practice" (1987:3) necessitates expertise grounded within the practicalities and pragmatics of daily life in schools and science classrooms. Likewise, the case study narratives of trainee teachers in my main research project, offer a very different and holistic representation of effective practice from an itemised list of teaching standards achieved and investigates how their identities change over time.

Kolb's (1983) experiential learning cycle, infers that effective understanding of teaching and learning is best generated by teachers when they engage in the process of informed enquiry. That is when they intentionally set out to learn from their own experiences by reflecting on them and conceptualising with the help of research insights and theoretical perspectives from elsewhere. They cannot expect to learn solely from picking up practical teaching tips from other teachers or mimicking the teaching style of mentors they admire, nor can they take abstracted, decontextualised ideas from educational research and hope to apply them unreconstructed to the particular circumstances in which they work. There needs to be a dialogue between the different sources of understanding in order to progress and embed transformational learning in practice (Mercier, 2013).

> *In praxis there can be no prior knowledge of the right means by which we realise the end in a particular situation. For the end itself is only specified in deliberating about the means appropriate to a particular situation* (Bernstein, 1983:147).

Hattie (2012) focuses on the notion of passion being the essence of successful teaching. While it is difficult to measure it is apparent when it is present in classroom teaching and learning. "Powerful, passionate, accomplished teachers" (Hattie, 2012:23) are those who can identify the most important way to represent the subject that they teach. The distinction of the expert is not about the amount of knowledge they have but about how they organise and use this content knowledge to combine with students' prior knowledge and with other subjects in the curriculum. They do this within an optimal classroom climate for learning generating an atmosphere of trust. I have observed trainee teachers who inspired a joy for learning of their subject in their pupils even after only a few weeks of teaching practice. This expertise is well encapsulated below:

> *Passionately committed teachers are those who absolutely love what they do. They are constantly searching for more effective ways to reach their children, to master the content and methods of their craft. They feel a personal mission...to learning as much as they can about the world and about others, about themselves – and helping others to do the same.* (Zehm & Kottler, 1993:118)

Neumann (2006) describes the overarching importance of a teacher's passion at the sensation of being involved in teaching and learning. A teacher's love of their subject can be infectious and instil a love of the discipline being taught (Duckworth, 2014). In my experience teaching passion is linked to the ability to make the subject comprehensible to others that is central to effective teaching and learning. Excellent subject knowledge at a very high academic level does not necessarily translate into the ability to develop understanding or promote engagement in young adults as shown in the findings of my study completed for document 3.

Importance of subject knowledge

The Royal Society (2007) views teachers' science knowledge as one of the critical indicators of the quality of teaching. However, there is a difference between subject specific knowledge and subject teaching knowledge. Grossman, Wilson and Shulman (1989:27) suggest that there are four dimensions of subject knowledge, or what they term "subject matter knowledge", that affect the teaching and learning of prospective teachers.

- Content knowledge (factual information);
- Substantive knowledge (explanatory frameworks);
- Syntactic knowledge (how new knowledge evolves for the learner);
- Beliefs about the subject matter.

Other studies (Shallcross, Spink, Stephenson and Warwick, 2002) interpret science subject knowledge in terms of Schwab's (1978) definition of substantive knowledge (the facts, theories and disciplines of science) and syntactic knowledge (the procedures of investigating and experimenting) which Roberts, Gott and Glaesser (2010:378) also call 'procedural' knowledge. However, developing into an effective teacher requires more than just the content, substantive and syntactic knowledge of the subject.

> *...just knowing the content well is really important, just knowing the general pedagogy is really important and yet when you added the two together you didn't get the teacher. (*Shulman in an interview reported in Berry, Loughran and van Driel, 2008)

It was Shulman (1986) who introduced the term pedagogical content knowledge (PCK) and proposed that such considerations included:

> *The most powerful analogies, illustrations, examples, explanations and demonstrations... the ways of representing and formulating the subject that makes it comprehensible to others.* (Shulman, 1986:9)

Shulman (1987) went on to delineate seven knowledge bases that identify the teacher understanding needed to promote comprehension among pupils.

- Subject content knowledge (SCK) referring to the amount of organised knowledge in the mind of the teacher. This includes both substantive and syntactic structure of a subject i.e. the variety of ways in which the basic concepts and principles of the discipline are organised and the ways in which truth or falsehood, validity or invalidity, are established.
- General pedagogical knowledge (GPK) with special reference to broad principles and strategies of classroom management and organisation that appears to transcend subject matter.
- Curriculum knowledge (CK) with particular grasp of the materials and programmes that serve as the 'tools of the trade' for teachers.
- Pedagogical content knowledge (PCK) which is that form of content knowledge that embodies the aspects of content most appropriate to its delivery and understanding.
- Knowledge of learners and their characteristics and how pupils learn.
- Knowledge of educational contexts ranging from the workings of the group or classroom, the governance and financing of schools to the character of the community.
- Knowledge of educational ends, purposes and values, and the philosophical and historical grounds.

At the same time as the development of the work on the importance of subject knowledge (however it is defined) and how it is delivered, the National Curriculum for England and Wales was developed and implemented (National Curriculum for England, 1988). The National Curriculum was defined as that knowledge which an able 11-year-old or an average 14-year-old should be capable of understanding and the term subject knowledge for teaching was used in its narrowest sense. However, the principles of general pedagogic knowledge, knowledge of learners and knowledge of educational contexts were not included in the National Curriculum framework.

Other educationalists developed the links between content and curriculum knowledge and the necessary pedagogical understanding required to transform learning; Borko and Livingston (1988) focussed on the relationship between subject knowledge and planning; McDiarmid, Ball and Anderson (1989) concentrated on PCK and pupils' misconceptions and alternative frameworks for conceptualisation; Kennedy (1991) returned to the importance of basic subject understanding of key facts and how best to deliver them. However, Shulman's knowledge bases (1987) provided a useful starting point in conceptualising the intricacies of learning to teach. When analysed further, the knowledge bases give rise to the necessities and skills of:

- Preparation (critical choice of resources)
- Representation (key ideas and how they can be represented in the form of analogies, examples etc.)
- Instructional selection (choice of teaching approach)
- Differentiation (tailoring input to pupils' capabilities)

These generic teaching skills work against a backdrop of classroom management, organisation, evaluation and assessment of pupils' progress and learning. Geddis (1993) proposed that developing teachers need to address pedagogical issues that are content specific:

> *Beginning teachers need to learn not just 'how to teach' but rather 'how to teach electricity'. (*Geddis, 1993:675)

This premise suggests that to be an effective teacher of physics it is necessary to not only know the content (subject knowledge) of the various topics, but also "the particular teaching and learning demands of that particular topic" (Bucat, 2004:17), the specific pedagogical content knowledge (PCK). As part of a two-year study on subject knowledge development in science trainee teachers, commissioned by the Wellcome Trust, Lock, Salt and Soares (2011) found that there are specific and unique pedagogies related to each particular topic, for example, electricity, genetics or chemical bonding. These topic specific illustrations, analogies, misconceptions etc. are termed "topic specific pedagogy (TSP)" (Lock, Salt and Soares, 2011:10). This study involved more than half of the ITT university providers in England and Wales, combining document analysis, questionnaires and

interviews with trainees and tutors. The requirement for science trainees to teach outside their main degree specialism, at least to Key Stage 3 and often to Key Stage 4, provides an additional burden to trainees and providers during the training year. Effective and inspiring teaching requires the teacher to understand the subject matter in greater depth than the level at which they are teaching at, so the acquisition of sound subject knowledge and pedagogy is a particularly important part of every teacher's training. The first few weeks on an ITT course are spent introducing, practising and evaluating these aspects of topic specific pedagogy so that trainees experience the myriad of approaches which contribute to effective lesson planning. Trainees who have completed a six month SKE have an early advantage as they have already begun to link theory to practice prior to starting their official training. When trainees are in schools their collaborative 'drop box' sharing of ideas concentrate on topic specific pedagogy and what has worked for them in their classroom or what they have observed being effective in the classrooms of their colleagues and mentors.

A number of studies have found a relationship between measures of teacher's knowledge of the content they are teaching and the gains made by their students. Ball asserts "Teachers cannot help children learn things they themselves do not understand" (1991:5). However, the search for a relationship between characteristics such as academic qualifications (Grounds, document 3) or teaching capability have been inconclusive; correlations have been very small or non-existent (Rockoff et al., 2011). Nevertheless, there seems to be an emerging body of work linking more specific measures of content knowledge and in particular the kinds of content knowledge that are relevant to student gains. For example, Sadler et al. (2013) tested a group of volunteer science teachers on their understanding of the content they were teaching and on the kinds of misconceptions they expected pupils to show. Their understanding of the content was good but the ability to identify common misconceptions was hardly above chance. He suggests that targeted support for teachers at particular areas where their understanding of student misconceptions is weak is a promising strategy for proposed teacher professional development.

Studies into teachers' occupational skills often find virtually no relationship between measures of work performance and years of service. Hattie's (2012) conclusions on indicators of effective teaching have been based on many thousands of studies collating evidence from the classroom. In some professions there is a slight deterioration in performance with time, though Hattie and Yates (2014) state that seniority of years of experience invariably fail to predict expertise in the classroom. They distinguish between the experienced teacher and the expert teacher, identifying measurable attributes of the expert who actively shape the classroom world and skilfully entice their students into becoming motivated learners sharing the same learning goals as their teacher. High quality teaching is not just a mechanical exercise, it hinges on developing a relationship with a group of young people who have come to trust and respect the goals that their teacher has

for them. Observational studies (Wragg, 2011) comment on the virtual absence of student misbehaviour as the students are too busy and goal orientated to lose concentration.

Given that current political directions in educational policies stress the importance of being judged as 'outstanding' my research focus is timely. As a trainee teacher, an established teacher, a school or a higher educational training institution (HEI) the impact of being less than 'outstanding' has severe consequences for all concerned. It can result in reduction in finances, increased inspection regimes and diminished esteem for all service users from students to politicians (Ollin, 2009). In the case of the HEI provider, partner schools ask for trainees with 'outstanding' potential to work with on school placement. When advertising for teaching posts Head teachers specifically seek the word 'outstanding' in the reference sent out. In addition to the work of Hattie and Yates (2014) there have been several studies on the importance of outstanding teaching performance and exemplary practice including the seminal work of Berliner (1994) on the characteristics of the expert teacher. The case studies of Alsop, Bencze and Perdetti (2005), who critically analysed examples of high quality teaching in secondary science and the large scale empirical study by Wilson and Mant (2011a; 2011b) who identified exemplary science teachers through "pupil voice" (2011b:115) used contrasting methodologies.

These studies concentrate on exemplary practices of experienced teachers whereas my study explores outstanding achievement in trainee teachers and the identification and analysis of intervention strategies that the trainees feel can aid progress during their training and early careers. Hattie and Yates (2014) suggest that to get to a point of expertise takes considerable knowledge and personal investment over five to ten years of development. The case study narratives of trainee teachers in my main research project may offer insight into the early steps of expert development and how it can be maintained.

To date, there appear to be no longitudinal studies tracking the progress of early career teachers in secondary education from the point of interview into the profession to the end of their induction year with a focus on the factors that contribute to outstanding achievement. Links between outstanding achievement and long term retention and professional progress are also missing from the research. Asking trainees to critically reflect on their views and beliefs at the start of their teaching journey and at points along the way, may link personal and professional harmony or dissonance to outcome achievements (Alsup, 2008).

"Cognitive dissonance", a term introduced by Festinger (1957:37) describes conflict between personal beliefs and professional behaviour. This possible conflict has been investigated in studies by Aronson and Carlsmith (1963), Flores and Day (2006), Smith (2007), Alsup (2008) and Lawson and Watts (2010). All use small scale case studies involving early career teachers mainly in primary education. They show how personal values and beliefs may change during acclimatisation into their school setting. I am considering how

secondary science trainees' personal and professional inter-relationship contributes to their outcome achievements and career progression.

Interplay between personal and professional identity in developing teachers

There has been growing attention to the place of the personal element in the process of becoming a teacher (Flores, 2004; McNally et al., 2008) and Goleman claims "Intellect cannot work at its best without emotional intelligence" (2006: 28). Learning to teach involves the whole of the individual including beliefs, emotions, identity and personality. The process of 'becoming a teacher' is an evolving process through which the developing teacher has to re-invent themselves, gaining their identity through a range of emotional, relational and cognitive experiences. The participants in my study report an emotional-relational dimension, a sense of self and relationships with colleagues and pupils, as being central concerns in their early teaching experiences, themes not visible in the teaching standards (McNally et al., 2008; Flores, 2001). The influence of the colleagues they meet both at school and university, along with their personal identity shape the style of teaching they will adopt and is linked to transformational learning.

Illeris (2014) states that transformational learning creates new capacity within the individual. He explains how the "individual" (2014:37) can be referred to as self (Tennant, 2012), the person (Jarvis, 2006), the biography (Giddens, 1991) or the identity (Erikson, 1968) and distinguishes between these terms. The self is primarily understood as the mental centre of the individual and an individual's self-understanding, self-confidence and self-realisation (Gergen, 1994). The person relates to one's personality and is more about how one is and wants to be experienced by others (Rogers, 1961). The identity comprises both how one experience one's self, one's qualities and how one is experienced by others so encompassing both the notions of self and personality and takes a central position in modern sociology and social psychology. The biography is an individual's orientation towards his or her life story (Alheit, 2009) so like identity, covers all of the individual's existence; the difference is that the identity is defined structurally as an instance of the human mental construction, while the biography is defined by the individual's development over time. After examining the four central and partly overlapping concepts of the totality of the human mind, Illeris selects "identity as the adequate concept or term for what transformational learning is related to and transforms" (2004:38) as it encompasses the cognitive, the emotional, the social, the societal and the environmental aspects of learning, as explored earlier. He provides an illuminating discussion on the development of the modern concept of identity.

Philpott more simply describes identity as "who we think we are" (Mercier, Philpott and Scott, 2013:220) and what sense we make of ourselves in relation to those around us and the rest of the world. He asserts that we do not have a single unitary identity that we carry around with us but that we have multiple identities that we move between different situations. For example, my teacher identity will be different from my identity as a parent or

as a scientist. He discusses the effects that teacher identity may have on professional practice in relation to embracing teaching technology; in relation to different models of curriculum design, subject knowledge expectations, diversity in the classroom and continuing professional development opportunities. Identities are not fixed in time and continue to be subject to change (Duckworth, 2014) especially during important life transitions such as embarking on a new career. Developing a professional identity is a complex and ongoing process when beginning teachers are "combining parts of their past, including their experiences in school and in teacher preparation with pieces of the present in their current school context" (Feinman-Nemser, 2001:1029). These areas will be included in my research remit when exploring the interplay between professional and personal identity of early career teachers.

Alsup (2008) uses the narrative of pre-service primary school teachers in the USA to explore their developing teacher lives and the transition from student to teacher. She tries to elicit how they develop a workable professional teacher identity without sacrificing personal priorities and passion. She uses personal participant narratives which have no preconceived structure or framework imposed on the telling. Her evaluation of the work of other educational researchers (Britzmann, 1991; Danielewicz, 2001) concludes that a teacher's identity is a combination or mixture of the personal and professional. Alsup (2008) describes how for some pre-service teachers, the meeting of the subjectivity, 'discursive borderlands' (2008: xiii) can be straightforward as their personal lives and sense of self are parallel to the expectation of their schools. Holistic and satisfying professional identity in an institutional climate results in professional and personal congruence. Some of her collected narratives, however, show collision between the two identities which produces the 'cognitive dissonance' described by Festinger (1957). When people find themselves in a state of dissonance, they have either to change their beliefs or attitudes or adjust their behaviour or change both in order to achieve personal and professional congruence, as described by Alsup (2008).

Lawson and Watts (2010) use case study methods to support the view that identity is dynamic and that a teacher's identity shifts over time under the influence of a range of factors both internal to the individual, such as emotions (Rodgers and Scott, 2008) and external to the individual, such as life and work experiences (Flores and Day, 2006). More recent research (Smith, 2007) indicates that development of the self and self-understanding appears to be advantageous for the classroom teacher personally and professionally and how their personal characteristics could affect their professional role. This personal awareness may be significant in helping to improve professional relationships on school placement if they feel there is dissonance between idealised expectations and actual experience.

Initial teacher training is dependent on discursive construction, placing considerable value on personal reflections and shared discussions with mentors, tutors, colleagues and peers.

As active participants in a variety of discourses, individuals have agency to shape themselves (Danielewicz, 2001). Kolb (1984), Boud (2001), Pollard (2008) and Dymoke and Harrison (2008) shape the discourse relating to reflective practice. Their work identifies critical reflection as a way to connect theory and practice and is a form of cognitive engagement providing opportunities for deeper processing about an event or dilemma which can then provide insight and alternative perspectives on the effect of their actions on pupils' learning. Initially the trainees are guided by their own experiences of being in the classroom together with the pedagogic theories taught at university. Gradually they make the transition from trainee teacher (being taught) to classroom teacher (learning to teach) where rather than dwelling on difficulties and errors, they examine successful phases of learning in order to identify the factors underpinning effectiveness. Hramiak and Hudson (2011) stated that the move from being the observer to being the observed requires a self-awareness of presence and ability to command attention in those first lesson experiences regardless of inner misapprehension.

When trainee teachers are about to start their school experience, role-play exercises at university often involve assuming the stance, gait and gestures of an established teacher; the assertive demeanour of a confident individual whose deportment, manner and style suggest they are in charge in the classroom and they know what they are doing. Duckworth, (2014; 36) states that "an ability to communicate verbally is essential, but teachers need to be skilled actors, adept at using gestures, mime and facial expressions to convey meaning". Marland (1975) likens every secondary school teacher to a performer. He or she is projecting themselves to each class and has to cultivate a certain air of confidence which is not the same as being over-bearing or brash or domineering. Marland compares some classes to a music hall audience of the past who will test the performer and "split the person apart if they prove weak in any way" (1975:71).

Though from 1975, Marland's text is still relevant and offers good advice to the novice teacher relating developing teaching approaches that are particular to the specific personality traits of the individual. In this text he stresses that good classroom management is the key to allowing personal teaching styles to develop.

> *Good organisation in the classroom avoids confrontation, and allows the teacher to establish the warm relationships with most of his pupils that he wants* (Marland, 1975:3).

This ability to "exercise appropriate authority" (Standard 7 in Teaching Standards, DfE, 2012) is difficult for some trainee teachers. It has to be learned, practised and revisited many times throughout the year, every time a new group of pupils is encountered for the first time. The outer persona may have to develop an assertive 'mask 'that is used as show, rather like an actor uses an ever changing mask to an audience. Drama and role play are teaching and learning strategies practised frequently during training. The 'inner voice' or hidden self may not be synonymous with the required mask for a particular school

environment. These “times of crisis” (Jenkins, 2002:77) in which the routine adjustment of subjective and objective structures is disrupted requires rational choice to take over. According to Bourdieu (1998), the surface appearance of decision making is a reflection of habitus (a person’s values and dispositions), when there is no conflict the habitus accommodates the external environment. Habitus can be transformed by changing circumstances and expectations. If the vocational field (the social arena) requires a level of impact on practice that is not compatible with habitus, a “field of struggles” results (Jenkins, 2002:85). Individuals acquire their habitus as part of the process of social and personal development within a field or fields. Several participants in my study experienced ‘a field of struggles’ at various points through their training. How they overcame these struggles is part of being a reflective practitioner leading to outstanding achievement and is addressed in the analysis of my research findings.

CHAPTER 3

RESEARCH CONTEXT

During the course of this study the continually evolving UK educational landscape created by new policies and legislation produced constant change and uncertainty for trainee teachers. The rapidly changing context in 2011 (including the introduction of teaching schools) and in 2012 (including the introduction of new teachers' standards) is the background for the training programmes provided for the trainee teachers starting a PGCE course in 2012. This is the cohort I have tracked from interview, through training and into their early career.

Since 2011 the government body responsible for recruitment of teachers has changed its name and physical location three times. The Training and Development Agency for Schools (TDA) was renamed the Teaching Agency (TA) and is now called the National College for Teaching and Leadership (NCTL); an amalgamation of the roles of the General Teaching Council of England (which was abolished in 2013) and the Teaching Agency (TA). Just keeping abreast of these changes in nomenclature, personnel and contact details has been challenging.

The TDA has historically been concerned with teacher recruitment. However, with the change of government in 2010, this has led to a shift in focus for the TDA to encompass both recruitment and retention of teachers. Initial Teacher Training (ITT) providers are required to track the development of their trainee teachers beyond their training programme into the wider world of first appointments as newly qualified teachers (NQTs) and for five years into their careers (DfE, 2011). This tracking requirement provides an opportunity for a longitudinal research study from interview to NQTs and into the following years as early career teachers. A focus on how and why some trainees make outstanding progress during these formative years in the teaching profession will add to the existing research on exemplary practice. Educational and social research has the capacity to influence change at many levels, including policy, practice, professional development and possibly further research (Clough and Nutbrown, 2002). My research is driven by this notion.

The House of Commons Education Committee (HCEC) report stresses that "the recruitment and retention of those most likely to be outstanding teachers should be firmly at the top of our education system's agenda" (HCEC, 2012:3). US research has identified a correlation between 'high value-added' teachers and higher later life student earnings, whereas poorly-performing teachers have the reverse effect (Chetty, Friedman and Rockoff, 2011). Research commissioned by the Centre for Market and Public Organisation (Margo, Benton, Withers and Sodha, 2008:58) involved 6000 pupils and 300 teachers found that having an "excellent" teacher compared with a "bad" one can mean an increase of more than one GCSE grade per pupil per subject. However, it is acknowledged that defining the qualities associated with an

outstanding teacher is a complex exercise, one which I have attempted to unpick in this study.

Exploring outstanding potential in trainee teachers can lead to identification of effective procedures for managing the trainee experience in school and at university. Hands-on experience is a major element in professional training provision. My professional experience confirms the need for a supporting framework of relevant professional knowledge underpinning practice. Collaboration between the university and the school relating to trainee development is a key underpinning for a successful training course. The "experts" identify the goal posts of excellence in a collaborative manner driving the profession forward (Hattie and Yates, 2014:37). One worrying aspect of the previous Coalition Government's broader thinking was encompassed in the White Paper (DfE, June 2010) and a related document released by Government called *The Case for Change* (DfE, November 2010). One of the principal messages from these documents stated the hallmark of a good teacher, and what facilitates good teacher formation, is learning from other professionals in the classroom. Many education professionals would confirm the importance of in-classroom learning, but this Government's vision omitted the importance of the Higher Education role in ITT. Reading the two papers together suggested the role of the Higher Education Institutions (HEI) in ITT was deliberately downplayed with pedagogical provision being led by schools rather than by the universities even though the OFSTED Annual Report (2011) found that there was "more outstanding provision in primary and secondary partnerships led by higher education institutions than school centred partnerships or employment based routes" (HCEC 2012:27). HEI-led provision into teaching was evidenced as the best route overall. Trainee teachers contributing to the HCEC Report (2010-2012) explained that the partnership between schools and universities was most often the recipe for successful provision with a balance of theoretical and practical training vital for any teacher. This emphasis on combining theory and practice in teacher education is promoted by high performing nations such as Sweden, Finland, Singapore and South Korea whose successful educational outcomes for their young people are based on the nation's results in the PISA tables (Programme for International Student Assessment). International comparisons of these successful education systems and teacher education policies were drivers for the reforms in government educational policies in England under the former Secretary of State for Education, Mr Gove (DfE, 2010, 2012a). He extolled the virtues of a variety of nations including Sweden, Finland, Singapore and the USA though he focussed on examination regimes and ignored the fact that all of these top performing countries have routes into teaching that involve long and rigorous study and deep engagement with practice (Tomlin, 2013). The British Educational Research Association (BERA) and the Royal Society for Encouragement of the Arts, Manufacturing and Commerce (RSA) produced a report into research and teacher education which concluded that the UK "lacks a coherent plan for teacher research and development" in contrast to that of internationally well-regarded education systems such as Finland, Canada and Singapore (BERA-RSA Report, 2014:34).

Husbands, director of the Institute of Education, confirmed that the decision to transfer responsibility for teacher training in England from universities to schools was contrary to the best practice identified internationally. He reported that the National Institute of Education in Singapore were surprised at England's stance on de-regulating pedagogic training provision (Swain, 2014) away from universities. In Finland, all initial teacher training is via a four-year programme which awards a Master's level qualification on completion and this appears to make teaching a high status profession which attracts the best graduates (Sahlberg, 2007). These qualifications 'are distinguished by their depth and scope' (Westbury, Hansen, Kansanen and Bjorkvist, 2005:275). The current government has continued from the previous government's calls for more practically based teacher education within the classroom by expanding school-based routes into teaching (DfE/NCTL, 2014). Finnish teacher education, on the other hand, emphasises university-based learning, research and a Master's degree. In Finnish teacher education, making strong links between theory and practice through Master's level work helps trainees to become excellent teachers (Sahlberg, 2015; Chung, 2015). The links between theory and practice are developed in university-affiliated teacher training schools, 'Normaolikoulu' (Chung, 2013).

The current UK Government are basing their 'university training schools' model as an additional school based route into teaching (Chung, 2013) overlooking the differences between the two systems. The university affiliated training schools in Finland are closely linked and co-staffed by the university ITT tutors and used for the teaching experience element of the teacher education provision. They have a strong research focus, combine theory and practice at all stages and are six times more expensive to run than 'field' schools (the UK equivalent of comprehensive state schools), (Chung, 2013). There are disadvantages to these 'elite' schools other than high cost implications, Finnish trainee teachers have to adjust to the demands of the 'field' schools after qualifying which are often not as well-resourced as the 'Normaolikoulu'. However, Pettifer (2015) reports on Finnish teachers having a feeling of increased professional values as curriculum content is decided by teachers in all schools. At national level there are core objectives, but it is up to individual schools, subject departments and teachers to decide how these are met. Staff in Finland are trained in research methods, they use this skill to set up and evaluate trials in content and pedagogy, then share their findings laterally with other schools and vertically within the education system hierarchies. Fifty percent of Finnish teachers continue their educational research at Doctoral level study (Pettifer, 2015).

One recent example of Finnish teachers developing major curricular changes involves cross-curricular teaching approaches which are being trialled by schools in Helsinki in an attempt to regain the high PISA ranking it held before 2012 (Pettifer, 2015). In 2012, Finland dropped to twelfth place in Maths, fifth in science and sixth in reading having previously always ranked in the top three places internationally. The Finnish authorities have become aware that pupils "are not as compliant as they used to be, delivery of the curriculum is hampered by an inability to cater for pupils who speak Finnish as a second language and traditional

methods of teaching are not as engaging as digital interaction" (Pettifer, 2015: 26). Two of the five yearly units are to be based on "phenomena", cross-curricular themes taught jointly by teachers of different disciplines. This means that 40% of the school year will not be taught in a subject specific way. They will increase their use of digital technologies in learning and involve other agencies such as museums and businesses in designing and delivering educational experiences. Once the trials have been evaluated by the teaching community in the pilot areas, the findings will be shared for wider dissemination so that other schools can base their own practices on trialled models if they wish. For teachers who have been trained in and regularly engage in educational research they have undertaken the trials enthusiastically and are inspired by their pivotal say in the new curriculum (Pettifer, 2015). Sahlberg, a policy advisor in Finland, who has worked as a teacher, teacher educator and researcher, states that

> *Finns tolerate more uncertainty, experimentation and failure in education than most other countries. In Finland failure precedes success, rather than being its opposite. Change is good if you don't have to worry about failure* (Sahlberg in Pettifer, 2015: 26).

Comparative education theorists have long warned about the dangers of uncritical theory practice (Phillips and Ochs, 2004; Crossley, Broadfoot and Schweisfurth, 2007; Steiner-Khamsi 2010). It could be argued that the DfE (2012a) overlooked the underlying principles of Finnish teacher education and instead promoted 'quick fix' approaches to educational reform. Hargreaves (2013) points out that education policies in high performing nations based on the nation's results in the PISA tables do not change significantly with changing governments, which encourages long-term thinking. He advocates this approach for the UK as it is unlikely that short term recruitment solutions can build a long term effective teaching workforce. In Finland the educational policy is made for the next generation whereas in England the education policy seems to be made for the next general election.

Other large scale studies on teacher development include the Organisation for Economic Cooperation and Development (OECD, 2012) project which initiated a Teaching and Learning International Survey (TALIS) in 2008. This study captured data from 100,000 lower-secondary teachers in 23 countries, providing powerful insights into the working conditions of teachers as well as teaching and learning practices in schools across the world. Eight percent of respondents were new teachers with two years or less of teaching experience and their developments were compared with more experienced teachers on a number of different issues. These areas included classroom climate, the amount of time spent on classroom management as compared to actual teaching, as well as the kinds of support new teachers receive plus ongoing professional development opportunities offered (Jensen, Sandoval-Hernandez, Knoll and Gonzalez, 2012)

The OECD (2012) recognised that those teachers new to the profession (under two years in post) needed particular attention and support. Findings indicated that in some countries over half of new teachers left the profession within five years. This is consistent with findings in England. Kyriacou and Kunc (2007) reported that 40% of those who start an ITT course never become teachers and 40% of those that do become teachers are not teaching five years later. Burghes, Howson, Marenbon, O'Leary and Woodhead (2009) refer to an estimated 30-50% drop-out rate within the first five years among early career teachers in England. These high levels of attrition are costly and cause difficulties in recruitment and filling vacant positions (Jensen et al, 2012). To date, there appear to be no studies correlating professional retention rates with newly qualified teacher achievement outcomes. It is an area I investigate as part of my main research.

In the OECD (2012) report, there were four policy implications from the data and analysis on new teachers that offered the greatest opportunities for improving schooling in the participating countries. The first involved a marginal difference in teaching responsibilities between new teachers and experienced teachers. Internationally, on average, new teachers taught for 17 hours and more experienced teachers for 18 hours per week. It was concluded that reducing teaching responsibilities for new teachers would provide more time for them to develop their teaching skills at the beginning of their career. Secondly, constructive feedback to teachers based on a meaningful appraisal of their work has consistently been shown to produce significant improvements in teaching and learning in the classroom (Hattie, 2009). This aspect is linked to the third area for consideration. Mentoring and induction programmes were found to be considered ineffective in half the school data obtained. Finally, developing practical classroom skills and dealing with problems of pupil discipline were reported as difficult issues for new teachers. Monitoring and improvement in areas of behaviour management were not being addressed by the induction tutors.

In my main study I analysed the factors and predictors that contributed to a trainee teacher being identified as outstanding and the conditions and interventions during their training year that supported them to reach this standard of achievement. The case study narratives of trainee teachers offered a very different representation of effective practice than an itemised list of teacher standards achieved. By entering into a dialogue where trainees were encouraged to reflectively share their perceived best practice, a mechanism to showcase their expertise may emerge.

CHAPTER 4

METHODOLOGY AND METHODS WITH ETHICAL CONSIDERATIONS

The intention of this research was to explore outstanding teaching potential in early career teachers on their personal and professional journey to becoming newly qualified teachers.

The study (document 5) was framed around three key questions:

- What are the factors and predictors that contribute to early career teachers being identified as outstanding?
- What are the conditions and interventions during their early career that could aid more beginning teachers to gain and sustain outstanding achievement outcomes?
- How does personal and professional identity affect outstanding teaching potential in the early career years?

In asking these questions I wanted to understand the process of developing a personal and professional teacher identity through the lived reality of the outstanding trainee teacher and their perceived successful transition, or otherwise, into the workplace of their first teaching posts as newly qualified teachers. Whether they remained in the profession as recently qualified teachers was a further development of the study.

Two complementary studies supported the main research and their importance in adding further dimensions to the above questions has been discussed in chapter one of this thesis. They focussed on the following subsidiary questions.

- To what extent is good subject knowledge indicative of outstanding teaching potential in trainee teachers? (Document 3)
- Do outstanding trainee teachers become outstanding NQTs? (Document 4)

These earlier studies contributed to the available research and literature on the recruitment, education and retention of beginning teachers in the under-researched area of outstanding trainee achievement and its impact on transition into the workplace, early career progression and retention. The studies highlight the need to develop a shared understanding amongst policy makers, teacher educators and schools regarding the multiplicity of factors that influence and determine the development and transition of early career teachers giving an insight into the complexity of the 'outstanding teacher' achievement.

Diagram 4.1 shows the inter-relationship of the three studies.

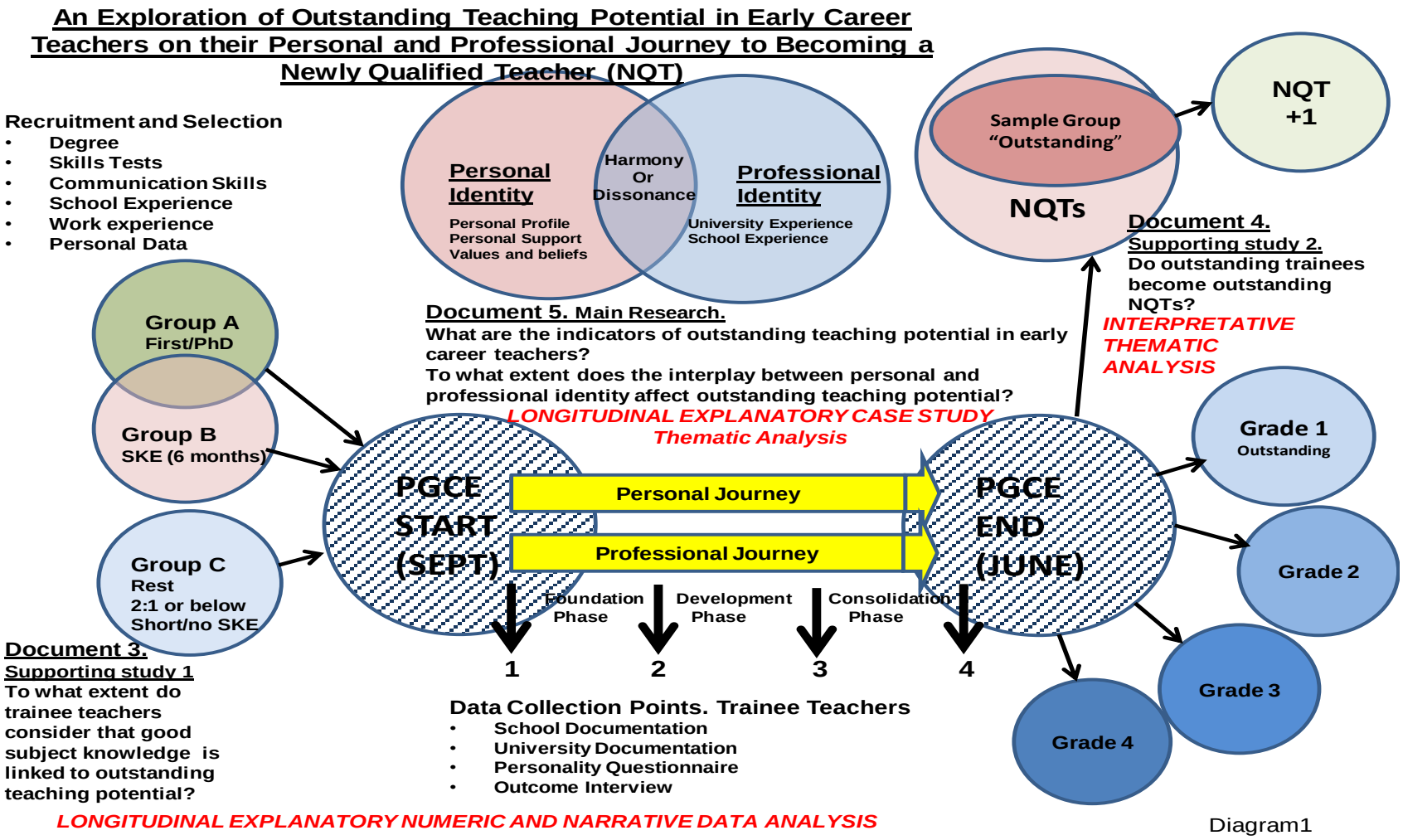


Diagram 4.1. The inter-relationship of the three research studies: Document 3, Document 4 and Document 5.

The Research Process

The principal characteristic of scholarly enquiry is the use of rationally grounded procedures to extend knowledge which a community of scholars regards as reliable and valid (Rudestam and Newton, 2007). The specific methods chosen will depend on the nature of the investigation. There are no universally accepted approaches to social and educational studies, though there are rich traditions which must be considered as well as a common understanding that the chosen methods of enquiry must be underpinned by rational justification.

The hierarchical framework for any research includes beliefs about the nature of reality and humanity (ontology), the theory of knowledge that informs the research (epistemology), and how that knowledge can be gained (methodology) giving rise to issues of instrumentation and data collection. Ontology and epistemology are dependent on axiology (the values and beliefs we hold) and in applied and evaluative educational research, politics and policy decision making are inextricably intertwined and often have implications on the direction and outcome of the research (Cohen, Manion and Morrison, 2011).

The critical epistemological debate in terms of conducting social science research is whether or not the social world can be studied according to the same principles as the natural sciences (Bryman, 2001). Two broad epistemological positions are often asserted: positivism and interpretivism.

Positivist assumptions have represented the traditional forms of research, often called scientific method, most often associated with quantitative analysis (Cresswell, 2009). Positivists identify and assess the causes that influence outcomes. They are reductionists as they reduce the concepts into small discrete sets of ideas to test, such as the variables that comprise hypotheses and research questions. The knowledge that develops through a positivist lens is based on careful observation and measurement of an objective reality. The researcher begins with a theory, collects data that either supports or refutes the theory and them makes necessary revisions before additional tests are made in an ongoing experimentation cycle. Research seeks to develop relevant, true statements that are valid and reliable and being objective is an essential aspect of competent enquiry (Lincoln and Guba, 2000). Explanations must be consistent with observed facts and have no logical contradictions and in terms of reliability, results must be able to be replicated by other researchers. Through my science background in practical investigative work, I am used to quantitative positivist techniques, constructing my theories carefully and systematically, proceeding in a linear direction and basing correlation between parameters on repeatable experimental procedures with a control group in evidence. The researcher remains objective. Any explanations are firmly based in facts or more accurately, the facts prevalent at the time.

In contrast, my research study has taken me into the world of interpretative researchers who hold that there is no objective 'reality'. In this paradigm the goal of social research is to develop understanding of social life and to discover how people construct meaning in natural settings. Reality is subjective and the role of the researcher is to understand how people experience the world and how they make meaning of their experiences. Knowing that social situations contain ambiguity, the interpretivist sees the behaviours are context-specific actions that depend on the interpretation of the participants in their social setting (Neuman, 2003). Interpretive research is more concerned with achieving an empathetic understanding of how others see the world, so interpretivists employ data gathering methods that are sensitive to context which provide detailed description of social phenomena. Positivists test the laws of human behaviour through measurable, repeatable data requiring validity, reliability and objectivity. Trustworthiness and credibility are key considerations of the interpretivist paradigm and something I will return to later on in this chapter.

Ontological questions in social science research are related to the nature of reality. There are two broad contrasting positions: objectivism that holds that there is an independent 'reality' external to the individual (Neuman, 2003:63) and subjectivism (Cohen a et al., 2011) the product of individual consciousness and cognition created by one's own mind which can be extended to the researcher or the participant in the research. Bryman (2008) calls this ontological position constructionism which he states is not only produced through social interaction but is in a constant state of revision. Bryman (2008) uses the terms constructionism and constructivism interchangeably but Crotty (1998) identifies constructivism as a focus on the unique experience of the individual; constructionism holds that reality is influenced by an individual's history and culture.

Methodology is a way of thinking about and studying social reality. Sarantakos (2005:30) defines methodology as a "research strategy that translates ontological and epistemological principles into guidelines that show how the research is to be conducted". The two major social science methodologies that relate to the positivist and interpretative paradigms are quantitative and qualitative methodologies.

Quantitative researchers collect facts and study the relationship of one set of facts to another. They use "numerical data and typically .... structured and predetermined research questions, conceptual frameworks and designs" (Punch 2005:28). They therefore use techniques that are likely to produce quantities and, if possible, generalised conclusions in line with the positivist paradigm. Researchers working with a qualitative perspective are more concerned to understand the individuals' perceptions of the world aligned to the interpretative world view. My research investigates the phenomenon of the outstanding teacher through the eyes of trainees during their university and school lived experiences. Punch draws attention to one important difference which is that "qualitative research not only uses non-numerical and unstructured data, but also typically has research questions

and methods which are more general at the start and become more focussed as the study progresses" (Punch 2005:28). Yet there are occasions when qualitative researchers draw on quantitative techniques and vice versa. It depends on what data the researcher requires. A way of breaking down and resolving the divide between the two research strategies is combining the two with mixed methods research. This combination is not without controversy. Bryman (2008:603) uses the term "mixed strategy research" to describe investigations combining quantitative and qualitative research. However, mixed methods research (Cresswell, 2009), has increasingly become the preferred term and implies that the research should involve mixing of the research methods involved and not just using them in tandem. The quantitative and qualitative data derived from mixed methods research should be mutually illuminating. Whether integration of quantitative and qualitative research is feasible has been contested by Smith (1983:12) who argues that the two research strategies "sponsor" different procedures and have different epistemological implications and therefore are not complementary. Any integration of methods is only at a superficial level and within a single paradigm. I have collected both numeric and narrative data during the course of this research depending on the research question being asked. Comparing trainees' degree classification with outcome achievement grades required collecting numeric data and displaying the results as charts and graphs. The interview transcripts produced narrative prose for thematic analysis. However, the research was firmly located in the interpretivist paradigm, processing narrative or numeric data depending on the particular question. Gagné (1989) states that the allegiance to either quantitative or qualitative methodologies is misguided and the terms should be replaced by confirmatory and exploratory research, respectively. Cresswell (2009) and Cohen, Manion and Morrison (2011) suggest that the third paradigm, mixed-methods research can exist which introduces evaluative research.

My research explores outstanding teaching potential in early career teachers and how these experiences are perceived and interpreted by the participants in co-construction with the researcher. My philosophical viewpoint aligns with interpretivist epistemology, subjectivist or constructionist ontology and a qualitative methodology, which I used to produce and analyse narrative and numeric forms of data as they arose from my investigations.

In qualitative research, there are a number of types of specific enquiry approaches which have complete procedures associated with them (Cresswell, 2009). Ethnography is a strategy of enquiry in which researchers study an intact cultural group in natural settings over a prolonged period of time by collecting primarily observational and interview data (Cresswell, 2007; LeCompte and Schensul, 1999). Phenomenological research is a strategy in which the researcher identifies the essence of human experience about a phenomenon as described by participants (Moustakas, 1994). It is a philosophy as well as a method and involves studying small numbers of subjects through extensive and prolonged engagement. Researchers bracket off their own experiences in order to understand those of their participants (Nieswiadomy, 1993). Narrative research studies the lives of individuals and

asks one or more individual to provide stories about their lives which are retold by the researcher in a narrative chronology. The narrative combines participants' life views with those of the researcher in a collaborative narrative (Clandinin and Connelly, 2000).

Grounded Theory involves deriving a general abstract theory of process, action or interaction grounded in the views of the participants. This process involves using multiple stages of data collection and the refinement and interrelationship of categories of information (Charmaz 2006; Strauss and Corbin, 1990. 1998). Two primary characteristics of this design are the constant comparison of data with emerging categories and theoretical sampling of different groups to maximize the similarities and differences of information. While my research used some grounded theory approaches, for example, the constant comparison of data with emerging themes, the sample group remained the same throughout my investigation in line with case study enquiry approaches.

Case studies are a strategy of enquiry in which the researcher explores in depth a program, event, activity, process or one or more individuals. Cases are bounded by time and activity and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Stake, 1995; Yin, 2009). Bassey (1999) describes educational case study as a prime strategy for developing educational theory which illuminates educational policy and enhances educational practice. Bassey's work (1999: 3) compares 'theory-seeking' and 'theory-testing' educational case studies. My research uses a theory seeking case study strategy.

Case study strategy

Case studies are important sources of research data, either on their own or to supplement other kinds of data ((Cohen, Manion and Morrison, 2011). Nisbet and Watt (1984:72) describe a case study as a specific instance that is frequently designed to illustrate a more general principle, Adelman et al., (1980:45) describe 'the study of an instance in action', whereas Stake (1995:8) says it is the study of a 'particular'. While Cresswell (1994:12) defines the case study as a single instance of a bounded system such as a child, a class or a community, others, such as Yin (2009) would not hold such a tight definition.

Yin (2009:18) argues that in case studies the boundary line between the phenomenon and its context is blurred because a case study is a 'case in context'. This argument resonates well with my research approach. It provides a unique example of real people in real situations. Yin (2009:13) also states that there are 'many variables operating in a single case' and therefore to represent the nuances of these variables usually requires more than one tool for data collection and many sources of evidence. Yin gives three case study criteria for a robust case study project (2009:26) all of which my study meets. Firstly, Yin says, it should examine contemporary events. It does this by examining the contemporary realities of the participants. Secondly, case study should direct observation of the events being studied and interviews of the persons involved in the events. Seeing the situation through the eyes of

the participants is central to my study. Thirdly, there is the necessity to deal with a wide variety of evidence, documents and questionnaires as well as interviews and observations in the field, which is a strength of my case study. In Yin's writings the essence of case study is that it is enquiry in a real life context as opposed to the contrived contexts of experiment or survey.

Stake (1994) describes an instrumental case study as one which will give insight into a particular issue or theory. There is a single unit of analysis, which in my case study is 'the emerging outstanding teacher', though embedded within this is the interplay between the professional mask of the trainee and personal voice and how these are manifested in the context of the outstanding trainee. Yin (2009:4) calls this structure embedded, single case design in which more than one unit of analysis is incorporated into the design. My investigation could therefore be described as an instrumental, embedded, single-case, longitudinal design as it follows the trainee teacher through their training year (2012-2013) and into their induction year (2013-2014). Whether they chose to remain in teaching to date was also addressed. This formed part of a comparative study with the newly qualifies teachers and their narratives in the supporting investigation (Document 4) which was completed in July 2012. The logic of replication is central to systematic case study research. It is only when a number of studies yield similar results that it can be agreed that a robust finding prevails (Brewerton and Millard, 2001:56). My research is illuminative and is not intended to be generalised beyond the specific research environment.

Yin (2009:3) claims case study research is one of the most challenging of social science endeavours. However, Yin also states that if the rigorous methodological pathway has been explained and the literature review and research questions are appropriate then the strengths and limitations of the case study will be exposed and a valuable contribution to knowledge can be made.

However, many traditional prejudices against the case study remain, including the perceived lack of rigour. Garvin (2003) suggests this may be because there is latent confusion between case study teaching material and case study research. In teaching, case study materials can be used to illustrate particular points which can be modified to suit the point under scrutiny. The participants usually welcome the opportunity to discuss and analyse such pseudoscenarios and can use them as models for future practice. Such practice would be prohibited in research and researchers must strive to report all evidence fairly and accurately. Other concerns state that the case study provides little basis for scientific generalisations though Yin explains that "case studies, like experiments, are generalizable to theoretical propositions and not to populations or universes" (2009:15).

Using this framework, Yin's scope of case study describes my study precisely.

> *A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real life context, especially when the boundaries between phenomenon and context are not clearly defined (Yin 2009:18)*

As the phenomenon and context are not always distinguishable in real-life situations, other technical characteristics, including data collection and data analysis strategies, now become an important part of the strategy.

Data Collection

The study is developmental and the trainees' progress is analysed at four points throughout the year with the first point of data capture in September 2012 and the last in June 2013 as this is the duration of the PGCE year (see diagram 1). The other two points of data capture are after the Foundation Phase of school experience (October to December) and after the Developmental Phase of school experience (February to April) both of which are preceded by a university based pedagogical input demanding assignments, reflective diaries and microteaching experiences. This documentation is available for retrieval for all PGCE participants as it is located on the university Virtual Learning Environment (VLE) site for access by examiners such as OFSTED and our internal and external moderating procedures. The study is limited to the science cohort (approximately 30 trainees each year) because of ease of access to the necessary data as I work alongside these trainee teachers throughout the year as their science course lead tutor.

As the study is longitudinal, it involves a variety of methods used to capture information throughout the year at different points during the metamorphosis of the 'outstanding' trainee into the 'outstanding' teacher. This information includes written background documentation collected at interview, subject knowledge tests and audits completed at each of the four sampling stages during the year, reflective journals and assignments required as course components plus all the written evidence produced during the trainee's school experience. This latter documentation is the most heavily weighted regarding the allocation of the final achievement award and involves triangulation of data between school subject mentor, school co-ordinating professional mentor and university tutor. The trainee is central to these discussions and must agree with the decisions made at each stage.

Review of documentation

A document may be defined briefly as a record of an event or a process (Cohen et al, 2011). Some of this documentation is produced by the trainee alone, some in collaboration with mentors and tutors and some is handed to them without input from themselves. Some are personal documents and others are official records. These have been produced independent of my research as requirements for the purpose of monitoring and assessing the trainee.

Each trainee completes:

- A weekly Impact Review Sheet (reflective journal) with reflections on their university experience (theory), their school placement (practice) and the literature and pedagogy that linked the two. This is shared with the university tutor each week through a Virtual Learning Environment (VLE) central site.
- The introductory section of the first assignment (Master's Level) asks for a review of the personal values and beliefs held important to trainees as leaders of learning.
- Whilst in school, they compile a Professional Development Plan (PDP) which consisted of a summary of their weekly mentor meetings and targets for progression based on their lesson planning, evaluation and lesson observation records.
- A formative School Assessment Profile for each phase of training. This aligns evidence from university and school experience against the Teaching Standards (DfE, 2012a.) The summative document comments, targets and grades are agreed by subject mentor, professional mentor, trainee and university tutor who add personal generic summary comments at the end of the profile.

Supporting the School Assessment Profile are schemes of work, pupil details and seating plans, lesson plans, evaluations, CPD support, lesson observation records and mark books integrated into a Portfolio of Evidence to support the Teaching Standards. This requirement to organise portfolios of evidence is a preparation for their NQT year where such portfolios comprise part of the assessment procedure for passing the induction year.

- A Career Entry Development Plan (CEDP) is a final requirement to discuss and record key points concerning experiences from before, during and outside the formal training programme which support reflections for transition into the induction year in the trainees teaching post school. A copy of this is sent by the university to the Induction Tutor at the NQT post school.
- Additional components are attendance registers, summaries of university tutorials (held four times a year) and records of enrichment and enhancement activities undertaken by trainees as part of the university course.

This collection of evidence was maintained for all trainees. It must be stored for three years as a statutory requirement for ITT provision. By tracking the science cohort as they progressed through the year I was able to identify those who were developing as 'outstanding' trainees as demonstrated by their School Assessment Profile entries, agreed by their school mentors, their university tutors and themselves.

Participant Selection Criteria

Twenty-six trainees in the science PGCE cohort (2012-13) completed their training and exactly half achieved outstanding achievement outcomes. I had thoroughly enjoyed working with each of them and appreciated their interesting and very personal biographies but I had to decide how many trainees I could realistically analyse for this thesis and invite for interview at the end of the training year. I based my selection on the following conditions.

- Trainees who were consistently 'outstanding' throughout their training year in the majority of the standards.
- Trainees that I had personally tutored through at least one school practice.
- Trainees who had accepted posts in schools where I could visit during their NQT year.
- Trainees from a range of cultures, ages, career backgrounds and agreed interview condition requirements.
- Trainees I had visited in school with other tutors or examiners for collaborative triangulation of agreed progress and development.

I identified six trainees who met these criteria, approached them individually to explain the focus of my study and obtained their written consent to be participants in my investigation. (Appendix 9: Consent letter and ethical statement).

Each of the previous research projects (Documents 3 and 4) involved semi-structured interview techniques at some point during the data collection. Building on this experience I incorporated a final semi-structured interview into the data collection for my main thesis (Document 5). Having used focus group techniques in documents 3 and 4, it was apparent that an individual interview would be the most appropriate approach for document 5. The participants had very different experiences during their training year and in their individual school environments and I knew from earlier correspondence, that certain individuals were unhappy in their school bases and were uneasy about sharing their experiences with others. The individual interview approach removed peer influences when relating experiences and ensured the narrative was personally situated. Therefore, in addition to the collected course documentation for each participant, I included a final interview in the last week of the course to explore each individual's personal and professional training journey in narrative form.

Preparation for the final interview

The questions used for the main study consisted of only a small number of questions (Appendix 10) and these were used as prompts during the interview procedure. In each case, the questions used had been piloted on the previous year's cohort so preliminary analysis of the usefulness of each question had already begun. Questionnaires can never be entirely neutral, as the ways in which the questions are phrased can trigger particular responses, but are useful to gain an overview and identify issues (Durrant and Holden, 2006), particularly if open questions are posed. This was felt to be particularly important within the exploratory nature of the research (Bailey, 1994) as participants were given the opportunity to express themselves at length. The questions were sent to the trainees in advance of the interview procedure for their consideration, then brought to the semi-structured interview acting as a framework for the discussions. At this stage I did not look at

any written responses and encouraged participants to extend or amend their individual responses before, during or immediately after the interview.

The HCEC (2012:21) recommended the implementation of 'an interpersonal skills assessment for teaching aptitude' similar to those used for recruiting professionals into business management industries (Furnham, 1994). Parkinson (2012) is a psychologist who advises business organisations on psychological testing, psychometrics and personality testing for employee recruitment at all levels, from clerical and production positions to managerial and professional staff. He invites readers (2012:10) to utilise a copyright-free personality questionnaire, including analytical procedures, to assess five main aspects or dimensions of personality and he stresses that it is not a test of intelligence or ability but it allows the participant to predict how they might react under particular circumstances (Appendix 11). Some people believe it is impossible to measure something as complicated as personality (Blinkhorn and Johnson, 1990). Parkinson (2012) contests this, stating that though personalities are complex, there are obvious similarities and differences between people and that is what these personality questionnaires highlight.

I decided to trial this basic personality questionnaire on the participants of this study before they were interviewed. Though I considered that the results might provide an opportunity to compare personality characteristics of participants, the main purpose of the procedure was used as a springboard for discussing aspects that surprised or supported each trainee's self-image. The resulting discussion surrounding perceived personality traits and actual personality traits (as determined by Parkinson's analysis procedures) attempted to capture information identifying any tension between the personal voice of each trainee and the professional mask that is exhibited and assessed each day in the classroom by pupils, class teachers and other professional colleagues.

Final semi-structured interview and construction of a timeline

The use of interviews is in keeping with socially constructivist, qualitative research (Kvale and Brinkman, 2009). Conversations are a primary mode of human interaction and, through conversations, we learn about people's feelings, experiences and attitudes to their situation. Knowledge is co-constructed in the dialogue between interviewer and interviewee and though an interview can often be a conversation between equals, the interviewer frequently leads the interaction and so must be ethically aware. Drever (2003) stresses an interview is not a conversation but is a formal encounter with a specific purpose which both parties are aware of.

The participants met with me individually to discuss and develop the open questions they had received previously. The questions set a loose agenda for the interview procedure. The discussion could move between descriptive narratives to more analytical sections when the participants were encouraged to evaluate why certain incidents were critical to their perceived development as newly qualified teachers. Each participant's narrative was

illustrated using a co-constructed timeline tracking their confidence levels from their first day in training until the date of the interview in July 2013. Critical incidents were marked on the timeline with written indications of high confidence levels and low confidence levels throughout the year. Other than the construction of the timeline, minimal field notes were required as the interview was audio-taped for transcription as soon as possible after the interview had taken place. When transcribing interviews, care had to be taken to exercise judgement about how to summarise without distorting what had been said or omitting anything important (Miles and Huberman, 1984; Oppenheim, 1966).

Electronic technology facilitated the rapid interchange of solicited documents in a wide variety of formats from the university database. The wealth of documentary evidence available for each trainee plus the final interview and timeline construction were available for analysis. Each piece contributed to the whole rather like jigsaw pieces coming together to produce the big picture of outstanding teacher potential at the end of the training year.

Data Handling: Interpretative Thematic Analysis

Qualitative approaches are very diverse, complex and nuanced (Holloway and Todres, 2003) and one of the most common approaches to qualitative data analysis entails what is often referred to as thematic analysis. However, unlike strategies like grounded theory, it is not an analytical approach that has an identifiable heritage or that has been outlined in terms of a distinctive cluster of techniques. In fact, Bryman (2008) stated that thematic analysis did not merit discussion in earlier editions of his work. However, Braun and Clarke (2006) insisted that thematic analysis should be seen as a foundation method for qualitative analysis and one of the first that should be learned by novices to qualitative interpretative methods. Boyatzis (1998) characterises thematic analysis as a tool running across different methods rather than a specific method in itself. Ryan and Bernard (2000) agree and locate thematic coding as a process performed within major analytical traditions, for example grounded theory, rather than a specific approach in its own right. Braun and Clarke (2006) disagree and argue that thematic analysis should be considered a method in its own right (Appendix 13). They suggest that an absence of clear and concise guidelines around thematic analysis lays its use open to the "anything goes" critique of qualitative research (Antaka, Billing, Edwards and Potter, 2002:56). Braun and Clarke (2006:78) provide a vocabulary and "recipe" for people that is theoretically and methodologically sound, without losing flexibility in how it is used. They stress that researchers need to be clear about what they are doing and why, and to include 'how' they conducted their analysis in their reports. Their review of using thematic analysis in psychology (2006) found that the 'how' is often omitted in reports. If it is not known how people went about analysing their data, or what assumptions informed their analysis it is difficult to evaluate their research and compare or synthesise it with other studies on related topics in the future (Attride-Stirling, 2001). I agree, as from my own positivist background, clarity on process and practice of methods are

essential for peer review of research procedures. The audience and researcher need to be convinced that the findings are based on critical analysis of available data.

The vocabulary of thematic analysis revolves around data display and analysis. Data corpus refers to all the data collected for a particular research project, while data set refers to all the data from the corpus that is being used for a particular analysis, for example the interview transcripts collected. Data item is used to refer to each individual piece of data collected, for example one of the transcribed interviews, which together makes up the data set or corpus. Finally, data extract refers to an individual coded chunk of data which has been identified within, and extracted from, a data item. There will be many data extracts though only a selection will feature in the final analysis. Thematic analysis is a method for identifying, analysing and reporting patterns (themes) within data. It should describe the data set in rich detail and is characteristically uses the whole context of the participants' experiences accessed through a range of data sets, in my case, transcribed interview, reflective journals, professional development profiles etc.

Themes or patterns within data can be identified in one of two primary ways in thematic analysis: in an inductive way (Frith and Gleeson, 2004) or in a theoretical or deductive way (Boyatzis, 1998). In an inductive approach the themes are strongly linked to the data themselves (similar to grounded theory) so in this form the thematic analysis is data-driven. In contrast, a theoretical or deductive thematic analysis is driven by the researcher's theoretical or analytical interest in the area and thus more explicitly analyst-driven. This form of thematic analysis tends to provide a less rich description of the data overall, and a more detailed analysis of some aspects of the data. The researcher either codes for a specific research question which maps onto the more theoretical approach or the specific research question can evolve through the coding process of the inductive approach. A theoretical approach requires engagement with literature prior to analysis, whereas the inductive approach may be enhanced and more receptive to emergent themes by not engaging with literature in the early stages of the analysis (Tuckett, 2005). However, this is never wholly possible as literature review preparation and exposure to professional debate around relevant theoretical frameworks is implicit in being a teacher-researcher. In addition, having completed two subsidiary supporting studies resulted in a comprehensive literature review regarding associated theoretical frameworks with the main study.

In inductive thematic analysis the emergent themes are strongly linked to the data themselves, similar to grounded theory but there are subtle differences in the two approaches. Grounded theory seeks patterns in the data but it is theoretically bounded. The analysis of the data should be directed towards theory development because the goal of grounded theory is to generate plausible and useful theory of the phenomenon that is grounded in the data (Macleod, 2001; Holloway and Todres, 2003). Braun and Clarke (2006) suggest that a well identified thematic analysis procedure means that the researcher need not subscribe to the implicit theoretical commitments of grounded theory if they do not

wish to produce a fully worked out grounded theory analysis. Though the methods share a search for certain themes or patterns across the entire data set, thematic analysis is not bound by any pre-existing theoretical framework and so can be used within different theoretical frameworks as the analysis proceeds.

Braun and Clarke (2006) define thematic analysis (Appendix 13) as a method for identifying, analysing and reporting patterns (themes) within data. Like grounded theory it involves searching across a data set, in this case a dossier of information from both school and university experiences, to find repeated patterns of meaning. However, identified common concepts rather than fully formed theories may be the outcome. The participants in my bounded case study were limited in number and chosen in the ways previously described. There was no attempt to saturate categories or themes with as many appropriate cases as possible in order to demonstrate their relevance into more general analytical frameworks outside of the setting as required by grounded theory. Analysis involved a constant comparison across the entire data set. Interesting features of the data were coded in a systematic way. Collated codes were gathered into potential themes. From the thematic map, clear definitions and names were given for each theme which were further interrogated to assess which themes linked and interconnected. Subsequent combining, refining and separating themes resulted in the final analysis which addressed experiences that supported progress in professional and personal confidence. The same colleague, who acted for document 4, acted as a 'critical friend' and discussed the process including reading the extract examples that were selected which related back to the research question and literature. A second colleague, who was not involved in the doctoral programme, acted as a peer debriefer by reviewing the draft documents and asking questions accordingly. This gave an interpretation beyond the researcher adding validity to the account.

The terms validity and reliability are terms associated with quantitative research and relate to the need for well-founded studies showing validity of a causal inference (internal validity) or the generalisability of the findings (external viability). Reliability concerns the replication of the study under similar circumstances employing standardised measures in controlled settings. However naturalistic investigations, like my own, derive consistency through coding of the raw data in a way that another person can understand the themes and arrive at similar conclusions and so can show reliability. Validation is the process of evaluating "the trustworthiness" of reported observations, interpretations and generalisations (Mischler, 1990:419) a term also used by Lincoln and Guba (1985:316) as an assessment criterion for qualitative research studies. I enhanced "trustworthiness" of my study (Rudestam and Newton, 2007: 113) through peer review and external audit of my data collection and analysis, triangulation by soliciting data from multiple and different sources and keeping a detailed audit trail that others could use to recapture steps and reach the same conclusions. Presenting findings regularly to the professional doctorate research community within my university was an effective way of reflecting on ways of presenting and explaining the data and receiving constructive critical analysis of procedures from colleagues. Having to explain

methodology, methods and terminology to others acted as critical self-reflection component of research identity development. The study was bound by ethical considerations.

Ethical considerations

Empirical research in education inevitably carries ethical issues, because it involves "collecting data from people about people" (Punch 2009:49). Ethical research practice demands researchers adhere to codes of ethical and professional conduct for research, for example, the British Educational Research Association (BERA, 2011) and manage emergent ethical issues appropriately (Miles and Huberman, 1994).

Social research usually necessitates obtaining the consent and co-operation of the participants who are assisting in the investigations and of significant others in the institutions providing the research facilities. Informed consent requires participants' right to freedom and self-determination is protected. Nevertheless, participants have to decide for themselves whether they take part (Cohen, Manion and Morrison, 2011).

Informed consent therefore involves the "four elements of competence, voluntarism, full information and comprehension" (Diener and Crandall, 1978:57). Voluntarism entails applying the principle of informed consent and thus ensuring that the participants freely choose to take part (or not) in the research and guarantee that exposure to risks is undertaken knowingly and voluntarily. For my research, letters outlining the context and purpose of the research was given to potential participants together with an ethical statement and a consent form. The letter provided a clear outline of all the stages of the research and an opportunity to opt out at any stage (Appendix 9).

Comprehension refers to the fact that participants fully understand the nature of the research project even when the procedures are complicated and entail risks. In my project preparation, there was sufficient time between giving out the letter and starting the research to allow participants time to consider the implications of the research. The participants are highly educated individuals who fully comprehend the situation they are participating in. The likely outcomes of data analysis and particularly the possible inclusion of verbatim extracts in published reports were explained. Raw, unedited data transcripts are only to be seen by the researcher and edited for anonymity and the data is safely retained until after the doctorate has been completed after which it is shredded. Anonymity is all that qualitative research can offer. To say that something is 'confidential' is to say that no one else will see it and this is not always the case (Smith et al, 2009).

There is a need for ethical reflexivity throughout the process of educational and social research where researchers explicitly identify their biases, values and personal backgrounds and acknowledge that they are part of the "social context" of the research project (Cresswell, 2009:177). My role as ITT tutor is closely linked to my chosen area of study and

all of the participants know me well in a professional context and may behave in a particular way as a result. Role conflict and the importance of the position of power and status differential may influence how participants answer questions or relay their perception of events in order to please me as their tutor.

My position as a trainer-researcher studying my own trainees in my own institutional framework brings clear research advantages. The insider's understanding of the research situation including professional, social, cultural and micro-political aspects can enrich and deepen the research, including interpretation of results and consideration of their transferability to other situations. At the same time, such insider status can make it difficult to maintain an objective approach regarding bias and subjectivity. Selective sampling and bias in collecting, analysing and interpreting results are obvious possibilities. Acknowledging these possible limitations will be central to the analysis of my findings and underlines the importance of clear ethical considerations, with reference to clear ethical guidelines (BERA, 2011). My research participants were pleased to have their experiences represented and their voices heard in a professional or academic forum as long as the outcome of the collected data was made clear to them and anonymity was maintained as described above.

The "cost/benefits ratio" (Cohen et al, 2011:75) is a fundamental concept expressing the primary ethical dilemma in social and educational research. The educational benefits against the personal costs of the individuals taking part must be considered. My findings from the three interdependent research projects may give the opportunity to contribute to the wider debate surrounding selection, recruitment and retention of early career teachers in England and to identify successful support and intervention procedures that ensure progression of potentially outstanding individuals. The cost to the participants may include time commitment for relating their narratives or completing questionnaires during this very busy period in their professional lives. Finding an appropriate location and asking for full reflection on the issues raised is very time consuming. The power relationship between researcher and participant may have played a part in perceived freedom to become involved as already discussed. On the other hand, the benefits to participants could take the form of satisfaction in having made a contribution to the debate and a greater personal understanding of the research area under scrutiny. Each encounter was supported by general discussion of the current political and academic background to the key questions posed and participants seemed genuinely interested in sharing their views. Several contacted me at other times with articles or ideas relating to the topics in question. The shared awareness of how educational research can be incorporated into the professional lives of practising teachers may act as an incentive to becoming teacher-researchers themselves. The process of balancing benefits against costs is a subjective one and not easy and has to be made in accordance with professional and personal values.

Only when the issue of positionality, as an aspect of the more general concept of reflexivity, is fully considered in the planning stages of the research can the disadvantages of bias,

subjectivity and vested interest be minimised by “bracketing” (Smith et al, 2009:13) and by informal but planned involvement of a colleague as a “critical friend” who exercises a “watching brief” and crosschecks proceedings (Punch, 2009:45).

In summary

The purpose of my investigation was to illuminate the issues under investigation through the eyes of the participant early career teachers. This research project was the starting point as to whether ‘outstandingness’ could be predicted, identified and facilitated during the training year and whether some factors were more important in developing outstanding trainees. Supporting interventions before, during and after the initial training year may be discovered and recommended using theoretical frameworks identified in the data. The interplay between mask and voice has been explored and the critical incidents of newly qualified teachers have been gauged by how they impact on their confidence levels and progress. Accepting Pring’s criticism that “educational research is often too small scale and fragmented to serve policy and professional interests” (Pring, 2004:40) I hope to contribute to the cumulative growth of knowledge about early career teachers through the in-depth analysis of detailed information gathered using a variety of data collection procedures over a sustained period of time. I offer perspective on an under-researched area ‘outstandingness’ in trainee teachers’ development and its importance in retention of teachers in the profession through their critical early years.

CHAPTER 5

FINDINGS, ANALYSIS AND REFLECTION

This qualitative, interpretative research study focused on outstanding teaching potential in trainee teachers on a PGCE Science course in a university in south-west London. The experience of six outstanding trainee teachers was tracked from interview, through their training year and into their induction year as NQTs. The aim of the research was to construct models of "outstandingness" through thematic analysis of the data captured during a longitudinal exploratory collective case study of the trainees in question. The study was explanatory and theory generating (Yin, 2009) and aimed to add to the literature on recruitment, training and retention of recently qualified teachers.

Participants in the main study

Pre-course interview data

For the six outstanding trainees in my study their pre-course interview records are summarised in Appendix 14. Participants ranged from 41 to 21 years, had different science background and qualifications (first class to lower second division in a range of science subjects) and different professional backgrounds. Two participants were transferring from long, successful careers in other professions. Two had attempted a variety of temporary jobs after completing university and had now decided to pursue a teaching career. Two had just completed their first degrees prior to starting the ITT course.

Their date of acceptance on the PGCE course varied from 15 months to 3 months before the course start date. The two applicants that applied well in advance did so in order to be able to complete a six-month Subject Knowledge Enhancement Course (SKE) one in chemistry and one in physics. They attended different SKE providers and their experiences were recorded and analysed as part of document 3. An additional participant completed a 3 month SKE in chemistry. One attended a one-week physics practical course at a partner school and the remaining two did no formal SKE and completed set GCSE examination papers across the sciences as a self-auditing tool. Their subject knowledge pre-preparation was tailored to their needs and agreed at interview.

One area that they all had in common was a sustained involvement in allied teaching/mentoring/coaching activities involving working with young people before applying for initial teacher training. Their backgrounds were:

- Teaching on undergraduate courses at university. Coaching qualification in equestrian pursuits, dance, drama and tennis.
- Hospital charity work and being a Student Ambassador at university
- A youth worker with the YMCA and charity work in free time

- Teaching on undergraduate courses and Sunday School teacher
- Student Ambassador at university and regular involvement with secondary schools, volunteering to support pupils with SEN
- Local Scout Leader. Drama Gold medal and working with young people in theatrical productions.

They had all developed skills involving collaborating with young people in a variety of teaching and learning settings, both formal and informal.

The other commonality was the extremely positive supporting statement from their referees. All trainees showed a strong commitment to wanting to work with young people, and their referees incorporated this strength into their supporting statement. In all cases the referees described excellent interpersonal skills, popularity within their peer group, good communication skills at all levels plus a positive work ethic. This was borne out for each of the participants during the interview procedures which gave opportunities to showcase ability to engage an audience and planning skills (presentation); communication skills and respect for others' views (group discussion) and ability to interact in a small group discussion during the individual interview.

Their GCSE results and A Level results were poor indicators of first degree classification at university. The candidate with the highest GCSE results achieved a lower second award at university and the person with the lowest GCSE and A level results obtained a first class degree at university and went on to study at doctoral level. Subject content knowledge (SCK) was supplanted by subject pedagogic knowledge (SPK) during the training year evidenced by their ultimate outcome achievement grades.

One common factor was that five out of six participants were single with no permanent partner. The five who were single had chosen either to live at home with their parents (three out of five) or rent accommodation close to the university with a flat mate. Only one from this group was married with a teenage child. She reported that she had to be well organised and planned to finish all requirements before going home so she could spend some time with her family. The issue of work/life balance demands on early career teachers is discussed later.

In summary, the analysis of the interview data and procedures for the six outstanding trainees showed there was no commonality of background in subject knowledge, regarding either degree award or subject knowledge enhancement preparation and their school observation experience varied from 21 days to 1 day in secondary school prior to interview However, they all exhibit strong interview performance in all areas (presentation, group work, subject knowledge audit and individual interview). Most significantly, they had prolonged involvement with aspects of teaching or coaching of young people in varied contexts and settings, plus very positive reference statements supporting their application.

> *There is no clear formula for an "outstanding" teacher and that although good subject knowledge, overall academic ability and a range of personal and interpersonal skills are vital, the evidence is similarly clear that no one factor (including degree class) correlates to performance in the classroom and thus to impact on pupil performance. We have been surprised at the lack of research into the qualities found to make an effective teacher, including any potential link between degree class and performance. Overall the research base in both directions is fairly scant and could usefully be replenished with new methodologically-sound research looking at the UK teachers and schools, both primary and secondary' (*House of Commons Education Committee, 2012:20).

My research addresses all of the recommendations for further investigation stated above.

The PGCE training Year

A dossier of information was compiled for each trainee during the course of the training year as described in chapter four of this thesis. From this data, thematic interpretative analysis techniques (Braun and Clarke, 2006) were used to identify, analyse and report patterns (themes) within data. It involved searching across a data set, in this case a dossier of information from both school and university experiences plus the final interview transcripts, to find repeated patterns of meaning. Analysis involved a constant comparison between the entire data set. Interesting features of the data were coded in a systematic way as described in Chapter 4 resulting in several common themes being identified.

However, before considering the recurrent common themes that were identified in all participants it is interesting to analyse the resultant personality traits from the personality questionnaire participants completed prior to their final exit interview. Most questionnaires identify five main aspects or dimensions to personality known as "The Big Five" (Parkinson, 2012:22). The names given to the five dimensions vary, depending on who designed the questionnaire though they can broadly be described as Extrovert/Introvert; Tough minded/Tender minded; Conforming/Creative; High structure/Low structure; Confident/Emotional (Appendix 11). In reality people may be at extremes of these dimensions or somewhere in between. Questionnaires therefore produce scales that run between each pole, for example, it is possible to be a tough-minded person and be caring and empathetic when necessary.

Referring to the tabulated results below, it was clear that there was no common or shared characteristic for any dimension, when the outcome of the questionnaire was analysed. Each trainee had their own very personal set of characteristics (Appendix 12).

Trainee 1 (SA)	Slightly introverted, tough minded, creative, low structure, confident
Trainee 2 (AB)	Very introverted, very tender minded, conforming, high structure, confident
Trainee 3 (AY)	Very extrovert, slightly tender minded, conforming, high structure, very confident
Trainee 4 (LA)	Slightly introverted, very tender minded, very conforming, very high structured, quite emotional.
Trainee 5 (GY)	Extrovert, very tender minded, slightly conforming, very low structured, very confident
Trainee 6 (AG)	Slightly extrovert, tender minded, creative, slightly low structured, very confident.

Table 5.1. Personality traits of research participants

The only common outcome was that they all acknowledged that they behaved in a confident way in the classroom and developed an outwardly more extrovert personality when in school. Harrison (Dymoke and Harrison, 2008) compared teaching with acting on a stage, as did Marland in the seventies (1975). Teaching involves constant scrutiny of the audience with teachers evaluating how they are being perceived by their pupils. Trainee GY reported that he never showed when he is worried or anxious.

> *I have a mask of confidence and I am a good actor and that attracted me into teaching in the first place as I enjoy acting.*

This notion will be further explored when considering how and when early career teachers develop a professional identity.

The variation in levels of confidence throughout the year was summarised in a co-constructed diagrammatic timeline for each participant during their final exit interview. A summary timeline for all participants is shown as Appendix 15; the individual timelines for each participant are included in Appendix 16 preceded by an overview of their perceived professional persona, how they prepared for their PGCE year, their expectations for pupils' progress and their criteria for successful professional development with stated aims for the future.

The summary timeline (Appendix 15) minimised below, shows a dramatic dip in confidence level in the first term of teaching for every participant with particularly low self-esteem recorded in the first four weeks of school experience. Similar, though less dramatic dips in confidence are seen in the second placement school at around the same time in the placement. All trainees end their training year with high confidence levels ready for their NQT posts. The factors contributing to this rise and fall in confidence level throughout the year are analysed in the following discussion.

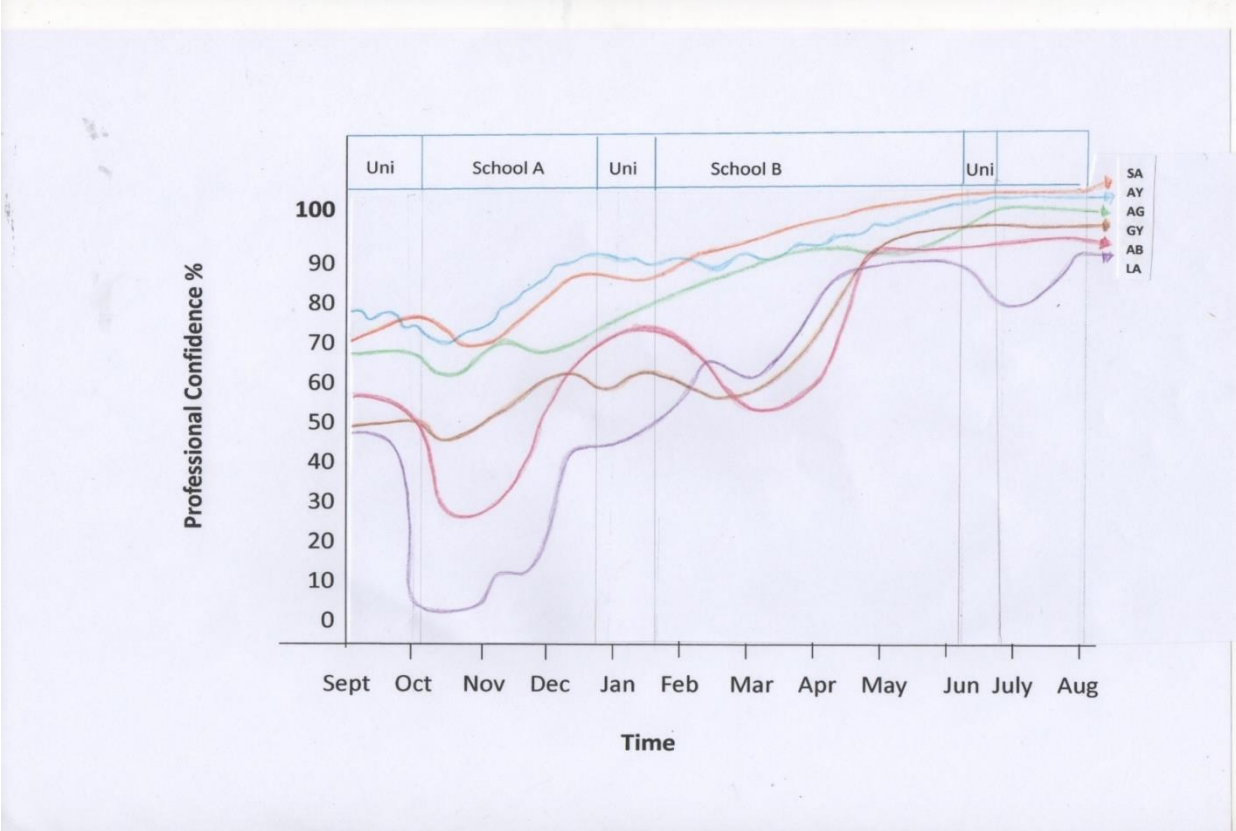


Chart 5.1. Summary Timeline showing changing confidence levels over time for the research participants during their PGCE training year (2012.13).

Thematic Analysis Findings: Recurrent Themes

The summary timelines, interview transcripts and university and school documentation were coded, named and organised into themes as explained in chapter 4 of this document and summarised in Appendix 16. Certain recurrent themes were identified as common to all participants across the data set. They all exhibited the following characteristics.

1. Continuing critical reflective practice and evaluation of own progress
2. Excellent interpersonal and communication skills with pupils, peers, mentors and colleagues
3. High expectations of pupil interaction with an empathetic emphasis on developing the whole child
4. Development of own teaching style and belief in the use of constructivist approaches to teaching and learning incorporating assessment of pupil progress
5. A passion for their subject and strong pedagogic content knowledge
6. Well organised with effective time management skills
7. Resilience and ability to 'bounce back' in times of personal and professional crisis
8. Strong professional identity as a teacher with defined personal goals for the future.

An analysis of each theme follows with data extracts from participants appearing in italics.

1. Outstanding trainees exhibit continuing reflective practice and evaluation of own progress

All participants saw the importance of a clear and shared understanding of the concept of critical reflection and the way it related to the development of classroom practice. This process was succinctly summarised by SA in the introduction to her first assignment.

> *The process of systematic reflection, both within the lesson and after it, gives me the capacity to gauge whether the lesson has been effective, whether pupils have learned anything and what I can do to improve the quality of my teaching next time.*

She concluded with:

> *Reflective practice empowers and informs me on how to develop personally and professionally.*

Dewey (1910, 1933) suggested that reflection is a form of problem-solving requiring open-mindedness which requires thinking in different ways, taking responsibility for personal learning and wholeheartedly analysing possible outcomes to each situation. Reflection needs to be more than a cognitive process; it requires intentional action and a deep consideration of alternative approaches to a perceived dilemma. All participants had at least one class or an individual pupil that proved difficult to teach at some point in their training.

This strong focus on resolving an identified issue through a variety of analytical procedures was evident in all participants' biographies. Early on in the first teaching practice they moved their focus from themselves as teachers to the pupils as learners as depicted in Kolb's Learning Cycle (Kolb, 1984). They sought to find out how pupils learn and applied learning theory to their practice. Dialogue and the sharing of ideas, actions and thoughts shaped their thinking. They developed their practice and explored the theories that underpinned this development. As Dysthe states, "the learner builds knowledge through discussion with peers, teachers and tutors" (2002:343). This is equally relevant for trainee teachers and pupils alike.

LA commented in her reflective journal that

> *I have observed in many schools, but until you have to plan lessons yourself, it is like watching a performance and you have not seen the rehearsal beforehand. You benefit more from observation once you have planned and done some teaching.*

She tried to understand the procedures and theoretical underpinning that had gone into developing the excellent teaching and learning procedures that she observed in school and applied them to her own practice. Personal practical knowledge is most valuable when it is

informed by diverse perspectives arising from wider research and educational theorising, recognising the dialogue that is necessary between the two sources of understanding.

AY acknowledged that '*continuous reflection can be tiring and disheartening*' as it is occurring at '*a relentless pace'*. However, she equated this with '*learning at a relentless pace'* which resulted in her mentor reporting significant improvements in her lessons after only four weeks. She attributed this rapid improvement to critical discussions with her mentor each week, which informed her own lesson evaluations, and observing excellent teachers across subject departments, through which she identified transferrable skills for her own professional development. She saw the importance of focussing on literacy development across the curriculum. AB read through her lesson observation commentaries each day and incorporates points made into her own evaluation, setting SMART targets for the next lesson in collaboration with the class teachers and mentor.

Hattie (2012) endorses the power of teachers working together critiquing their planning. This happens frequently during the training year, initiated by the inquisitiveness and demands of the trainee but I have observed that once a teacher is considered as qualified this dialogue diminishes in many schools. Hattie (2012) raised the question of how to construct an environment in schools were teachers talk to each other about teaching - not about curriculum, students, assessment conditions but about challenging pupil learning. "The co-planning of lessons is the task that has one of the highest likelihoods of making a marked positive difference on student learning" (Hattie, 2012:74). It should be built in to CPD programmes in all schools.

There are many existing models of school-based professional mentoring (Coe et al, 2014) including co-observation, co-planning and regular feedback on progress between mentor and developing teacher. The TALIS (2008) survey of the working lives of new teachers found that many international policy makers require the mentor to teach the same subjects as the teacher being mentored. Smith and Ingersoll (2004) found that same subject mentoring had a positive impact on teacher retention while Rockoff (2008) found no such impact. However, both studies agreed that the most successful models included creating mentoring relationships characterised by trust and feeling supported while being sufficiently challenging to provoke change. All participants in this study were paired with science mentors but not necessarily one with their own specific specialist science background. All trainees taught across the sciences at Key Stage 3 and Key Stage 4 but specialised for post-16 teaching. At this point they worked with specialists in the field and reported positively on the experience. As recommended by Lock, Salt and Soares (2011) they were all assigned a teacher within their departments to consult with for their specialist science development. Specialist physics, chemistry and biology tutors at university also advised when approached for help.

A particularly successful mentoring strategy, "Lesson Study", involves groups of teachers collaboratively planning, teaching, observing and analysing learning and teaching in

"research lessons" (Dudley, 2014:1). Originating in Japan it was imported to the United States and United Kingdom. Cajkler et al. (2014) argue that Lesson Study provides greater teacher collaboration, sharper focus among teachers on pupils' learning, development of teacher knowledge, practice and professionalism and improved quality of classroom teaching and pupil learning outcomes (ibid.:3). Schools that provided systems of support allowing teachers to respond positively to the challenge of improving their effectiveness, were the ones in which the trainees made most progress.

2. Outstanding trainees have excellent interpersonal and communication skills with pupils, peers, mentors and colleagues

While each trainee had different personality traits, they all possessed an ability to develop positive professional relationships with peers, colleagues and pupils. McNally et al. (2008) argues that relationships almost define the job at these early stages of professional development. Hewitt (2009) agrees that the key to successful development as a teacher comes from developing powerful, personal relationships before developing professional skills. Cognitive development theory also complements the idea that early career teachers must socialise and interact personally and professionally. Physical and/or mental isolation can impede teacher development (Lundeen, 2004). Changing their perception of themselves from 'outsiders' to 'insiders' enables trainees to feel they are accepted members of the school community. SA stated that she '*never felt like an outsider*' in either school placement. '*I always felt I belonged'* and '*I always felt more like an NQT'*. All participants recorded that it was important to develop a strong network of support of contemporaries and colleagues. SA got involved in school drama productions and '*put herself out'* to meet the rest of the staff as well as those in her own department. AY stated that *'teaching is very stressful'* and you need to get involved in '*extra-curricular activities like singing and drama'* and build good relationships with colleagues. GY described how he went straight into being part of the school community *'from Open Evening to INSET day with a focus on SEND pupils'.* AG offered support to colleagues during a stressful OFSTED inspection. *'I acted as an extra pair of hands even though I had not been in the department for long'.*

SA developed several learning community networks from the time of her interview to completion of her training year. As part of a physics subject knowledge enhancement group (SKE) group prior to starting the PGCE, belonging to a professional body (Institute of Physics), keeping in touch with both school placement communities and of course sharing and developing resources with her peers in training. Duckworth (2014) describes this as affiliated professional identity development.

> *I am developing a learning community and the network is an important aspect of my professional development.*

SA felt supported at school, through university and by her home life and gave support to others in return. Like the others in the study she was '*becoming a teacher*' and developing

her professional identity in several settings. The emotional-relational dimension, a sense of self and relationships with colleagues and pupils are central concerns in early teaching experiences (McNally et al., 2008; Flores, 2001).

Developing good communication skills go hand in hand with engaging in reflective conversations with colleagues, peers and mentors (Kolb, 1984; Boud, 2001; Pollard, 2008; Dymoke and Harrison, 2008). A reflective conversion is a way of bringing improvement forward and it is the quality of the conversation that is important. This again hinges on the qualities of a good mentor (Coe et al. 2014). Sometimes the dialogue can be both supportive and threatening for the beginning teacher since the power relationships with the mentor may be imbalanced. The quality of their mentor support had a huge impact on their perception of their professional development supporting the international (TALIS, 2008) findings (Jenson et al., 2012).

All six participants reported at least one excellent school based mentor and four out of six had two outstanding mentors. SA concluded that:

> *Having a supportive mentor is an essential element in improving effectiveness through constructive directed discourse.*

She had excellent mentors in both schools as well as a welcoming 'training department' in her second placement where all teachers co-mentored at some stage in their careers. They knew how to give critically constructive feedback and set SMART targets after a lesson. AY wrote in her assessment profile that:

> *Working with my mentor has been truly amazing. I have learned so much about being an outstanding teacher and about being professional and maintaining high standards from myself and my pupils. She is one of the best teachers I have ever observed. I want to be just like her.*

LA explained in her reflective journal, that a key factor in establishing a healthy learning environment is the overall ethos and culture of the whole school. *'Team work and professionalism have been inextricably linked in my career'*. She appreciated the collaborative teaching techniques her second mentor used to help her develop confidence. The learning conversions she had each week during the formalised mentor meetings and the opportunity to observe excellent teachers in action underpinned her ability to try new things and to consider their pedagogical implications which resonates with Santagata's (2007) study which recommends that trainee teachers are regularly exposed to innovative teaching experiences.

AB also worked with an excellent role model in both placements. Her first placement mentor was an advanced skills teacher (AST) and made teaching and learning science appear so easy. They discussed professional issues as a department and AB was integrated into these discussions from the beginning. In her assignment she wrote *'When participants*

share ideas and listen to different perspectives, they gain a deeper understanding of their own personal experience'. She too was part of a 'training department' where it was expected that there would be a dialogue after each lesson including constructive feedback and advice. Being with five other trainee teachers in the school made the General Professional Studies (GPS) sessions lively and interesting, '*allowing discovery of new approaches to situations'.* This excellent learning environment where pupil progress is central to any discussion reflects Hattie's (2012) vision of a successful school environment in which teachers thrive.

GY had two very contrasting school experiences His first mentor was supportive and reflective, held regular constructive review meetings and encouraged him to observe excellent teachers across departments. He also worked with seven other trainees so a professional dialogue was encountered every day.

> *I loved being able to talk about teaching with my peers. I was amazed at how I got better and better as had been predicted at university.*

In his second placement he wrote in his reflective journal that:

> *I had minimum interaction with my mentor except when she observed me teach her very difficult bottom set that she offloaded onto me as soon as possible.*

There was no collaboration or time to get to know the group. She insisted that he taught '*her way*' and criticised other approaches that he tried.

> *She clearly did not care about teaching or about her pupils. She certainly did not care about me. She did not even go into school on results day to see her own pupils!*

Fortunately, the rest of the department were helpful and supportive and took on the role of giving constructive advice after their lessons. He was made to feel part of the department in every other way and was encouraged to try new things and develop his own style of teaching and learning with his other classes. Experienced members of the team even came to ask for his advice regarding creative approaches to lessons that they heard about from his pupils.

GY was in danger of being downgraded on his Assessment Profile as his mentor based her judgements on the one class that she observed. She did not seek reports on his progress from the other teachers in the school. An external examiner visit and intervention from his university tutor resulted in an outstanding achievement grade being awarded once all the evidence of his progress was ratified. Fortunately, GY was philosophical about his experience and focussed on positive outcomes.

> *I will be very sad to leave my school. I will miss the teachers and the pupils. I have enjoyed my whole year and have appreciated a contrasting school experience.*

AG also had the experience of an ineffective mentor in her first placement school.

> *He would forget to turn up for meetings and you could never find him.*

AG reported that her mentor was often sarcastic which she found unnerving. She was unsure how to take his personal comments. It was her co-trainee's mentor who helped her set weekly targets and the collaborative discussions relating to progress occurred between the two trainees in science and other trainees in the school. '*I did not feel I was developing, I just plodded along'.* In contrast in her reflective journal she described her second mentor as proactive, enthusiastic and an excellent professional role model.

> *I had agreed targets after each lesson which were reviewed each week. I was making very good progress and I knew it from my mentor, other members of the department and from my pupils.*

Both AG and GY used their peer network at university for further discussion relating to resources and effective lesson planning.

There are two important issues arising from these experiences. Firstly, a school mentor must want to take on a supportive role and understand the importance of their potential impact on trainee development. The House of Commons Education Committee (HCEC, 2012) recommended that mentors should have at least three years' training experience and should have completed specific mentor training. Fortunately, both trainees were very resilient and had an inner confidence (initially identified at interview) and used their interpersonal skills to find support from other sources. The university tutors in each case brought the inadequacies of the mentors involved to the notice of the Professional Tutors for attention before the next placement and targeted mentor training was put in place. Secondly, strong relationships with family, peers, colleagues at university and at school are essential as a safety net in difficult situations.

In the final Assessment Profile summary comments were made by mentors and tutors to give an overview of the trainees' progress. The outstanding calibre of the trainees and the positive relationships formed is evident in these comments (See Appendix 17 for full statements on all participants).

- *AY's time here has been an incredible success. I have never worked with a candidate of this calibre. We are delighted to appoint her. AY is an outstanding PGCE student. In fact, she is the best one I have ever mentored in 10 years of teaching. Her commitment, adaptability and moral compass are superb.* (School B mentor)

- *SA has made a huge impression on everyone she has worked with during the year. She has tirelessly supportive of other trainees and is one of the most gifted teachers it has been my privilege to work with as an HEI tutor. I look forward to her rapid development and increasing success in her aspirations of leadership.* (University tutor)

- *GY is an outstanding teacher who cares deeply about the pupils in his care and the progress they are making. He has developed his own teaching style which is engaging, creative and creates a secure learning environment.* (School B PCM)

3. Outstanding trainees have high expectations for pupil interactions with an empathetic emphasis on developing the whole child

All participants believed that in order to manage the learning environment, they needed an agreed set of positive behaviours and routines for interaction with pupils. They felt obliged to model a moral and ethical foundation of showing consideration for listening to their pupils and acting fairly. Bell (2011: 86) defines the term "ethical practice" as a philosophy or way of thinking about the "moral principles of right and wrong, good and bad, virtue and vice, and caring and non-caring". Bell supports Tate's (2007) view that teaching must be viewed as an inherently and fundamentally ethical and moral practice. AB insisted on '*courteous behaviour (from her pupils) to each other and to me'*. LA stated that '*teachers lead by example and instil an atmosphere of equality and fairness that students will want to replicate'*. Being '*firm but fair'* is a phrase that is repeated in their observation feedback from class-teachers and mentors from the early stages of their development. These values underpin their teaching on teamwork and in science their good practice in terms of safe working in the laboratory in tandem with developing personal affective attributes like perseverance, intellectual curiosity, honesty and a love of learning. Hattie's (2012) research associates the attitudinal attributes of learning, including self-efficacy and mastery of motivation with the skills of the expert teacher. The impact of these skills on pupil learning is always shown to be positive. AY explained in her master's assignment that having high expectations of pupils covers more than developing their academic knowledge.

> *It is an expectation of high standards of behaviour and positive attitude to work both in the classroom and at home* (AY, Master's assignment).

OFSTED (2012a; 2012b) suggest that moral development is about pupils' ability to recognise the difference between right and wrong and their readiness to apply this understanding in their own lives; understanding the consequence of their actions and an interest in investigating and offering reasoned views about moral and ethical issues.

> *Teaching must develop the social, emotional and lifestyle skills needed to thrive in an adult world* (AG, first assignment).

The science curriculum incorporates many opportunities to work across subjects to consider the ethical and moral implication of, for example, the atomic bomb, GM crops, and pharmaceutical drug trials. RE, social studies and PSHCE sessions in school provide opportunities for cross curricular working across departments. SA felt that including cross-curricular teaching was an important aspect of developing intellectual curiosity and allowed

more scope to challenge and stretch the gifted and talented pupils (Baughen, Chambers, Gordon and Grounds, 2011). All six participants attended optional enrichment university sessions to develop cross-curricular practice. They worked with trainees from other subject specialties to produce resources and units of work to model cross-curricular themes. All these trainees were adventurous in their teaching and learning styles using music, drama, role play and poetry to enhance their science teaching, something I will return to in the next chapter.

It appears that these trainees possess well developed social capital and are able to interact using a variety of social networks. They have identified the importance of "bonding social capital" (Mercier et al., 2013:127), the ability to form close relationships with similar individuals such as their peers and families which form inward-looking networks. They also show a developed "bridging social capital" (Mercier et al., 2013:127; DCSF, 2008) which refers to outward-looking networks of relationships with associates outside their immediate circles and with those dissimilar to themselves. They expressed a desire to work in schools that had an ethos of both bonding and bridging capital at the core of their mission statement. AB felt comfortable in her first placement school and reported:

> *I like how the school offers free breakfast from 8.00-8.20am for pupils and teachers. As many pupils come from deprived backgrounds or have long commutes, they may not get a breakfast meal. This scheme not only gets the pupils ready to work but also motivates the teachers and develops excellent relationships as the staff and pupils eat together. The lunch meals are delicious and Halal, catering for the school's large Muslim component. Over 50% of the pupils are Muslim. The teachers always look happy and the school environment is very pleasant. I would love to work here.'*

AB worked in this school as an NQT (and is still there three years on) and continued to ensure she developed the social, moral and ethical aspects of the science curriculum and took on the role of a form tutor to further establish good working relationships. DCFS (2008) investigated the aspirations and attainment amongst young people in deprived communities. Their report found that high levels of bonding social capital and low levels of bridging social capital restricts young people's horizons. Social interaction took place within a very limited geographical area, depriving young people access to other sources of inspiration and opportunities. Improving bridging social capital helps to raise aspirations amongst young people in deprived communities and is an important aspect of schooling for all pupils. All these trainees expressed their desire to display the positive attitudes and dispositions they wished to nurture in their pupils.

> *Instilling a sense of good citizenship and taking on a pastoral role is an important aspect of teaching* (GY, reflective journal).

AB, in her Master's essay, gave an excellent summary of the whole group's aspirations as

'the role of a teacher is not just to import knowledge within their specific subject but to teach pupils life skills so they leave school as morally sound, fully rounded human beings'.

4. Outstanding trainees develop their own teaching style and believe in the use of constructivist approaches to teaching and learning incorporating assessment of pupil progress

Developing a personal teaching style during the training year is inextricably linked with professional teacher identity development. The evolution starts with observing others, first at university and then in schools. Santagata et al. (2007:125) noted that student teachers need "concrete images of innovative and alternative teaching methods". For many their first experience of performing as a teacher occurs during the micro-teaching sessions at university. LA remembered watching one of the group and thinking '*how great her micro-teaching was and how I wished I could do something similar*'. This particular trainee was so innovative and outgoing in her first micro-teaching session that instead of giving the group confidence through her example, she made some feel inadequate in those first few weeks on the course.

I was undermining my own ability by comparing myself with some of my more innovative peers during the micro-teaching (AB, reflective journal).

GY noted in his interview that:

The most useful thing I did in preparation for teaching was observing classes and doing this in different schools. It was interesting to see lots of different ways of teaching.

AB appreciated that pupils learned in different ways, so actively looked for alternative ways to teach. She did this by '*considering both pedagogy and observations in the classroom'*. There is much literature on how best to use observation opportunities to improve personal teaching skills (Wragg, 2011; Capel et al., 2009; Gagne and Driscoll, 1988; Fuller and Manning, 1973) yet what counts as effective guidance is still an open question. However, Pinder (2008) found that trainees benefit from observing others but specifically from having post-observation discussion with teachers to explore some of the issues raised and to reflect on the lesson. This is certainly what all participants found. If they could meet with the teacher to be observed before the lesson, agree on a focus for observation and then have time at the end to discuss any issues they wanted to develop, their observations were extremely helpful to their progress. AG noted that having a chance to critically discuss her observations allowed her to make sense of how and why the teachers had responded in certain ways. Ainley calls the way experienced teachers respond "attention based knowledge" (2004:1).

> *A teacher's response to a situation is highly particular and not a response driven by a general rule that could have been articulated in advance. The knowledge gained from this attention informs subsequent action* (Ainley, 2004:2).

Some trainees try to mimic the attention-based knowledge of a particular teacher, for example, AY '*I want to be just like my mentor*'; others actively seek to be different. GY objected to being expected to teach in the same way as his mentor. He wanted to develop his own style and try new techniques. GY affirmed that '*you have to develop your own style through constructive reflection'.*

All the participants in this study found their lesson planning moved from a teacher-centred approach to a pupil-centred approach as their 'teacher' identities developed. In their work on 'The Changing Concept of Teaching and Learning', Stoll and Fink (1996) challenge teachers to move away from a "delivery model" of education and encourage them to move towards an emphasis on constructing environments that facilitate pupil learning. If we consider Twiselton's (2004:157) suggested teaching models of "task manager", "curriculum deliverer" or "concept builder", all participants identified as concept builders by the end of their first placement in most lessons. They may have started off as task managers until their behaviour management techniques were established but emphasis soon switched from their teaching to pupil learning. GY explained that '*it is what the learner does not what the teacher does that promotes learning'*

Interestingly, four of the participants were pupils themselves during the introduction of a new secondary curriculum (NC, 2008). The focus of this curriculum was on *how* the curriculum was taught rather than *what* was taught. It was argued that teachers should be able to develop the curriculum in a way that was more relevant to the needs of the pupils such as enterprise, community participation, technology and the media. The emphasis was on personal learning and thinking skills and pupils were to become independent enquirers, creative thinkers, reflective learners, team workers, self-managers and effective participators (QCA, 2007). Teachers were encouraged to work across subject boundaries to build a flexible approach. Possibly, as this was the backdrop to their own educational experience they embraced this philosophy themselves. An interesting development of this premise could illicit the impact of personal educational experiences on their own teaching and learning style as a future study, as literature is especially scarce in this area. Of the two mature participants, one had a teenage child so had witnessed this approach through her daughter's experiences at school. The other had been schooled by content deliverers with an emphasis on what should be taught rather than how it should be taught. She found a tension moving from her familiar didactic experience of delivery to a more creative constructivist approach. She commented in her reflective journal that she had become more creative by adapting things she saw her colleagues and peers use.

> *My subject knowledge is excellent; my creative flair is not. I have had to adapt to a pupil-centred approach which I am now most comfortable with* (LA, reflective journal)

At university, the participants were encouraged to evaluate differing theoretical models of curriculum delivery. Considering Bernstein's (1971) curriculum models, the 'collection' model has clear boundaries between subjects and the teacher holds control of knowledge and the process of transmission. An "integrated" model is planned around concepts, skills and processes rather than subjects and the learner is more in control of their learning (Bernstein, 1971:206). The origins of this integrated approach can be traced back to Dewey (Carr, 2007:8) who's starting point for learning is the pupil. Teacher and pupil learn together and construct knowledge together. There are no boundaries between what is learned in the classroom and what is learnt outside school. This model of the curriculum calls for very different approaches to teaching and learning as shown by the recent trials of cross-curricular approaches to be introduced nationally in Finland (Pettifer, 2015) as described in chapter 3 of this document. Though all six trainees embraced the cross-curricular enrichment sessions at university they found limited opportunities to put their ideas into practice in their training schools apart from in their form tutor role and involvement in PSCHE sessions.

Very few secondary schools follow a fully integrated approach to the curriculum and as White (2004) has suggested these initiatives, for example Citizenship and themes such as identity and cultural diversity, have tenuous links to the idea of connected learning. Though most subject departments still work in isolation, some schools do teach within an integrated model in one context and as separate subjects in another. For example, the humanities department or the pastoral PSCHE curriculum and ICT development, cross subject boundaries requiring colleagues from different disciplines to work together. Separate subjects are maintained in all other areas, though one trainee, SA, did '*open up lines of communication with the mathematics department*' when her group was being introduced to drawing graphs. She approached the numeracy co-ordinator during a CPD session and the two departments synchronised their timings for teaching the topic. A larger endeavour involved AY helping to organise a joint school trip with the geography department to Greenwich Observatory. The two departments worked collaboratively to ensure the pupils saw the outdoor learning experience as an integrated one with context in everyday settings.

By observing good practice in other subject areas, trainees were able to include practices associated with other subject specialism into their teaching repertoire in order to produce engaging science lessons as mentioned earlier. On their return to university, mid school experience, they were asked to share a particularly innovative lesson where they had used teaching and learning strategies outside their personal comfort zone. GY used poetry, song and rap sequences to introduce certain subjects and asked pupils to produce their versions too. He played music quietly in the background as a calming effect on some classes. AY

modelled the function of the digestive system; using pupils to role play the processes at each stage. LA who felt least creative in her natural approach to lesson planning had produced an IT resource containing animations, embedded videos and a series of activities involving maximum pupil participation. Lesson observation reports praised their innovative teaching strategies and their emphasis on identifying pupil progress. One Head of Department observed that an advantage of having trainee teachers was that they brought new and exciting teaching into the school and rejuvenated the department.

An example of exciting teaching was observed, with a colleague, in the final weeks of school experience when SA exhibited facilitated learning approaches promoting student learning as a priority of formative assessment techniques necessary for effective teaching and learning (Black et al., 2003). SA had previously reported in her reflective journal;

> *I tend to use my traffic lighted learning objectives which I now get the children to grade red/amber/green (RAG) throughout the lesson and then emoticon how they feel about a subject. I include the types of learning that the pupils experience, i.e. independent, collaborative, as well as the types of activities i.e. VAK, teamwork, peer assessment in my lesson plan. I put together resource packs and lots of independent activities. My lessons are pupil led and I am able to facilitate learning of my classes by dealing with misconceptions as I circulate, walking round and assessing pupil progress and generally seeing how they are working together and whether they are all on task.*

She incorporated all these techniques in the final lesson on photosynthesis with a year 10 class which involved directed groups of pupils using a resources pack that drew together all the subject content covered so far. The pupils produced a concept map tying in all the material they had covered on the topic. They were allowed to draw the concept map on the laboratory tables using coloured marker pens (time was built in at the end for cleaning these off). This gave them a huge space to work on. Each group then circulated from table to table to add or comment on the concept maps produced and were given time to adjust their own summaries. They took photos of the end result on their phones which were added to their learning portfolios and sent to SA for 'assessment of learning' feedback for next lesson. They had 'RAG'ged the learning objectives at the beginning of the lesson and continued to RAG at stages throughout the lesson. SA circulated systematically throughout posing challenging questions depending on the group involved. The pupils were involved, animated and engaged throughout the lesson and when questioned they could summarise the main concepts required to understand photosynthesis. Through SA's sequenced learning approach they had connected all the key concepts into an inter-related framework for themselves. The subsequent feedback from SA ensured any misconceptions were identified. They though their teacher was "great" and science lessons were "wicked"!

This use of effective assessment techniques influenced pupils' attitude to learning and engagement with school subjects and motivated them to do well. AB wanted to assess the

practical skills and prior scientific knowledge of her low ability year 7 class for the topic 'acids and alkalis'. Having accessed the pupil data, she knew they had severe issues with numeracy and literacy aspects of the curriculum. She set up a circus of 6 experiments and the small class moved round in pairs. At each station they attempted questions and instructions in their personalised 'passport' and could tick or write in information according to the requirements. There was minimal writing and maximum illustrated material. AB, her mentor and the LSA worked collaboratively to supervise two stations each so they could talk to each pupil and assess both practical capability and scientific understanding. Those who had difficulty expressing themselves in writing could discuss the questions instead. The information was entered onto a pupil observation sheet and the results were shared with each child whilst the class worked in groups on a levelled mind map outline. These engaging differentiated assessment opportunities informed her next sequence of lessons as she now knew the starting point for each child.

There is a substantial body of research suggesting that intelligent, thoughtful and well-informed assessment practice is one of the most important factors in ensuring that pupils achieve their educational potential (Assessment Reform Group, 2002; Swaffield, 2008; Hattie, 2012). Teachers who can use assessment to promote pupils' learning "come to enjoy their work more and to find it more satisfying because it resonates with their professional values. They also see that their students come to enjoy, understand and value their learning more as a result of the innovation" (Black et al., 2003:3). LA observed that;

> *Every five minutes (of a lesson) must be accounted for (when planning) and there need to be several assessment points throughout. Setting appropriate learning outcomes must come first and the tasks that motivate and engage come next.*

AY discussed the importance of taking into account the individual needs of her pupils through appropriately differentiated planned activities. Incorporating independent learning opportunities '*allows the pupils to come up with conclusions for themselves. An environment where pupils can openly explore their level of understanding and the nuances of scientific theory means they take ownership of their education'.* AB felt '*it is important to recognise and celebrate the efforts pupils make to progress their learning and improve their work'*.

These examples are typical of approaches to teaching and learning exhibited by all six trainees. They embraced Brunner's views on constructivist pedagogical theory (Powell and Kalina, 2009). Brunner emphasised the teacher's role in facilitated learning, selecting materials, experiences and guidance to enable the learners to work within defined areas of knowledge, making it their own. The participants also exhibited an interaction between learners and the more knowledgeable teacher using scaffolding techniques to support pupils' learning (Vygotsky, 1978) to differing degrees depending on pupil needs.

While the trainees did not always use the term "construction of shared understanding" (Bell, 2011:30), they did talk of engaging the pupils in the teaching and learning activities in

the classroom. Engagement is a multifaceted construct with cognitive, behavioural and emotional aspects (Chapman, 2003; Fredricks et al., 2004). Cognitive engagement refers to the use of thinking skills when recalling prior knowledge or making links between new information and existing knowledge then testing new understanding, possibly through communication with the teacher or each other. It also involves the cognitive skills of problem solving or self-assessment. GY addressed this aspect of engagement in his Master's essay.

> *A good teacher has the ability to interest pupils. If engaged they will help to teach themselves... They will begin to question and look for explanations and may share information with family and friends... I want to encourage them to question how the world works.*

Behavioural engagement refers to the active student response to teaching and learning activities and include following classroom rules, participating in class discussion and completing tasks. In his final interview, GY commented:

> *Teachers' with good control seems to be able to cover more academic work and gain more respect from their pupils. They create a good working ethos and a safe positive environment. Being too strict and controlling can dampen their spirit and discourage them from answering questions. A balance between the two approaches is necessary and is dependent on the individual class*. (GY, reflective journal)

AG said that by making consistent effective use of the rewards and sanctions policies of the school, pupils understood what was expected by each teacher regarding behaviour. Both her schools had open and overarching rewards and sanctions procedures, followed by every member of staff. This resulted in more participatory pupils and infrequent non-compliance in class.

Emotional engagement refers to a student's emotional response in the classroom such as interest, boredom, happiness, anxiety and identification with the school environment. AB explained in her final interview that she was not sure what to expect in her first teaching placement.

> *I was nervous about behaviour and whether the pupils would give me respect. They were very respectful. There was some low level disruption initially but I followed on sanctions immediately and it stopped. The pupils appeared to really enjoy my lessons and appreciated how I tried different things to make my lessons interesting. I was always animated and positive and this transferred to them. My form group.... respond well to teachers who have a good sense of humour, are polite, fair and honest and can relate to them.*

AY likes to think she is approachable, smiles often (recommended by Hattie, 2012) and pupils feel comfortable to ask questions. Using appropriate praise and clearly explaining

when things are not acceptable pupils '*know where they stand*' and engage with learning appropriately. '*They know that I will give them constructive rather than negative feedback*'. LA describes the '*joy of teaching'* being when pupils thrive, learn and enjoy being at school. When they are secure and happy in their environment they can achieve to the best of their ability. Fredricks et al. (2004) also correlate positive engagement with higher pupil achievement in school and progress in lessons.

By the end of the training year all six trainees had identified the school practices and structures that would enable them to feel in harmony with their teaching and learning environment. Observing and practising in contrasting schools allowed the trainees to find the approaches that matched their values and beliefs for education and to develop their own approach in the classroom. They all identified with schools that promoted positive learning environments based on rewards as well as sanctions with clear rules and routines, mixed ability groupings at least in the lower school and an independent learning focus and pupil led learning as the norm. Appreciation that assessment strategies should be learning experiences as well as measurements or indications of pupil progress was central to their approach.

> *Independent learning allows for students to come up with conclusions for themselves. It is the journey to the right answer itself where students learn the most.* (AY, Master's assignment)

5. Outstanding trainees have a passion for their subject and strong pedagogic content knowledge

Teaching as communication requires that teachers use multiple types of knowledge (Shulman 1987) as discussed in the literature review section of this thesis.

The trainees in this research study brought with them a wide range of knowledge depending on their prior experiences in educational settings, scientific settings or neither (Appendix 14). Their knowledge of science subject matter was quite narrow in five cases and very broad in one case, with experiences developing the three sciences at some point in her career. While all had experiences of working with children in a variety of community settings, none had spent much time in the classroom since attending school. Their educational, cultural and prior professional background was very different in each case. They were required to develop the pedagogical subject knowledge (PCK) that is essential to transform the content knowledge into forms that are pedagogically powerful and adapted to the variation in ability and background of their pupils.

Before examining how PCK develops it is important to remember that teaching science in secondary school has additional demands to other curriculum subjects including ordering requisitions, managing practical procedures with the attendant health and safety issues, and collaborative working with school science technicians. As I regularly reminded trainees in

those first university sessions, science teachers provide opportunities for young people to experiment with gas, electricity, water and potentially dangerous chemicals simultaneously. Science can be considered to be conceptually difficult and pupils may arrive with alternative conceptual frameworks of understanding that need to be reconstructed (Brook, Briggs, Bell and Driver, 1984). Biology, chemistry or physics specialists are regularly expected to teach across the sciences, to Key Stage 3 without exception and usually to Key Stage 4 with new scientific developments constantly having to be updated. These considerations put additional demands on lesson preparation and production of resources (Lock, Salt and Soares, 2011).

Not one of the participants mentioned the challenge of PCK though all complained about the length of time they spent on planning lessons and preparing appropriate resources, especially early in their training year.

AY reflected that

> *Lesson planning has taken over my life. It is... essential and I would not dream of going into a lesson without one (a plan) but the amount of time each one takes is exhausting. There is so much to think about to make a successful lesson.*

LA agreed with this sentiment. She described at her final interview how she spent hours and hours planning lessons. She was up until the early hours trying to '*get it right'*. Being on a paired science placement enabled her to discuss lessons with her co-trainee rather than feeling she was burdening teachers in the department. AB commented in her reflective journal '*that it can be quite draining, after hours of careful lesson planning to find the lesson does not go according to plan'*. SA did not fully appreciate how long planning would initially take. She learned to be extremely focussed on '*how you are going to do that in an outstanding way'*. She included in her reflective journal that it was about '*getting the resources to suit her plan rather than the other way round.'* The turning point for each trainee came when they realised that once the teaching objectives and learning outcomes were established the appropriate resources and activities followed. In the early stages of planning some trainees in the cohort thought of their reservoir of resources first and then tried to make the lesson fit around those. Research suggests that it is helpful if teachers are explicit about their learning objectives and share them with pupils in a way that pupils can understand (ARG, 2002; Black et al., 2003; Clarke, 2005; Wiliams, 2011). 'Modelling' or showing pupils what a good response might look like and involving pupils in active dialogue and self and peer assessment were strategies used by all the participants to demonstrate pupil progress throughout lessons, as described in the previous section. However, trainees needed examples of constructive marking guidance to use with pupils and were initially dependent on their mentors and colleagues for access to such materials.

LA found that her first department were not good at sharing resources. Everyone had their material in their own IT area and she had to ask to access it. Departments that were well

organised with schemes of work and exemplar lesson plans on their intranet system offered a starting point for trainees. They could use the plans immediately though every participant described how they modified the plans and available resources to suit their style of teaching.

SA described the lesson support in her first placement as superb.

> *My school has excellent intranet set up for school staff, with an amazing amount of resources for things like starters, plenaries, interactive activities etc., all of which help to make a teacher's life so much easier. There is also a place where there are a number of different categories that reflect the standards produced by OFSTED, for example differentiation, learning assessment, classroom management etc. Also under each section there is a list of the staff who are particularly exemplary in this area and who you are encouraged to go to talk to. I thought that this was a brilliant idea and incredibly reassuring that you are able to approach people in order to help you.*

This is a long way from LA and GY's experience of feeling a burden to the department and to the school. Feasey (2006) states that the school and department ethos is an important aspect of developing a creative and innovative learning environment. Creativity and engagement of pupils is more likely to be fostered in an environment where pupils' achievements and creativity are celebrated at every opportunity, pupils' work is proudly displayed around the school and links with industry, clinics and environmental agencies are developed. Clubs, fairs, science weeks and awards schemes should be part of the extra-curricular enrichment promoted by all the teachers in the department. The Head of Department should actively sanction creative practices. The same is true of developing teachers. If they are surrounded by positive role models who encourage them to use and develop existing resources in a creative way and are openly available for advice and discussion, they will know how to present an engaging learning environment for their pupils. Oliver (2006) states that if learning is fun and pupils have opportunities to be creative, the experience of learning becomes memorable and can facilitate higher-order thinking skills, enabling difficult concepts to be tackled. Having a variety of tried and tested lesson plan suggestions and accompanying resource material available in the department, enabled the participants to focus on their interpretation of how to develop PCK for the topics they were about to teach.

Three trainees completed SKE course prior to starting their PGCE year. SA said at interview at the beginning of the course that the long SKE '*brushed off the cobwebs and got her thinking about lesson delivery'.* She was already becoming familiar with PCK. AB reported

> *The SKE course was very good as it covered chemistry, physics and biology. That gap between university and teaching was perfectly filled with the SKE course plus it was*

essential to prove to myself that I want to go into teaching. (AB interview at the beginning of the PGCE course)

The two trainees who attended shorter SKE courses and in one case no SKE course at all, had target areas to work on during the summer preceding their PGCE course. They had SKE audits with identified areas for development which were discussed at interview and revisited during an early tutorial with their subject tutor in the first week of starting. AG reported that she had begun her revision schedule during the summer holidays.

I believe that in order to promote learning within your classroom good understanding of the subject you are planning to teach is essential. Using critical reflection when filling in my subject needs analysis, I took measures to revisit, revise and improve my knowledge in identified areas. (AG, reflective journal)

When asked about how their content knowledge was developed across all three sciences their answers identified four routes. Firstly, the university sessions incorporated subject knowledge, topic specific knowledge and pedagogical content knowledge. There were subject specialist tutors for all three sciences that they could ask for advice and help.

*I remember the novelty of everything; of planning lessons at university and using a circus of experiments, the cosmic balls and many different resources we shared from the KS3 presentations. Being able to watch ourselves on video with our tutor was very valuable. They saw things that we did not and started with the positives; we looked for the negatives. (*LA in her final interview)

AB also lauded the support sessions at university '*which were very useful as they combine subject content development with how best to teach it'.* All participants remembered particularly enjoyable subject pedagogy sessions which they adapted for use in their own classroom including making aliens out of modelling clay to illustrate adaptation in biology, using highly reactive potassium and sodium to demonstrate characteristics of alkali metals in the periodic table and modelling with role play when explaining the flow of electricity in a circuit. The underpinning content was explored in an engaging way. They were developing topic specific pedagogy.

Secondly, their collaborative sharing of resources and ideas as a PGCE science cohort using 'Facebook' and 'Dropbox' accounts were maintained throughout the year and into their NQT year.

The PGCE network was particularly helpful for sharing ideas. (AB final interview)

Thirdly, they used revision guides and internet websites for self-study including the Times Educational Supplement (TES) and the resources from professional bodies such as Institute of physics (IOP), Royal Society of Chemistry (RSC), Institute of Biology (IOB) and Association

for Science Education (ASE). All six of the participants attended a Field Studies Council (FSC) run weekend for an ecology input.

> *I am becoming more and more creative. I take something from the TES website and modify it to suit my style*. (AY, reflective journal)

AB reflected that her subject knowledge had developed so that it was consistently good.

> *I use the internet and textbooks to read up on topics I am not sure about and will always ask for help.*

The fourth very important input to PCK occurred through their school experience. Here they were able to combine theory and practice by observing specialist teachers and discussing lesson plans with their mentors and class teachers prior to teaching each lesson. The preparation was most intense at the point of having to teach the topic.

My findings support the research results of Lock, Salt and Soares (2011). This research was devised to provide insight into the acquisition of subject knowledge that takes place alongside the acquisition of more general teaching skills during the training year. Lock, Salt and Soares (2011) found that science subject knowledge and topic specific pedagogy (TSP) usually took place within the university and less so in the teaching practice schools. They found that trainees tended to focus on areas of subject knowledge weakness only when required to teach those areas. They reported trainees employing textbooks for pure science knowledge while drawing on the support of experienced teachers and university tutors for TSP.

However, the participants in my study all had at least one school experience where there was an emphasis on discussing and developing PCK by mentors and class-teachers. Whether this practice was instigated by the curiosity of the trainee or whether this was specifically incorporated in their school training is not clear. On a school visit to AB, I witnessed her mentor encouraging her to explain what she thought were the main principles of the topic for the pupils. The resultant consideration of common misconceptions held by pupils was very illuminating and became central to future planning. SA was involved in departmental discussions when developing new schemes of work. PCK was central to this development.

> *An in depth and comprehensive knowledge of your subject is essential. Added to that you have to know two other specialist disciplines to such a degree that you have to be able to explain scientific concepts in a way pupils will understand.* (AY Master's assignment)

Rather than being daunted by teaching unfamiliar topics, all the participants enjoyed the challenge of teaching new things. AY, a chemist, particularly liked to embrace new topics in the other two sciences. She included in her CEDP answers;

> *I am enjoying teaching new topics to my classes. It gives me the opportunity to develop my subject knowledge and to try new practicals and activities. Sometimes I discover that I prefer one topic to another or that there is one aspect that is conceptually difficult and then the challenge is to present it in an accessible way. When it is the first time I have taught a topic it is trial and error. I enjoy discovering new things about myself and my teaching style. For example, I really enjoy teaching solar systems but other aspects of KS3 physics I find intrinsically tedious so I have to find exciting and fun activities to keep both me and the pupils interested.* (AY)

During the final interviews all trainees expressed a passion for their subject.

> *I have a strength for making my subject interesting. I really have a passion for many areas of science and I try to relay this whenever possible I can use my subject knowledge to make interesting and engaging resources, I felt proud leaving classes at the end of my placement more interested in science than when I started teaching them. (*GY)

> *I have a passion for my subject. I can relay this knowledge to my students and inspire them to want to take science further. I want them to exceed their own expectations and realise that they can.* (LA)

Finally, though they all acknowledged the importance of good subject knowledge they felt it was irrelevant if the teacher could not transform that knowledge into a form that pupils could comprehend. "Teaching and learning involves teachers and pupils constructing shared meaning and understanding of the content to be learned with purposeful communication" (Bell, 2011:29)

> *More important than the subject knowledge is the ability to explain at the correct level for your pupils. (*AY interview)

> *Comprehensive SK is of fundamental importance. However effective teaching requires the teacher to transform the knowledge of the subject into suitable tasks that lead to learning. The greatest authorities in the field may not be the most effective teachers if they are not able to relate their experiences in a suitable way.* (LA Master's Assignment)

In summary, all six outstanding trainees had a passion for their subject which they wanted to share with their pupils. They enjoyed researching and planning in depth to provide engaging interactive access to the materials through a variety of learning techniques. They developed subject content knowledge alongside pedagogical content knowledge throughout their training experience. This development is succinctly summarised by SA in her reflective journal.

> *Once you are au fait with the subject content, the structure of each lesson should have a creative, unusual starter. Learning objectives should be differentiated and relevant. I encourage and promote independent learning to provide the skills and strategies to work through problems on their own.... they must be encouraged to take risks in reaching a conclusion in a safe, non-judgemental environment. There is regular interaction in groups or with individuals to facilitate learning. The plenary allows the pupils to consolidate learning. Most important of all they must enjoy their learning and want to find out more.*

In their CEDP document and final tutorial, they all felt that their subject knowledge was good in all aspects of content and pedagogical application but they saw the need for further CPD opportunities in the year to come. Lock, Salt and Soares (2011) found that nationally, science trainees felt there was a need for focussed generic development of pedagogy in areas such as assessment and behaviour management, with physics knowledge acquisition featuring strongly as a subject specific need. The participants in my study suggested a range of CPD foci for their future professional development. SA would appreciate more experience working with Learning Support Assistants (LSAs) in an attempt to learn from their expertise; Both LA and AG regarded experience of involvement with extra-curricular activities specific to her school requirements plus being solely responsible for a form group. AY agreed and was looking forward to the reality of being a form tutor and being in school for the full academic year. She was excited about being involved in all the events she missed out on such as sports day, Christmas productions and Year 11 leavers record of achievement assembly. Extra-curricular opportunities develop professional relationships with students outside the classroom. Though she had taught physics to GCSE (she was a chemist) she wanted to be completely confident in teaching the entire subject and seeing concept progression from year 7 to year 11. To work alongside a physics specialists was one of her priorities. AB and GY wanted more experience with A-level teaching and would welcome working with subject specialist on sections of the A Level specification. AB also felt she could contribute to school CPD sessions by sharing her experiences on the SEND placement she participated in as a third placement.

> *The joy of being a teacher is that in ensuring that your pupils are developing academically, emotionally and socially you grow as a person too. This really is a career which encompasses life-long learning.* (SA reflective journal)

6. Outstanding trainees are well organised with effective time management skills

The most commonly cited barriers to retention of good teachers are workload, new challenge, school situation, personal circumstances and salary, with "workload by far the most important and salary the least" (Smithers and Robinson, 2005: iii). All six participants found the workload immense, especially during the early phases of each school experience. The sheer volume of tasks and requirements in a new setting plus the demands of university work were cited as very challenging. SA wrote in her reflective journal;

> *My biggest personal challenge is when trying to do everything at once. When my first assignment came in and when there were problems with the ICT system...at the same time producing 4-5 lessons a day... you cannot make them all outstanding. Most are but not all. You have to show lesson plans to class teachers in advance and give requisitions to the lab techs; some say one week in advance and others say 48 hours which is easier. I have developed high structure in my working life. I am very focussed on time management as being a mature student with a family, while completing further degrees has meant developing good organisational skills.*

This was reflected in AB's comments in her reflective journal towards the end of her first practice.

> *One of the biggest challenges is managing my time to plan lessons, mark work and complete the university based work. I am trying hard not to get totally absorbed into the demands of teaching and make time for myself and my family and friends.*

All acknowledged the importance of being well organised in order to utilise their time efficiently both in school and at home.

> *Teachers are working in excess of 50 hours a week. Getting the work/life balance correct can be difficult when the amount of work you have to cover is vast. Good organisational skills allow for work to be quickly and proficiently completed allowing teachers the time to relax. A relaxed, happy teacher makes for a stress free productive lesson as well as making you confident about going into the classroom to teach.* (AY reflective journal)

The participants felt the need to have their planning sequences and teaching resources at hand at all times. This was potentially difficult as trainee teachers often used many different classrooms as they were taking classes from a variety of teachers. They acquired a personal container which carried all their everyday materials, for example, scissors, pens, glue etc. At the end of each lesson they loaded all their books and materials back into this box so that they could keep track of their things.

> *I like high structure. Everything has to be precise and I like to know how things are to be done. I need where things are and I need to be organised personally and professionally. I do get anxious but if I know everything is in place then it de-stresses me.* (AB, final interview)

One trainee preferred to keep all her documentation electronically. She could not organise hard copy and would *'lose bits of paper'* that were given to her at university and at school, so she asked for electronic copies. She considered herself as a low structure personality type. Fortunately, everything was logically managed and displayed on her computer. She worked through the school Smartboard system in the classroom and did not print off lesson plans unless being formally observed, though they were detailed and appropriate. She was

well organised in her record keeping and marking schedule and also had her resources box mainly to ensure she kept her laptop and personal effects to hand.

Wellington and Ireson (2012) outline how ICT can enhance science teaching through the use of a multitude of applications including word-processing, desktop publishing, database and spreadsheet use, data-logging simulations, modelling and multimedia of all kinds. However, they warn that the authentic and appropriate use of ICT in science must be governed by the teaching objectives and learning outcomes and only included as "value-added" activities (2012:256) for enhancing the learning. AG was aware of risk involved in keeping everything electronically. IT failures in the laboratory in which she was teaching and temporary software corruption left her without any accessible resources for part of her teaching day. Fortunately, her creativity and use of departmental hard copy materials enabled her to continue teaching effectively. ICT can enhance teaching and learning but it can have its drawbacks.

> *I don't like planning to a rigid structure and having to write everything down. Once I know my learning outcomes and how I will assess these, the rest just comes as I am teaching* (AG, reflective journal)

In summary, the trainees appreciated the importance of using time effectively. It made them more efficient and productive, allowed them to plan long term. Being less anxious afforded better job satisfaction and gave more time for themselves.

> *I had a lot if free time in first placement. I did everything at school before I went home. I like being organised and having everything to hand when completed especially as I had a long commute home, I knew I would be very tired when I got home.* (AY, final interview)

7. Outstanding teacher exhibit resilience in times of personal and professional crisis

Resilience is a characteristic that has been regularly discussed during the PGCE year. The necessity to identify personal strengths and areas for development and how to cope in times of challenge is an integral part of their Professional Development Plan (PDP) resulting from the research work of a colleague within the education department (Gordon, 2015). Resilience has been defined as a dynamic process encompassing positive adaptation within the context of significant adversity (Luthar, 2006). Individual challenges with particular classes or individual pupils have already been mentioned when discussing how reflective practice allowed AY and AG to resolve specific problems in the classroom.

If the co-constructed timelines for all six participants (Appendix 16) are analysed considerable dips in confidence are apparent for all trainees throughout their journey, but all experienced a dip in the Foundation Phase of the PGCE year (Appendix 15). That first

term is very challenging and requires weekly monitoring through both mentor sessions at school and submission of the reflective journal to the university tutor, which facilitates potential issues being identified at an early stage. “Successful teaching ..... depends on teachers establishing close bonds with people around them and on creating working conditions that make emotional understanding possible” (Hargreaves, 2000: 811).

Hargreaves (2000) uses the term ‘emotional understanding’ to refer to the ways teachers, pupils, colleagues, parents, mentors and tutors read each other’s emotions; developing this understanding usually requires a strong, continuous relationship. Emotional understanding is an aspect of caring as a teaching practice and the expression of caring, in either words or actions, to pupils, colleagues or family may be termed support. Each participant had incidents suggesting that emotional understanding had not been established and further support was required.

In AG’s case she was dissatisfied with school mentor support and a lack of empathy of the school staff. There was an ethos of competitiveness and unpleasantness to colleagues ‘*behind each other’s backs’*. However, she found the pupils were eager to learn and responsive to her style of teaching.

> *In the classroom I was myself but outside I was quieter than I would normally be. I learned from MA (co-tutee) and his mentor who set targets with me each week and the class-teachers gave good feedback when I asked for it. I had to be proactive and self-sufficient. I called for my university tutor to visit as early as possible and shared my concerns.*

In LA’s case there was a dissonance with the ethos of the first school placement. She found the pupils challenging and the demands made by the department crushing and did not enjoy her time at the school even though the mentor was extremely supportive.

> *This was the least confident I have been in my entire life. It was largely the ethos of the school and the behaviour of the pupils. The department were very diverse in their approaches and had their own way of doing things. Their expectations were very high in the light of the achievement of the pupils. The infrastructure was not in place for a novice.* (LA Interview)

LA persevered and worked with her co-trainee on placement with her, discussed her issues with her mentor and tried to please the various demands of her school-based colleagues. She was surprised to receive thank-you cards and positive evaluations from her pupils at the end of the placement. She had made a positive impact on them and had possibly been over critical of herself and unrealistically idealistic.

AY had a bottom set class with low expectations when she started to teach them.

> *They were a challenging class with a mix of personalities and abilities which made them difficult to teach. The first few lessons were the hardest I have ever taught. I had little control over them and was unsure if they had learned anything. However, over time, I adapted my teaching style to suit them, differentiated my resources to suit their ability, gave each of them a personal senses of achievement and slowly they began to listen. I think because I was always patient and positive with them when they began to want to answer questions to receive positive praise which I willingly gave out, and something they rarely got in other lessons.*

AY also had to face a colleague who took her criticism of AY straight to her mentor rather than discussing it personally.

> *I had to face her and ask her to speak to me directly. It was a bit awkward but I dealt with it appropriately according to my mentor. (*AY, interview)

This was an example of an experienced teacher who did not want to have a trainee taking over her class. Rather than collaboratively working with the trainee she criticised and was negative about AY's approaches to others in the department. Sometimes individuals can feel threatened by less experienced trainees who appear to be more successful with the class they have taken over.

GY experienced a bereavement and simultaneous ill-health of close family which affected him emotionally. This coincided with poor mentor support and caused him to consider leaving the course. He discussing his misgivings with his Head of Department and other colleagues in the school and called on the support of his university tutor to put issues in perspective.

> *The rest of the department were very supportive. They invited me to their meeting and I felt part of it. I became familiar with the behaviour policy, the assessment demands and I felt included. I taught the full range of classes, including year 12, and the teachers gave me pointers without dictating how I should teach. I just got on with it. My confidence grew, I developed a routine and I felt I was getting better and better.* (GY, interview)

In two cases, negative emotions were not a result of issues with school-based colleagues or pupils. SA and AB were both making excellent progress at school, however they both failed their first Master's assignment. Neither participant had ever failed academically before, they found the outcome personally demoralising, especially as their school reports were so glowing. Shapiro (2010) suggests that part of a teacher's identity is constructed on feelings such as guilt when outcomes do not mirror perceived input. However, both trainees resolved to remedy the failure by attending university support sessions and noting and implementing the individual feedback for improvement. They resubmitted and passed the assignment once the foundation phase was over.

In each case the participants were aware of the complex web of relationships between pupils, school-based and university-based colleagues and the importance of being included in the communities of practice in schools (Bell, 2011). If issues could not be fully resolved such that professional and personal identity coincided, coping strategies were put in place following reflective practice and constructive discourses with appropriate individuals. They rarely over-reacted and had a calm, measured manner about them, both at university and at school. The outer persona sometimes masked inner anxiety though they would usually share the anxiety with their mentors and tutors and always with each other. This resonates with Danielowicz's (1995:3) identification of "multiple, often conflicting identities" which are a result of dynamic interplay between discursive processes that are internal to the individual and external involving everyone else. Many discourses are multiple and simultaneous and can be hierarchical as in the case of reflective discourses with mentors compared with social discourses with each other. The science PGCE cohort developed a strong cohesive emotional bond and had strong support networks providing a collective identity based on friendship and emotional support. GY stated that he loved talking about teaching with his peers and how they '*picked up'* on each other's feelings. LA reflected that the network of friends was reassuring. *'Talking about our different situations and how we dealt with them was very rejuvenating'.*

> *The connection with university throughout the placements through the Facebook page meant I was offering help to others and we were supporting each other, emotionally, organisationally and professionally with lesson ideas and resources. (*SA, Final interview)

The ability to be resilient in times of personal or professional crises is interwoven with strong professional identity as a teacher.

8. Outstanding trainees have strong professional identities as a teacher with defined personal goals for the future

The development of the beginning teacher is influenced by social and emotional practice as well as cultural and ethical considerations in a political context. The six trainee teachers in this study had developed strong professional teacher-identities by the end of their training year. They could articulate their perceived "core identity" which described their stable characteristics; their "personality layer" which relates to how they wish to be perceived by others and the surrounding world and their "layer of preference"', described by Illeris (2014: 73) as how they behave in various kinds of everyday situations.

GY described himself as an actor in the classroom putting on a mask of confidence. He assumed a more extrovert personality in order to be more interesting and also to feign being tough minded which he intrinsically was not. Goffman (1959: 32) uses the term "presentation of self" to suggest that individuals have desires "to be" and "to be seen to be"

someone or something. This resonates with Marland's (1975:71) premise that all teachers are "performers" and Bourdieu's (Jenkins, 1996:71)) description of the context of social life and the individual's participation in it as "improvisational". This trying out of different presentations of self is part of the identity-making process which is constructed between the relationship between self-image and public image.

GY quickly discovered that he needed to be firmer with the pupils, using the school rewards and sanction policy, though once he got to know his pupils he developed a relationship based on humour and kindness. He produced interesting, well resources lessons and was knowledgeable about the subject content. He showed he cared for his pupils by quickly knowing their names, addressing their learning needs and offering his time in revision sessions and getting involved in extra-curricular activities.

> *In my first school, my personal and professional identity matched. I am adaptable and if the confidence is an issue I feign it in front of a class. At this point I was never that confident to do anything extra for example if I saw a pupil running in the corridor and I did not know them I would not do anything. My professional identity as a teacher was not complete. The mask was fine in the classroom where I knew the pupils but not so easy outside.*

Interestingly GY wanted to start teaching immediately he started his placement. After a few lesson observations he wanted to try for himself.

> *Pupils regard you as the person who is hanging round at the back and it takes the power away. I did not want any of the transition I just wanted to get going.*

Once he started teaching and planning his own lessons he felt elated.

> *I love being in the classroom and really enjoy teaching. I am gaining in confidence and becoming more creative. What I learned at university has been very beneficial .... it has given me a toolkit to use in difficult circumstances. The safeguarding issues and behaviour management sessions have been very useful already.*

By the end of his second placement he had grown in confidence and had a clear evidence of his progress.

> *I am becoming an effective teacher inside and outside the classroom. I am part of the school community. My progress has been affirmed by my colleagues, my university tutor and the external examiner so I must believe them. Also the pupils are appreciative, especially the exam classes I took on when a member of staff took stress related sick leave.*

GY believed strongly in facilitated learning practices in the classroom. Specific tasks had to be covered before the end of the lesson with pupils working at their own pace plus extension material for those who were ready to move on. He felt he relayed a passion for his subject by using a variety of techniques to capture pupils' imagination as advocated by

Hattie (2012). He wanted them to exceed their own expectations and realise that they could. He was a reflective practitioner, a good communicator, had excellent pedagogical content knowledge and cared deeply about the pupils in his care. He believed in mixed ability learning grouping, positive reinforcement rewards systems and individual learning opportunities

> *I accepted a post in a school that a colleague has already taken a post in. I get my own lab, GCSE and A Level classes. The principles of the school have an emphasis on mixed ability and rewards and positive reinforcement and individual learning opportunities. I did not hear anyone shouting at their class when we had a tour of the school. I think I will be happy there.*

He took his first post in a local Catholic, coeducational school that had achieved an outstanding Ofsted award. He asked for additional responsibilities at interview, wanting to get involved in the Duke of Edinburgh scheme. His longer term goal was to become a mentor as he believed he understood the requirements of strong mentor support. In his final interview with me he was excited, anticipatory and already preparing for his NQT year.

SA was a mature trainee who had a very successful career prior to her ITT training year. She described herself as '*extrovert, tough-minded and very creative'*. *'I like to use drama, raps, poems, songs, role-play and music for a much more holistic approach to teaching and learning'*. She exhibited high structure and was extremely confident both inside and outside the classroom. Wellington and Ireson (2012:5) agree that one of the great arts of teaching is to be able to explain things in terms "pupils can understand and without distorting their meaning". Teachers acquire a whole "armoury" of techniques to aid comprehension, planning that if one does not work another will. This 'wisdom of practice' (Shulman, 1986: 9) develops over time. In the case of SA and the other study participants it developed very quickly aided by being exposed to "concrete images of innovation and alternative teaching methods" (Santagato, 2007:125) at school and university.

> *I have always been a very confident person and have seen myself in positive light and done things that others might not want to do. I have the confidence to try new things in the classroom and this has increased because the two schools I have trained in have given me free rein and allowed me to blossom. I can try things out and consider what works and what doesn't.*

As a mother of a teenage child she was aware of the pressures young people of today experience.

> *The pupils are doing much more adult things that they can cope with. I just had to accept that this goes on. You do have to pick your battles. The background that some pupils have come from was quite tough and though I would not accept bad language in my classroom I could not send the whole class out each time so I had to make it*

clear that I would not accept that sort of language. You instilled your expectations on them rather than you gave in to their demands.

SA focussed on the learning rather than the teaching from very early on in her practice. She had good role models and learned from them very quickly. The school mission statement revolved around developing the whole child and instilling independent working confidence from year 7. She thrived in this environment and regularly produced outstanding lessons which more experienced colleagues would go to observe.

I tend to use facilitated learning and pupil led learning in all of my lessons now; although it takes a lot of resource building, differentiation and familiarity with your pupils it does mean that the actual lesson time runs itself and I am able to check on the progress and overall abilities of my students. I also find that they really enjoy the independence and flourish in this sort of environment, however you do have to make sure that your behaviour control is in place first in order to do this type of lesson.

She was described by her mentor as a very effective teacher. Pupils knew what was expected of them and though she could appear intimidating, they knew she cared from the excellent resource material she produced and the care she showed regarding individual progress. SA fitted Hattie's (2012:23) analysis of a "powerful, passionate, accomplished teacher" who focussed on ways of developing thinking and reasoning that emphasised problem-solving using teaching strategies relating to the content she wished pupils to learn. She embodied the caring practice identified by Bell (2011) as a teacher's responsibility. This caring goes beyond displaying kindly emotions towards pupils but uses knowledge and skills for the betterment of pupils including high expectations and the attainment of learning goals (Goldstein, 1998)

I think that one mistake that new teachers often make is in thinking that they need to get the class to "like" them; however, I feel that my job is not to be "liked" but to improve the life choices and chances of the children entrusted into my care by educating them. Some of this education involves modelling exemplar behaviour which is particularly pertinent if they have little opportunity to experience this outside of the classroom. I am also a firm believer in positive praise, catch them being good and reward accordingly. In doing this I find that my pupils are generally engaged, motivated, adopt good appropriate behaviour and we have a positive relationship built on mutual respect and trust.

Her aims for the future were predictably high.

Getting a first at uni was what I was aiming for. I want to be a deputy head within 7 years and get a Headship soon after. I want to be outstanding and I am highly competitive. I always set myself high goals. I would like to mentor in the immediate future. I think that would be a good way to share my skills.

AB taught in three very challenging environments. Her first two placements were in socially deprived areas and her third placement was an enrichment experience in a SEND school at the end of her consolidation phase. She felt passionately that she could make science accessible to all pupils.

> *Some pupils can't learn in a particular way and so I have to teach in a variety of ways. I have to cater for their needs. It has resulted from both pedagogy and observing experts in the classroom. I am becoming more creative with each placement.*

She was a shy person who had to put on a mask of confidence in the classroom (Goffman, 1959). She cared deeply for her pupils and wanted them to realise that she cared for their well-being (Bell, 2012).

> *How a teacher portrays themselves in the classroom is fundamental in influencing what values and ethics are instilled into the students.*

Her initial reticence disappeared as she progressed through her training year. Her reflective journal was particularly considered and she analysed daily events, feedback from her colleagues and the underpinning pedagogy very critically each week. As emotions play a role in learning, Boud (2001) emphasises the importance of examining successful phases or learning rather than focussing on negative events. It is not professionally effective to dwell exclusively on difficulties and errors. Brookfield (1987) reminds us that positive experiences provide opportunities for sudden insight or self-awareness and these events are fulfilling and illuminating. Initially AB's reflections started with negative considerations and she had to be shown how to identify strengths first and use her areas for development as building blocks for progress.

> *Reflecting on teaching has been shown to be important for purposeful, professional growth and learning. You need to be able to think outside the box, innovate and take risks. It is interesting that teachers tend to self-criticise after a lesson rather than thinking about what went well. We need to acknowledge our achievements.*

Her modest, caring and reflective approach made her a good role model for pupils and peers. By the end of the training year she was able to evaluate her lessons constructively and believing the positive praise from her tutor and mentor.

> *The ability to be an outstanding teacher is the capacity to engage in critical reflection. This process of systematic reflection, both within the lesson and after it, gives us the capacity to gauge whether the lesson has been effective, whether pupils have learned anything and what we can do to improve the quality of our teaching next time. Reflective practice empowers and informs us on how to develop personally and professionally.*

She wrote in her final reflective journal entry:

> *I feel so comfortable around pupils and really enjoy teaching. I feel also comfortable with my subject knowledge. I wish to inspire students to love science through my enthusiasm in the teaching of science.*

The transition from personal self-doubt to professional confidence in her identity as an effective teacher was reflected in her thoughts on career progression. Aiming to gain Excellent Teacher Status and ultimately lead a strong science department she had a clear future focus.

In contrast to AB, AY was extremely confident from the first day. She wrote in her reflective journal,

> *Both personally and professionally I am very confident. I am an extrovert and am quite optimistic and positive in the classroom. All my colleagues have told me this. By the time October came I was raring to go and felt excited rather than scared. I was ready to go.*

She had excellent interpersonal skills and built supportive networks in each school and at university.

> *Teaching is very stressful and you need to get on with your colleagues, have a joke with them and relax with them. As a science group we were very tight knit even though we had a diverse intake of backgrounds, ages, and cultures. You have to take responsibility for your pupils so you have to be responsible yourself. Being pro-active is very important.*

Her lesson observation reports commended her creative and flexible approach. She was able to differentiate effectively and pupils she taught enjoyed science and felt they were making progress. She was able to relate to pupils outside the classroom and her '*teacher identity*' was strong. When visiting her in school, pupils regularly stopped her in the corridor on the way to her lessons to ask questions or share pieces of information. Fuller (in Mercier, Philpot and Scott, 2013) found a high correlation between job satisfaction and working relationships with colleagues. These social interactions produced the crucial relationships for new teachers' professional identity and role. AY was an integral part of the school community from very early on in her practice. She wrote in her first assignment:

> *There are many things I believe are essential to being an excellent leader of learning, one is being more than just a teacher but a role model which can be achieved by successful behaviour management. Creating the perfect environment for your students to learn allows you to set high expectations for them which they believe are attainable. You must inspire and motivate whilst taking into account the individual*

needs of students. More important that subject knowledge is the ability to explain it in the depth that is suitable for the group being taught.

AY wanted to explore the pastoral route of career progression. She felt her strengths lay in supporting the personal development of her pupils. Interestingly she expressed a desire to rediscover a research focus in her teaching. She had struggled with her Master's assignment, not with the ideas and pedagogy but with the interpretivist approaches to communicating findings. Like many science trainees her comfort zone was in the positivist paradigm and she had to adapt to interpretivist, qualitative requirements of the assignment.

LA was a mature trainee teacher who had a successful science related career prior to her PGCE year.

Thinking of my personal and professional identity with students and with colleagues it is not too different. I pretend to be more extrovert than I really am in the classroom.

As with the other participants reflective practice enabled LA to develop professionally.

Reflective practice is very important. Towards the end of the practice I felt trusted by the department. They gave me flexibility and freedom to adapt my own style and teach how I wanted. It has given me a glimpse of what life will be like as a full-time teacher. I took over a class at short notice and gave a successful lesson. I would never have had the confidence or knowledge to do this at the beginning of the placement. I am developing into the teacher I want to be.

She was particularly interested in developing practical work in science and felt it was an important dimension in science teaching. She stressed the importance of trying out procedures in advance and focussed on safety protocol before commencing any practical in the classroom. She realised the importance of forward planning and organisation when leading a Year 12 field trip. The subject knowledge preparation, the health and safety demands and the logistics of getting them to the site was a steep learning curve. These experiences are additional operational burdens in science teaching and trainees must develop confidence in these areas. However, it is well known that children value out-of-school experiences in helping them learn science. A study by Cerini et al. (2003) found that pupils rated going on a science excursion as the most enjoyable and fifth most useful, effective strategy for learning science out of eleven strategies given. Braund and Reiss (2006) contend that if you want your pupils to make sense of the world around them, then working on science outside the classroom is vital. Even though a Field Studies Council led field trip had been enjoyed as part of an enrichment opportunity at university, few teachers would have the confidence to organise a Year 12 field trip in their training year as she did.

Having struggled with low level disruption in her first school experience, LA gained confidence in her second school. She felt her professional identity and that of the school matched and she felt comfortable and was able to develop as a teacher. She wrote in her reflective journal,

> *Behaviour management is a pleasure and pupils show respect. I have defined my expectations at the start of each lesson and consistently upheld them. There is a zero-tolerance policy on most offences so the pupils know where they stand. As you are not worrying about behaviour you can concentrate on the learning, enjoy humour and banter. This is what I enjoy most about teaching, building positive and enjoyable relationships. I am enjoying myself in my lessons and the environment is ultra-supportive.*

Her summarising paragraph in her reflective journal was,

> *I have a genuine desire to see students thrive, learn and enjoy. The greatest motivation is doing their best for pupils. This is the joy of teaching. I am a teacher who is passionate that all students are secure and happy in their environment so they can achieve to the best of their ability, grow and develop healthy relationships and attitudes and develop the life-skills necessary to become valued members of any community.*

LA wanted to become more involved in the school community though choral and music opportunities as well as out-door-learning as part of her biological interests. She had visions of completing her Master's modules quite soon after induction as she had been particularly successful in her assignment submissions. Her long term goal was to participate in ITT training sessions at university. She had been impressed by the visiting lecturers' contributions to her training programme.

One of two trainees who came straight from university onto the PGCE course, AG arrived with a first class honours degree and had a student ambassador role throughout university.

> *Having a first class honours did not give me any advantage as an effective teacher. You have to relate to the pupils and be able to explain concepts logically and at the right level. The school liked my degree classification but it had to match what happened in the classroom. Good subject knowledge is important but you can't know everything and you have to learn from your mistakes and admit if you don't know something.*

She was knowledgeable in her subject and quietly confident in the classroom. She realised that she had '*to be strong as the pupils think they can be your friend and they try to chat about unacceptable things so you have to demonstrate that you are their teacher and not*

their friend'. Being only a few years older than the Year 12 pupils she was teaching meant that she had to establish a rapport through modelling her expectations.

> *Building a rapport is essential to establish mutual respect. It is related to positive classroom behaviour, which can be aided by using humour and finding out about the interests of the class. We must encourage an enjoyment of learning. To effectively lead learning there must be co-operation between the teacher, the parent/guardian and any other important figures in the child's life. Situations must be approached with compassion and open mindedness.*

She was considered by her colleagues as extremely creative and used very engaging activities to capture her pupils' imagination and interest. As Oliver (2006) contends, creative and fun lessons not only make the learning experience memorable, it can facilitate higher order thinking skills because pupils have not dulled their emotional responses.

> *In order to make a subject interesting the teacher must be motivating and passionate about their subject. Creativity and innovative methods of teaching help pupils to get involved, ask questions and challenge thinking*.

Though she was reluctant to write her thoughts down she was very reflective and would engage in long philosophical debates about aspects of pedagogy.

> *The critically reflective habit helps us to identify who we are as teachers and grounds difficult decisions in core values and beliefs. An effective leader of learning realises that their professional development is a lifelong process.*

There is a gap in the literature relating to trainees' long term goals and visions of career progression, how they are arrived at and whether they are realistic and ultimately achieved. This could be because the production of a Career Entry Development Plan (CEDP), linking training and induction and perceived career progression is a relatively recent requirement for ITT providers.

The participants' long-term aspirations appear to be influenced by role models they identified with in school or at university during their training. I suggest that SA's ambition to become a Head teacher was linked to her positive view of the Senior Leadership Team (SLT) that she worked with. It was school policy to involve trainees and NQTs on 'learning walks' with the SLT and the Head teacher. Advice was given and received from all colleagues involved. The culture of a collaborative learning community which percolated from the Head teacher downwards was an important influence on her professional progress. Interestingly, the two trainees (AG and GY) who had experienced very poor mentoring support in one of their placements both had professional ambitions to become mentors. AG did take on a co-mentor role with subsequent trainees in her third year of teaching and the evaluations were extremely good. AB worked with an Advanced Skills Teacher (AST) in her department. Daily interaction with a superb classroom teacher fuelled her aim to achieve Excellent Teacher

Status, a role that has replaced the AST role. AY and LA both had goals to continue with a Professional Master's programme. LA because she had been particularly successful in her submissions to date and AY for the opposite reason. She had enjoyed the reading and research aspect that developed her pedagogical thinking but was challenged by the interpretivist analysis and writing up of her findings. This resonates strongly in the science education community (Heshusius and Ballard, 1996).

In summary

From their biographies and reflective journal entries it is evident that these six trainees had a passion for their subject, enjoyed working with young people, built up strong interpersonal professional and personal networks and valued the skills of critical reflection in collaboration with their peers and colleagues. They were resilient, well organised and had developed strong professional identities as teachers with defined personal goals for the future. In her final interview, SA gave a very colourful description of her PGCE training journey illustrated by a pictorial timeline included as Appendix 18.

> *I am drawing the PGCE circus. This is me at the beginning and I come in not knowing anything. I have to develop specific skills at uni from the beginning and I have to get up on the unicycle; I do that but I haven't developed the skills to juggle yet. At the end of school A I have some of the juggling balls in the air and I can juggle and ride at the same time for a bit as I have the support from home, school and uni. By the end I can juggle and ride the unicycle. I will want to be on a unicycle and juggling and on a high wire by the end of the NQT year.*

SA's interpretation of a timeline reflects her creativity in lessons. '*I have always wanted to try different things and that is probably why my lessons are different and quirky*'

Each trainee's journey is unique and offers insights into personal and professional challenges leading to transformational learning (Illeris, 2014) through experience and reflective practice. The challenges were varied, but by reflecting on and verbalising the mismatch between their personal and professional expectation and the lived experiences, they clarified their own values and beliefs. They identified the environment in which they felt they would flourish and used their experiences of dissonance to reinforce their decisions.

The NQT year: Do outstanding trainees become outstanding NQTs?

> *Consolidation phase done!!!! I did it, with lots of help and support from my schools and colleagues, my university lecturers, my fellow students and of course my family. It has been at times emotional; a lot of hard work but always enjoyable...bring on the NQT year. (SA)*

All six trainees were awarded outstanding achievement outcomes (Grade 1) on completion of their PGCE training year (see Appendix 19 for summary details). They all accepted NQT posts in local partner schools with OFSTED outstanding status. Their science departments have employed many ex-trainees that I have tutored in the past. Consequently, on subsequent tutor visits to current trainees I met with all six of the research participants on an informal basis. All six participants had agreed to meet with me at the end of their NQT year to discuss their progress during their induction year. The format was the same semi-structured interview procedure used at the end of their PGCE year. Open-ended questions were sent to the participants in advance (Appendix 10b) to form a platform for discussion. The interview was audio-taped and a co-constructed timeline produced showing professional and personal confidence levels throughout the year. The questions had been piloted in the supporting study (Document 4). Individual interviews were conducted in their schools at the end of their NQT year. The transcribed interviews were analysed using inductive thematic analysis procedures (Braun and Clarke, 2006) as discussed in the methodology section (chapter 3) of this document.

Though the trainees had different experiences in their separate schools, their confidence level across the year was supported or challenged by the following coded categories.

- PGCE preparation; outstanding outcome
- School Ethos
- Induction programme and support structures in school
- Work/life balance
- Personal support networks
- Subject knowledge demands
- Behaviour management considerations
- Organisational skills

The interaction of these categories on the confidence of all individuals supported or challenged personal and professional growth. All participants reported higher confidence

levels by the end of their induction journey though the summary timelines show dips of confidence at different points throughout the year (Appendix 20, 21)

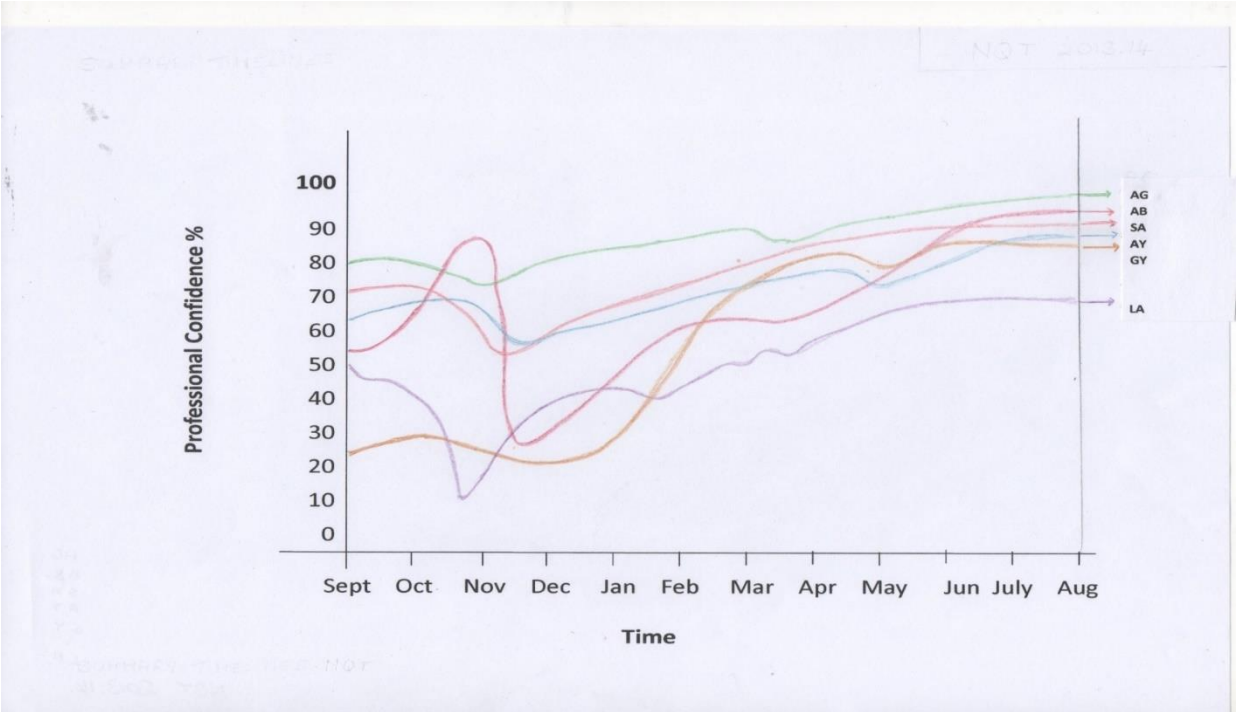


Chart 5.2. Summary timelines for research participants during their induction (NQT) year

The timeline shows that confidence levels for each participant are lower at the start of their professional induction journey and rise as the year progresses. Fuller (in Mercier, Philpot and Scott, 2013) states that the progress of a beginning teacher is influenced by the people they meet, the experiences they have, both good and bad, and their own personality and reflective capabilities. My data shows there are some significant dips in confidence for some participants, especially in the first term. Haggarty and Postlethwaite (2012) also found that the first term of teaching was a particularly critical time in the induction process. NQTs were likely to be facing a "reality shock" (2012:241) in relation to their new responsibilities. McNally et al. (2008:295) state that "beginning teaching is demanding for just about all beginners and is special for each beginner".

PGCE preparation: outstanding outcome

All six participants commented on feeling well prepared for their NQT year through their PGCE programme. This is an important consideration as *r*ecent government developments involve promoting work-based teacher training routes such as School Direct (DfE, 2014b) and Teach First (2014) and reducing core numbers to university based routes such as PGCE. This recent move to centralise teacher training in school runs the risk of reducing teachers' professional knowledge and expertise to a kind of practical applied craft knowledge and to ignore its intellectual and theoretical sophistication. The participants in my study stressed the importance of actively engaging in a process of systematic and informed enquiry. They

intentionally set out to learn from their own experiences by reflecting on them and conceptualising with the help of research insights and theoretical perspectives from university and school based learning. Teachers who recognise that dialogue is necessary between abstracted, decontextualised ideas from educational research and its application to their own socially constructed practice may have the potential to be outstanding practitioners.

AB considered how an outstanding PGCE outcome translated into newly qualified teacher practices. She felt the accumulation of resource material during school-based experiences and the pedagogy studied at university supported her successful approaches as an NQT.

> *The resources and pedagogy I developed from my PGCE year and the suggestions from my mentor really work. All this material has underpinned my practice and given me a set of resources I can develop and work from. I understand why things work.*

Both LA and SA felt that the two contrasting school placements experienced during their training year were particularly influential in identifying their values and beliefs in relation to the type of school they wished to work in. SA commented that,

> *The PGCE year was useful in allowing you to see different teaching environments and schools. At school A they wanted you to be just like them but you can't. You have to find your own style; you can't just copy. In school B there was no support from the senior leadership team. The Head never introduced himself to us and was rarely seen around the school. He did not set a good example.*

Accepting an NQT post in a placement school meant trainees were already familiar with their school and departmental procedures and knew the ethos of the school aligned with their own.

School Ethos

The data revealed that factors relating to school ethos and how this matched the personal and professional philosophy of each participant played a critical role in how successfully participants developed in their first term of teaching. Alsup (2008) suggested that the key to progress in the workplace required a matching of school, department and personal values and beliefs about teaching and learning.

Four of the six participants had taken up posts in one of their placement schools. One of these participants started with a 60% confidence level on her first day. She felt that her challenging first school placement had taught her important behaviour management skills. It also provided a useful benchmark so that when she arrived in her second placement school she knew immediately her own expectations and philosophy matched that of the second school.

The most influential factor in preparing me for my NQT year was that my second placement school was where I took a post. The ethos of the school matches my own. Placement A was a sharp learning curve and gave me an understanding of where I did not want to work. (LA)

The other two participants started in schools they had only seen at interview. GY shared his reservations about starting his new post.

I was not enormously confident at the start as I was coming into somewhere where I had no idea of structures in place or of the procedures or expectations. I felt thrown in as we started on Monday and the pupils were in on Wednesday. I had to get my lab prepared and then get my registers, timetable and classes sorted. However, the pupils were nice and they behaved brilliantly and the staff were very supportive and made it clear that I could ask any of them anything. (GY)

Successful schools acknowledge that continuing professional development is important throughout a teacher's career. They support Steele's (2009) argument that individual teachers can be inspired on some days but not necessarily on all days and maybe not with all pupils all of the time. An environment where it is acceptable to ask for help and share strategies is described by Hattie (2012) as one of the signposts of excellence in education.

School leaders and teachers need to create schools, staffrooms and classroom environments in which error is welcomed as a learning opportunity.....and teachers can feel safe to learn, re-learn and explore knowledge and understanding.

(Hattie, 2012:22)

Within the department, the shared teaching and learning strategies that matched those of the NQT meant they felt comfortable when planning lessons. Collaboratively developed schemes of work with shared resources which gave an opportunity for individual interpretation allowed trainees to develop their own personal style and approach to teaching. The provision of a dedicated teaching room encouraged good organisational skills and the opportunity to create a personalised working environment from the beginning.

The science department is so supportive we can talk about anything. Having my own lab makes a big difference. I can be well organised and can show off my personality by making it colourful and interesting as soon as pupils walk through the door. (AB)

Opportunities to discuss progress with the whole department either through regular departmental meetings or informally in a communal recreation area allowed NQTs to share their positive and negative experiences and see that even experienced colleagues made mistakes.

Colleagues and departmental cohesion is most important. The pupils are a mixture of abilities and characteristics and you learn to cater for their needs with the help of your team. (AY)

A move from a teacher-centred approach to a pupil-centred approach in teaching and learning had been made by all participants during their PGCE year. They all mentioned using strategies that emphasised constructive environments for pupil learning. Returning to Twiselton's model (2004:157) of teacher aspiration of being "concept builder" rather than "content deliverer" was already embedded in their professional identity. Possibly this was one of the distinguishing characteristic between those trainees achieving outstanding outcome awards at the end of their ITT year.

I differentiate my lessons but I teach my triple science group in exactly the same way as my year 10 lower group but I provide more structure. I challenge and support appropriately and must be bang on with my expectations. I RAG charting progress and get them to reflect on their own development. Active learning means pupils being engaged in learning and you do this through your own style. Concentrate on the learning rather than the teaching. (SA)

I started with my top set year 9 with a facilitated learning activity..... It was great to get them thinking and allowed me to work out what they know. It gave opportunity for individual thinking, paired work and group work. (GY)

The Head teacher and the senior management team are responsible for establishing and leading the perceived school ethos and pupil expectation for learning. An ideology based on positive reinforcement of behaviour was found to be most successful in providing a secure teaching environment conducive to learning. Head teachers who had a regular presence in the school and knew their staff (including NQTs) and congratulated them on their involvement in the school community produced a positive working environment and satisfied staff.

The Head teacher would talk to us at our Induction meetings, he knows us all by name and I could take issues to him. He leads the Monday morning briefing and he adds humour and is a nice person and talks to staff and pupils. He leads by example. (GY)

Head teachers who were either absent from every day school life or focussed on negative aspects and procedures did not gain the respect or co-operation of their workforce at any level. In my supporting research study there was an example of negative leadership procedures:

I did not agree with the school ethos that was built on intimidation and fear. It was an autocratic regime with bullying at the heart of it..... Everyone knew why the

atmosphere was so awful but no one told the Head and he seemed oblivious to it. (De, document 4)

Fortunately, within this main study all trainees reported very positive relationships with the Head teacher and senior leadership team (SLT). All schools in this study had 'outstanding' Ofsted reports which reflected excellent leadership qualities which were borne out in the experiences of the participants.

Everyone pulls together and the staff want the pupils to do the best they can. This is the ultimate aim. Consistency of policies and the Head is a very sensible caring man and everyone knows what is expected. They are all pulling the same way. I would send my own family here. (LA)

The quality of the Induction Programme

Trainees reported a well-structured, developmental induction programme tailored to the needs of each NQT in the school was essential to produce optimised progress. Regular meetings with a designated co-ordinating mentor with opportunities for participants to report positive and negative aspects of their perceived progress provided the most contented early career teachers, especially in that very important first term.

The Induction programme was very good with a meeting each week. All NQTs had cake and a whinge and it was important and there was always a session but the chance to moan and let off steam and complain and moan was very important. (LA)

Planned, agreed and targeted observations of lessons by qualified mentors within and outside the subject department should include opportunities for reflection on positive aspects of each lesson observed. A limited number of SMART targets for improvement can be identified with follow up in the central NQT session. It is agreed that regular constructive feedback based on accurate appraisal of classroom teaching identifying strengths and areas for development is an effective way of improving teacher efficacy (Smith and Ingersoll, 2004; Jensen and Reichl, 2011).

There is an observation once every half term by my mentor and HOD and once per term by my Induction Tutor; sometimes joint observations. Feedback was spoken and written so it could be added to my folder. At the end of each observation I was not graded just told what I had done well and what needed improvement and we agreed targets. I liked being treated like a new member of staff. I was never treated like an NQT. (GY)

I had observations about once a month. SLT came in and someone from the borough and I got 'outstanding' in every lesson observation and produced a lesson plan using the school proforma and it was very detailed and I ensured the lesson plan was outstanding. We do learning walks and I observe someone else and will give them

feedback. We have a week of science learning walks and you don't know when they will come in. They might only stay for a few minutes. The staff are really supportive the pupils are generally good and they behave well. I feel I am improving daily. (AG)

One participant felt her initial subject mentor was ineffective. Fortunately, the school had channels for redress.

*The HOD was a nice lady to your face but very disorganised on a fundamental level and maybe delegating things inappropriately. She was our mentor and did not give us any written feedback. We did not learn anything from her. We complained and she was replaced by a colleague who has been wonderful with lots of good ideas and given very good advice. (*LA)

For those NQTs who have prolonged difficulties a series of strategies involving collaborative planning and observation and teaching with the subject mentor (or an identified excellent teacher) should be implemented. Opportunities to teach to their strengths in the first formative year should be available possibly starting with science topics they are comfortable with. Once a positive classroom rapport is established then teaching outside their specialism can be attempted.

I had a very poor relationship with a Year 10 BTEC class I taught on a Friday afternoon. I was unfamiliar with the topics taught. I observed others teaching the group, spoke to their form teacher, developed independent learning strategies and lavished them with praise whenever I could. We never really gelled but we got by. Luckily I was doing well with all my other groups so I knew this was just a blip I had to overcome. (LA)

Providing opportunities to observe and engage with identified excellent practitioners across the school allowed different approaches to be considered. If this was coupled with an open door policy for observation, then mutual support became the norm.

We were encouraged to go to observe other members of staff and NQTs teach. I saw a lesson with NQT MFL and watching the languages teaching with a class I taught. It was interesting appreciating how different subjects were in their approach. (GY)

Time for reflection and opportunities for continuing professional development are very important so providing a reduced timetable, co-tutoring a form and designated subject specialists for advice should be mandatory. Advice on how to establish a work/life balance should be one of the first sessions discussed at the induction meetings.

Establishing a work/life balance

As Amos (1998) emphasised everyone has the same amount of time. It cannot be increased or reclaimed by turning the clock back and it can easily be misused or wasted. Too heavy a workload is given as one of the three reasons that teachers leave the profession within the

first few years, along with stress related work and too much administration (Capel et al., 2013). All my research participants identified problems with a very heavy workload especially in the first term.

> *I leave home at 6.30am and leave school at 5.30pm and it takes me 1 hour and a quarter to travel each way. At some point I will have to leave my lesson preparation in order to do the marking. The stress is enormous especially the marking and I keep up with it by giving up my weekend. If they gave me two periods to mark in I would be fine.* (GY)

> *I got in at 6.30am, left at 6.30pm and worked all of Saturday and half of Sunday. Very full on preparation.....I am pedantic about marking books so never got behind.* (LA)

All of the participants realised that this level of time commitment was not sustainable and in all cases they established a way to prioritise their workload demands and organise their time management skills. Induction tutors should be very aware of the time NQTs spend in school. Discussions analysing effective time management strategies should accompany information on emotional well-being for the whole workforce.

> *Work/life balance is very important to maintain. I come in at 7.30am and leave at 5.30pm and try to get everything done here but to begin with weekend work was necessary. Working SMART is important. Now I try to limit my weekend work.* (SA)

> *I am now not working on Saturdays or Sundays as I have lost Year 11 and some Year 10 groups so workload is much easier. I had previously rejected social offers on week nights and now I was turning down outings at weekends. My flatmate made me realise I needed to shift my priorities.* (LA)

There has been growing attention to the place of the personal element in the process of becoming a teacher (Flores, 2004; McNally et al., 2008). NQTs have to reinvent themselves, gaining their identity through a range of emotional, relational and cognitive experiences. There is a high correlation between job satisfaction and good working relationships with colleagues and pupils (Clandinin and Connelly, 1987).

> *Stress increases initially as you get more lessons to teach but colleagues make you welcome and you build up a confident with the pupils. I showed personal resilience and determination and stress levels disappeared*. (AB)

Personal Support: Family, friends, colleagues

All participants had at least one critical incident during their NQT year that challenged their progress in some way. A secure network of friends and family who offered support even if they did not understand the ramifications of particular problems was considered important.

My friends from the PGCE year have always been there. I know they will rally if there if there is a problem. I have friends from the department and non-teaching friends ....and I don't have to talk about work to them. They kind of understand the demands of teaching. (AY)

A feeling of belonging is an important aspect of personal and professional development. AG asserted that '*collegiality of the department is very important. They are all very nice and helpful. We go out socially'.*

When I am planning we sit together in the science department at one table and discuss ideas. Sometimes I bring my ideas to the departmental meetings. It does not matter that I am the only NQT... it means I get lots of support and attention. (AB)

Hewitt (2009) argues that the key to successful induction comes first of all from developing powerful, personal relationships within the school and then a focus on developing professional skills. Cognitive development theory also complements this premise. Lundeen (2004) states that to grow and develop as a teacher you must see yourself as an accepted member of a community. This sense of belonging is more important to some people than others. AY said she found the school support network essential for her feeling of belonging.

The collegiality in the school is fantastic. We have lunch together and talk about other things not just school. We are a group of like-minded people. Socialising is very important to me. Colleagues and departmental cohesion is most important.

Extracurricular activities are part of the community life. I brought in my pet snakes; we are having a Bollywood extravaganza; at the moment I run science club. Everyone is expected to participate in other things. Part of your identity is to be involved. (SA)

Subject knowledge concerns

Trainee teachers are aware that the subject content knowledge (SCK) that they bring with them into the profession and the pedagogical content knowledge (PCK) that they develop and learn from their classroom experience interact and inform each other (Shulman, 1986 and 1987). The subject content knowledge is indicated by the trainee's degree specialism which can cause considerable challenge to science teachers. As discussed earlier in this chapter, science teachers routinely teach outside their own science specialism encompassing biology, physics and chemistry to at least GCSE. Lock, Salt and Soares (2011) showed that early career teachers seek to develop their subject knowledge for teaching at the point of delivery as described by SA.

I have Year 12 and 13 on another site for Health and Social Care and Applied Science. As a physicist this is new to me so I have to read up on it. I prepare as I need to. Chemistry is my weakest subject ...if I don't know something I admit it to the pupils and then go and look it up or ask the others in my department.

Teaching outside one's science specialism can mean many more hours of preparation and planning are needed in the first instance. This can contribute to the feeling of work overload and a reduction in inner confidence.

AB described how she '*took BTEC Forensics with a low achieving set. I did not have a background in it so having to prepare from scratch was a difficult situation'*. However, through her own focussed application and help from her department the pupils achieved higher than expected. Her summary of the experience was *'I realise I can do anything if I set my mind to it'*.

Those who were teaching to their subject knowledge strengths gained confidence. GY was particularly confident with his A level group.

> *Having come straight from university meant I was very familiar with all the material for Year 12 so it was easy for me .... cytology then plants and ecology which I love. Then I was given the lab with the greenhouse as I had taken on a lot of the plant stuff. Heaven!*

As a group these participants had been confident in all aspects of subject knowledge development (Shulman, 1987) when teaching during their training year and this continued through their induction period. GY commented that '*The sixth form feedback for me was very positive so I was pleased they appreciated my teaching'.*

AB summarised the shift in emphasis very succinctly.

> *Considering SK for my teaching I was worried that I would not cope but I knew I could not stay up until 1am in the morning like I did on my PGCE year. I am not sure why I took so long. I overcomplicated everything and tried to do everything from scratch. Now I know how to plan lessons as I have a bank of material at the back of my mind. It is like you said at university. It is like learning to drive a car. First you concentrate hard on everything and it seems difficult, but then it becomes second nature and it all comes together.*

Behaviour for learning

Marland (1980) stresses that while every teacher has their individual approach based on their own personality, there are 'many techniques of class management that can be distilled from the work of hundreds of teachers that have almost universal validity' (1980:3). The core tenet focuses on building positive relationships with the learners. Generating interest and enthusiasm through engaging approaches may be dependent on initially establishing rules and routines which organise the teacher's expectations of pupils. The act of making explicit what may be implicit in the way a person teaches helps to create security for the pupils by removing any uncertainty about what is expected of them. Appropriate rules and routines help to steer pupils towards effective learning (Holmes, 2009).

All participants reported having at least one class or one pupils that they found challenging. LA described her Year 10 BTEC class that she taught on a Friday afternoon.

> *They proved to be my nemesis and by half term my confidence plummeted to 40%. I was not familiar with the BTEC approach or the type of pupils and their needs. The initial dip from one particularly awful lesson at the beginning really set me back.*

She asked her induction tutor to observe her to give advice, she observed the pupils with other teachers, she used a variety of teaching and learning approaches and though she never '*gelled*' with this class they developed a '*mutual understanding of what needed to be achieved'.*

GY described that following advice from his colleagues he started with a strict persona that he was not comfortable with. Once he established his behaviour management expectations he relaxed, especially with his older groups and felt much happier. He was developing his professional teaching style after observing others in the department and in other subject departments.

AG came straight from university into her training year. She reported being mistaken for one of the 6th Formers. However, she rarely had behaviour issues with any of her groups.

> *Behaviour management is the most important thing. The approach I take is to show a hard outer shell but I have a soft inside. All teachers who are outstanding have excellent classroom control. I use the school rewards and sanctions policy at all times. Positive reinforcement through praise and achievement points when deserved. I was relentless about following up misdemeanours from the very beginning. The pupils do respect me as they think my lessons are creative and fun. They know I care about their progress.*

SA reported that,

> *My strongest asset is the relationship with the pupils. I set boundaries but can also have a laugh. It is easier when you are older and have your own children. There are definite sanctions and good positive rewards that provide a positive classroom ethos.*

Recent thinking (DfE, 2014a) emphasises the development of positive approaches to behaviour which shifts from phrases like 'behaviour management' to 'behaviour for learning' and focuses on linking pupil behaviour to the curriculum and their learning (Capel et al., 2013). This is achieved through interlinking relationships between pupils and themselves; their teachers and fellow pupils and the learning they are undertaking. A whole school behaviour policy, as advised in the recent DfE (2014a) circular, provides the building blocks for creating a positive classroom ethos which should match the teachers' personal principles regarding effective teaching and learning.

When asked to give advice to the next group of NQTs, AB recommended that,

> *It was important to build good relationships and to teach in a way that allows pupils to enjoy science ...then everything falls into place. There will be no behaviour issues. Follow through with strong behaviour management approaches .... use the school policies and build strong pupil-teacher relationships. Then they realise that you care about them as young people as well as learners.*

Organisation skills

Al six participants described the importance of being organised from the beginning. Those teaching in one of their placement schools (4 participants) knew the school rules and routines and implemented school rewards and sanctions policies immediately. Those in new school environments who were able to start before September had begun to familiarise themselves with the school requirements and started to personalise their own teaching environment. Having their own laboratory appears to have made a huge impact on the feeling of being established and organised which in turn increased confidence. These comments support Marland's view (1975) that having a room of your own means you can create an atmosphere that reflects your own character and what you have to offer the pupils you teach. He states that pupils behave better in a well organised room with individual character. Those participants with no prior experience of the school until September took time to feel settled. LA was able to start her teaching post in July and knew which was to be her room.

> *I knew the staff and pupils as I had done my placement here and some supply work in July. I had my own lab and started preparing it to reflect my personality.* (LA)

GY was not naturally organised and found it difficult to find time for marking pupils' books in the required detail every fortnight.

> *I am not good at organising my time and cannot keep up with the marking. Teachers mark every two weeks and can keep up with it. I have to give up a whole weekend to catch up. I am too conscientious and cannot do 'ticking and flicking'. I prefer to give feedback verbally in class after a piece of work. I worry that I will let people down.*

The planning and marking workload was contributed to by report writing demands, teaching outside one's subject specialism and teaching examination classes especially A-level groups. Being a form tutor to a needy form group, for example a year 7 group, also ate into time. In all cases any experience that was brand new took a disproportionate amount of time in this first year.

All six participants asked for their own laboratories for the following year so they could work on organising their resources and equipment. Apparently mundane considerations like a designated place for pupils' bags and coats, set seating plans displayed in the room,

permanent location of the tools of the trade, for example pens, pencils, scissors and glue made a big difference to the image of the organised and prepared teacher that they wished to portray. Being able to greet your class at the door as they entered, with everything in place ensured a calm and orderly atmosphere.

The OECD (2012) international policy recommendations for retaining new teachers focus on reduced initial workload, constructive feedback and appraisal of progress and the opportunity for professional development when, for example, issues of behaviour management arise (Jensen and Reichl, 2011). The NQTs in my study who thrived were in schools which provided collegiality and support mechanisms, however, in all cases an unrealistic workload was perceived, especially in the first term. Greater scrutiny and understanding of the initial demands including subject knowledge strengths, form tutor demands and provision of personal teaching rooms should be incorporated into the induction programme which may need to be initiated before school officially starts at the beginning of term. Just as those pupils who are new to a school have an introductory period before the rest of the pupils arrive, new teachers should have a paid introductory programme prior to starting.

School is not just a professional setting it has an important personal dimension. The concluding comments from all participants indicated that they had developed as individuals and finding a harmonious work environment allowed them to establish a synergy between their personal and professional identity.

> *My issue is I am so happy here if I were to move it would have to be like this or better. I have been spoilt. I knew that when I came here I felt at home. It was good to get two contrasting placements during your PGCE year as it made you think about your own values and beliefs.* (AY)
>
> *I am settled here. I made the right choice going into teaching. I have a good nucleus of friends at the school and feel part of the school community. (AB)*
>
> *The school is very supportive and the department has so much experience it is slightly overwhelming as they are all such brilliant teachers. However, I feel I am getting better each term. It is a fantastic place to work. We have a good social life, science nights every term and a night out for the head technician who was retiring, was paid for by Head. The staff feel valued. We even have Pilates classes on a Friday evening which are fun.* (GY)
>
> *Collegiality of the department is very important. They are all very positive and helpful. We go out socially. R is HOS and his leadership style is having things done in a particular way. He will listen and give good guidance and is an excellent role model. (AG)*

In summary

Outstanding trainee teachers can become outstanding newly qualified teachers but only if they feel their personal lives and sense of self matches the expectations of the school. Developing a satisfying professional identity leads to personal harmony (Alsup, 2008). They flourish in their institutional climate. The critical analysis of the interplay between professional expectation and personal attributes has an important bearing on the type of school they start their careers in. A mismatch at this early phase impacts on their success as an NQT especially in the first term. There is a wider implication for research into employee engagement and success in the workplace.

> *The ethos fitted me perfectly. It is a Catholic school and I am Catholic. On Induction day the Head teacher met the NQTs and welcomed them. I know the staff, I have met my department. The HOD was really nice and I quickly got familiar with school. As you walk through doors it is immediately like home. The kids are lovely. From the top down the school is brilliant. The head was interested from day one. The SMT came to the first induction and mentor was brilliant. With 14 NQTs in one go, there is an excellent Induction programme, very well organised for NQTs. You cannot help but progress in this environment.* (SA)

All six early career teachers passed their induction year with outstanding evaluations from their schools. If the timelines are considered (Appendix 20 and 21) the dip in confidence in the first term is apparent and caused by illness, challenging classes, a demoralising observation or sheer volume of work. However, they all found solutions for their lack of progress, with the help of their very supportive departments and school communities. These findings have implications for OFSTED examination of provision for ITT providers as the new regime requires observation of NQTs in their first term after qualifying as teachers. We see that this is when they are at their most vulnerable during their transition to becoming confident teachers and constructive, positive support of their peers and colleagues is vital.

They summarised what being an outstanding teacher meant to them (Appendix 24) with two examples below.

> *I don't think one outstanding lesson makes an outstanding teacher. There is a lot of building up before a consistency of outstanding can be achieved. It is the relationship with the pupils that matters. Creating a positive learning environment that is creative and interesting ensures engagement regardless of what has gone on before they arrive at your door. (AY)*

> *Outstanding teachers can keep every student engaged. You can hear some students talking about their experience outside lessons. They carry on talking about what they*

have learned after the lesson has finished, if you can focus on making them enjoy the lesson. Trusting relationships with pupils is the key to success; it shows them that you care. (GY)

Tracking these potentially outstanding early career teachers into their first five years of teaching will be a fascinating aspect of my future research and will supplement the information I have gathered so far.

There is much literature on trainees' transition into the workplace, but to date I could find no correlation studies comparing calibre of trainee and their progress and retention in teaching. As I meet so many former trainees on my visits to our partner schools, I was interested to find out if outstanding trainees were more successfully retained in the profession compared to those awarded good or satisfactory grades. I did not expect to find that there was 100% retention rate among outstanding trainees from 2010 to 2015.

The additional numeric data gathered is displayed in Appendix 22 and summarised below. Findings show that outstanding trainee teachers remain in the profession for at least the first five years of teaching.

Number of years in teaching to date	**Science cohort dates**	**Retention rates by September 2015**	
		Outstanding	**Good/Satisfactory**
5	2010-2011	100% (10 trainees)	50% (14 trainees)
4	2011-2012	100% (9 trainees)	87.5% (16 trainees)
3	2012-2013	100% (13 trainees)	77% (13 trainees)
2	2013-2014	100% (11 trainees)	60% (10 trainees)
First year	2014-2015	100% employment rate as NQTs (9 outstanding, 18 good)	

Table 5.2: Retention rates for recently qualified teachers, comparing 'outstanding' NQT retention with 'good/satisfactory' retention rates during the years after qualifying as NQTs.

The 2010-2011 cohort of science trainees have 100% retention rate in their fifth year of teaching with 80% having important posts of responsibility in their schools. In comparison those individuals who were awarded 'good' or 'satisfactory' grades (grades 2 and 3) have 50% retention rates, in line with national figures (Burghes et al., 2009; Smithers and Robinson, 2005). The 2011-2014 cohort show similar 100% retention rates for outstanding achievers and comparative attrition rates for those less than outstanding.

The numbers represent the science cohort in one institution and are relatively small. Retrospective analysis of the whole PGCE cohort, primary and secondary courses in this institution, could be an interesting extension to this study.

In constructing a holistic interpretation of the outstanding early career teacher recurrent common characteristics are identified including critical reflective practice, excellent interpersonal and communication skills, high pupil expectation, constructive approaches to teaching and learning supported by a passion for science and its pedagogy. Good organisational skills and resilience in times of crisis are evident plus clear professional identity with defined long term future goals.

The implications of my findings and how they may inform teachers and researchers in my immediate influence and advise policy in a wider remit is included in my summary of findings and conclusions.

CHAPTER 6

SUMMARY OF FINDINGS AND CONCLUSIONS

I was motivated to undertake this interpretative, longitudinal case study by an interest in trainee teachers' recruitment, development and transition into the workplace as outstanding professionals. Tracking six very different individuals from their application for a teacher training place, through their PGCE training pathways and finally into their induction as outstanding newly qualified teachers, provided insight into their evolving successful professional identities. Supporting investigations into the importance of subject knowledge and a detailed analysis of the impact of their induction year on teacher retention has supported the main research. The findings of these studies have produced significant implications for the recruitment, education, induction and retention of beginning teachers. The summary of findings and conclusions are structured around three key areas which directed the qualitative data collection and analysis.

1. The factors and predictors that contribute to early career teachers being identified as outstanding
2. The conditions and interventions during early career that could aid other beginning teachers to gain and sustain outstanding achievement outcomes
3. The impact of personal and professional identity on becoming an outstanding teacher in the early career years.

Factors and predictors that contribute to early career teachers being identified as outstanding

Participants came into teaching with different biographies and personalities however deeper analysis revealed certain commonalities. Positive recruitment indicators included a prior history of working successfully with young people in a variety of settings; some understanding of the differences between subject content knowledge and pedagogic subject knowledge (preferably through completion of a subject knowledge enhancement course) and a confident 'outer mask' presented in the classroom. They all possessed excellent interpersonal skills. The personal references on their applications forms reflected these qualities and unreservedly recommended them for their chosen career paths in teaching.

A personal self-awareness enabled an understanding of the importance of reflective practice. They had the ability to stand back and consider the implications of their pupil-teacher interactions in lessons and the impact they had on pupil learning. Possessing good communication skills allowed engagement in reflective conversations and collaborative working with colleagues, peers, tutors and mentors providing different perspectives of strengths and areas for development. Even when they were in school environments that did

not match their personal beliefs or they were working with teachers whose methods they did not agree with, they remained positive and used the situations as transformational experiences. Their resilience showed positive adaptation to significant adversity (Luthar, 2006). The two trainees who felt unsupported by their designated mentors found alternative supportive and advisory colleagues instead. In fact, they were too self-sufficient and only brought the issues to the attention of their university tutors during their quality assurance visits. Confrontational situations with individuals and classes were used as learning situations when the problems were shared with tutor, mentors and peers and a variety of alternative approaches were discussed, tried and evaluated. They used the incidents as transformational learning experience for their own personal and professional development (Illeris, 2014). They learned just how well they could cope with potentially esteem and confidence damaging situations.

Regardless of their own personal educational experiences, the participants embraced Brunner's (1960) views on children as active processors of information and ideas, constructing their own understanding rather than simply being instructed by their teachers. They believed that children should perceive connections with previous knowledge as proposed by constructivist pedagogical theory. A consequence of this approach resulted in their excellently constructed medium and long term plans which ensured development of pupils' conceptual understanding of key scientific concepts. This realisation was central to their personal acquisition of subject knowledge for teaching. The ability to present information at the correct concept level for individual pupils and to scaffold the learning appropriately according to Vygotsky's psychology (1978) became an intrinsic part of their lesson planning. They may have started as "task managers" in their first few lessons but they moved on to being "concept builders" very rapidly (Twistleton, 2004:157). This ability to explain concepts in an accessible manner was coupled with an ability to enthuse and engage pupils through a passion for their subject and high expectation of pupil interaction with their teacher and their peers. I observed outstanding facilitated, engaging and challenging approaches to pupil learning from all six trainees.

Based on the results from my first exploratory investigation into the importance of subject knowledge on trainees' outcome achievements, I found no association between incoming degree classification and outgoing exit grades at the end of the training year. Over a three-year period, 450 entry and exit awards were compared, across all secondary subjects, using simple data correlation methods. Having a first class degree or PhD is no predictor of outstanding outcome potential. My findings were mirrored, on a smaller scale, by colleagues in a neighbouring HEI who compared incoming degree classification and outgoing teaching grades for Mathematics trainees (Clarke and Pye, 2013). Presenting our findings at a Science Tutors' London Providers meeting at the Institute of Physics may have influenced the representative from the DfE to recommend re-instating bursaries for secondary physics and mathematics applicants with third class degrees. These applicants had previously constituted a quarter of shortage subject recruits into teaching.

Under-recruitment in shortage subjects has led to the creation of extended subject knowledge enhancement (SKE) courses. These are aimed at graduates with insufficient specialist knowledge and involve a commitment of between 6 months and one-year study prior to starting a PGCE course. My findings indicate that trainees who complete long SKE courses consistently outperform those with no SKE by the end of the PGCE year regardless of their degree classification. The trainees I interviewed praised their SKE provision for developing PCK alongside SCK throughout the course. The experiences mirrored pedagogical development in schools through practical work, opportunities for peer review, group work and presentations in a safe non-threatening learning environment. They developed self-awareness by learning from each other. In the same year, Inglis, Mallaburn, Tynan, Clays and Jones (2013) came to similar conclusions about the benefits of long SKE courses with their science PGCE cohort.

The success of the SKE course concept challenges the conventional wisdom that a graduate degree in a subject is a pre-requisite to being an effective teacher of that subject. It also raises questions about the extent to which science teachers should be teachers of science or teachers of biology, chemistry or physics (Lock, Salt and Soares, 2011). I assert that extending the training programme to incorporate opportunities for further study and research as in Finland (Sahlberg, 2007) would produce more effective teachers and raise the profile of the profession in England.

Comparing the responses of two groups of science trainees, those with first class degrees and those who have complete long SKE courses showed remarkable similarities in their interpretation of the essential attributes of an outstanding teacher. Having a positive work ethic, developing excellent communication skills, a caring attitude to colleagues and pupils and enthusiasm for science was matched with flexibility in approach, creativity in planning engaging lessons and critical reflective practise. They all agreed that subject content knowledge alone is not a pre-requisite to effective teaching (Document 3).

Conditions and interventions during early career that could aid other beginning teachers to gain and sustain outstanding achievement outcomes

The research indicated that certain conditions and interventions were positive indicators of outstanding development of early career teachers at each stage of the teaching journey.

Recruitment

Before even beginning their professional training three key areas were significant indicators of likely success, namely:

- Attendance at a long subject knowledge enhancement (SKE) course
- Previous work experience with young people or time spent in a school setting

- Excellent interpersonal skills including presentation skills, group work activity and evidence of the ability to communicate with young people plus an opportunity to write at Master's level.

Interestingly, the degree qualification alone was not a predictor of outcome potential.

Subject knowledge enhancement (SKE) courses

The long SKE courses enabled participants to gain confidence in subject content knowledge (SCK) which encompassed content knowledge (factual information); substantive knowledge (explanatory frameworks) and syntactic knowledge (how new knowledge evolves for the learner) (Grossman, Wilson and Shulman, 1989). This was developed through learning 'pure' science knowledge from science specialists and then having opportunities to collaboratively prepare and present topics to their peers. Listening to and evaluating each other's work, with the guidance of education tutors introduced pedagogic content knowledge (PCK) from the start of their journey into teaching.

Three aspects of personal growth and development were identified by the entire SKE group but absent from the responses of those with no SKE input at the beginning of the training course. The first was the value of collaborative working; the second was a confirmation of commitment to teaching and the third was an awareness of the importance of critical reflection and an awareness of one's own capabilities. Working closely with peers and colleagues for six months and having a common aim developed the first of many support networks that are so important for positive professional development. A clear awareness of the implications of teaching is manifest and shows a commitment to wanting to succeed in teaching.

> *Overall, the SKE has provided me with increased confidence before starting my PGCE year through sharing common misconceptions with my peers, preparing and presenting materials for presentations and giving me time to really assess what I don't know.* (Respondent 4, Document 3)

> *Not only did it improve my chemistry, it introduced different teaching methods for evaluation and developed my confidence when presenting... in front of a class.* (Respondent 3, Document 3)

Working with young people or spending time in a school setting

Some requirement to have worked extensively with young people or spent targeted time in a school setting is also an indicator for success. All six trainees had a background of working within communities in a teaching, coaching or mentoring capacity either through their religious congregations, their university courses or through their personal hobbies or interests. They provided evidence of possessing good interpersonal and communication

skills which were further identified at interview for the course. Hattie's (2012) notion of passion being the essence of successful teaching was evident in their everyday practice at interview, throughout the course and in their first teaching post.

Interpersonal skills

The interview application procedure should be rigorous and include opportunities to assess engaging, logically developed presentation skills, collaborative group work capabilities and evidence of the ability to communicate with young people. An opportunity to write at Master's level and identify misconceptions in children's understanding of science give an indication of support interventions that might be necessary at the start of the course. All six trainees scored highly in all areas at interview.

An HCEC (2012:21) recommendation proposes the implementation of an "interpersonal skills assessment for teaching aptitude" (though there is no definition of outstanding teaching aptitude included) in addition to the numeracy and literacy skills tests as a selection procedure. Having administered a basic personality test (Parkinson, 2012:50) the results showed that there were no common series of characteristics shared by the participants. The only common outcome was an acknowledgement that they behaved in a confident way in the classroom and developed an outwardly more extrovert personality when in school. Given that identity is viewed as dynamic and that a teacher's identity shifts over time under the influence of a range of factors both internal to the individual, such as emotions (Rodgers and Scott, 2008) and external to the individual, such as life and work experiences (Flores and Day, 2006) a shift in self-understanding is expected with professional experience. As long as idealised expectations match actual experience, dissonance should not occur. Time spent in a variety of school settings prior to starting the course may align expectation and experience.

The Training Year

While studying for the PGCE trainees should be given opportunities to:

- acquire fundamental pedagogic underpinning of their practice;
- have opportunities for enrichment and intervention sessions;
- have access to a variety of teaching and learning communities, including at least two contrasting school experiences.

The opportunity to access these different learning experiences significantly helped to develop the trainees' skills and understanding.

Pedagogic underpinning of their practice

A balance between hands-on experience in school and a supporting framework of relevant professional knowledge is essential if trainees are to become aware of the reasons for professional action and the links to theories of learning. The cognitive skill of critical

reflection starts with seeking to understand how the teacher learns, which in turn develops a deeper understanding of how children and young people learn (Moon, 2008). The reflective journal entries of the participant trainees provided a means to consider and reconsider their own values, attitudes and beliefs developing an awareness of the constructed nature of knowledge and understanding. Collaboration between the university tutor, the school mentor and the trainee is a key underpinning for a successful training course for as Dysthe states "the learner builds knowledge through discussion with peers, teachers and tutors" (2002:343). Through social constructivism the trainees question, compare perspectives and consider new ideas and information leading to identifying personal strengths and areas for development.

This emphasis on interrelating theory and practice in teacher education is promoted by high performing nations whose educational outcomes are compared in the PISA tables. I focussed on Finland's educational model in section 3 of this study, as Finland is often used as an international comparison of successful attainment by the previous UK Coalition and current Conservative Government (DfE, 2012a). Finland's ITT courses are four-year Master's programmes with links between theory and practice developed through university affiliated training schools co-staffed by university tutors and school teachers. There is a common research emphasis with 50% of Finnish teachers undertaking doctoral research in education once qualified (Sahlberg, 2007; Westbury et al., 2005). Finland and other top performing countries such as Sweden, Singapore, South Korea and some US states have routes into teaching that involve long and rigorous study and deep engagement with practice (Tomlin, 2013). International studies in the USA (Reeves, 2011), New Zealand (Hattie, 2012) and Finland (Pettifer, 2015) show that teachers who have a firm grounding in research procedures are equipped with the tools they need to evaluate their impact on pupil progress. They have an expectation of grass roots participation in national educational research projects.

Hattie (2012:40) stresses that in order to accomplish the maximum impact on pupil learning teams of teachers should work together with excellent leaders and coaches.

> *……agreeing on worthwhile outcomes, setting high expectations, knowing the pupils' starting and success in learning, seeking evidence continually about their impact on pupils and modifying their teaching in light of this evaluation. Critical reflection in the light of evidence is the key to pupil progress. This pedagogical dialogue should be a continuous part of a teachers CPD experience throughout their professional lives.*

Building on these models, I would recommend two year fully funded ITT courses should be the norm in England allowing time for addressing subject knowledge needs and incorporating preliminary pedagogic approaches and development of Master's programmes. If the current world-financial situation does not lend itself to prolonged funded training, the first training ITT year could be considered the first stage in a continuous process of professional development providing purpose-designed extended CPD courses extending

over the first three years of teaching. All early career teachers could obtain Master's level qualifications within those early years and have time allocation and mentoring time built in to their timetables.

The current rapidly expanding school-led provision, often with reduced links between theory and practice, does not support the PISA (Hargreaves, 2013) recommendations for teaching excellence or the findings from the OECD (2012). Hargreaves (2013) expresses concerns that some trainees completing the School-direct salaried route are being asked to teach practical classes in the first week of their training with minimal pedagogical preparation and no health and safety input. The recruitment, development, progress and retention of early career teachers in school-based training routes would be an interesting extension to my current research.

Opportunities for enrichment and intervention sessions

Opportunities to participate in extra-curricular and cross-curricular themes at university were taken by all six participants. All participants attended optional enrichment university sessions to develop cross-curricular practice. They worked with trainees from other subject specialties to produce resources and units of work to model cross-curricular themes (Baughen, Chambers, Gordon and Grounds, 2011). All these trainees were adventurous in their teaching and learning styles using music, drama, role play and poetry to enhance their science teaching. Though most school subject departments still work in isolation, some schools do teach within an integrated model in one context and trainees saw how, for example, the pastoral PSCHE curriculum and ICT development crossed subject boundaries requiring colleagues from different disciplines to work together. Participants cited examples of working with the school numeracy and literacy co-ordinators and organising joint school trips with other departments. A range of university generic enrichment sessions including academic reading club, first aid sessions, voice projection classes and ICT skills development were offered alongside subject specific enhancement in a variety of schools and key stages with videoed microteaching evaluation sessions. An FSC run ecology course was available for all scientists. The introduction to professional associations, for example, IOP, RSC, IOB, SAPS and ASE provided further networking communities and support structures for the training year and beyond. Workshops on the awareness of resilience and strategies to progress through challenging situations were particularly well attended along with research seminars where current in-house research projects were shared.

In contrast it appears trainees on school based routes are not always made aware of this selection of enhancement opportunities and accessibility to networking communities by their mentors. They are limited to their support relationships in school. The HCEC (2012:31) report highlighted that "some school led training struggled to provide the sense of camaraderie and professional networking offered by university courses which invariably take on more trainees". There may be no "outside" quality assurance mechanism and the

power relationships between school mentor and trainee could limit honest, open and frank discussions about perceived progress.

Access to a variety of teaching and learning communities including two school placements

The professional networks identified above are supplemented by those started during SKE courses, continued through university and expanded into their school communities, providing opportunities to share and develop resources and ideas. All participants were exceptionally adept at building personal relationships alongside developing professional skills. Exposure to at least two contrasting school placements gave opportunities to establish their own values and beliefs in preparation for their first teaching post. Additional provision developed certain aspects further, for example SEND teaching opportunities. All participants identified at least one school environment where they felt they belonged and experienced a deep caring about the colleagues they worked with and the pupils they taught.

> *I am developing a learning community and the network is an important aspect of my professional development. (*SA reflective journal)

She felt supported at school, through university and by her home life and gave support to others in return. Like the others in the study she was '*becoming a teacher*' and developing her professional identity in several settings.

The quality of the support-mentor in school is a key influence on outstanding development of the trainee. Through reflective conversations improvement can be brought forward and it is the quality of the conversation that that is important. Sometimes the dialogue can be both supportive and threatening for the beginning teacher since the power relationships with the mentor may be imbalanced. The collaboration with the university tutor is important in these instances.

> *Having a supportive mentor is an essential element in improving effectiveness through constructive directed discourse. (GY reflective journal)*

Good mentors know how to engage in critically constructive feedback and set SMART targets after a lesson. They should be constructively supportive and catch up regularly with a running professional dialogue about how to apply theory to practice. Allowing trainees to try out new ideas and analyse the effect the approaches have on pupils' progress is an important part of transformational learning. Particularly successful training environments embrace the notion of a 'training departments' where all teachers co-mentor at some stage in their careers. Advice on how to progress is consistent across the department where agreed successful mentoring procedures have developed. University tutors usually know their mentors and training departments well and respond to changes of personnel rapidly by ensuring new mentors are aware of the training expectations and most importantly have a commitment and professional interest in taking on a mentoring role.

Transition into the workplace as NQTs

The choice of first-post school is central to whether early career teachers continue in the profession. My findings indicate that:

- Paid orientation time in school prior to the start of the new term gives new teachers an opportunity to prepare themselves, their personal teaching environment and their knowledge of the groups they are going to teach. A familiarisation of school policies on rewards and sanctions, assessment and marking and the pastoral provision of the school should be assimilated before pupils arrive.
- A supportive induction programme with experienced, committed mentors and an empathetic and interested senior management involvement (including the head teacher) is necessary throughout the year.
- The opportunities to observe excellent practitioners and be observed in turn, receiving constructive and sensitive feedback establishes an ethos of professional development and personal confidence. Discursive construction, placing considerable value on personal reflections and shared discussions with mentors, tutors, colleagues and peers, shape the discourse relating to reflective practice.
- Congruence must exist between the teacher's philosophy of education and practice and that of the school and department in which they work. This can be discussed in the early mentor meetings with reference to the Career Entry Development Plan (CEDP) that accompanies new teachers into their first school.
- Continued opportunities to network within school, across neighbouring schools and within regions, for example London Teach/Meet programmes, allow for exchange of effective experiences in teaching and sharing of research findings. Keeping in Touch (KIT) and Best Practice (BP) events hosted by university education departments provide a well-attended regional collaborative forum particularly if subject specific.
- An appreciation of the need for social and recreational interaction between colleagues throughout the school engenders further commitment to the school. Organised trips and outings and the provision of well-being support such as Pilates classes or use of the school sports or gymnasium facilities fosters a feeling of belonging to an extended community. The younger participants in my study particularly highlighted the importance of a socially caring school culture.
- An overwhelming workload of planning and assessment requirements plus expectations outside the classroom can result in early career teachers establishing an unacceptable work/life balance especially in the first term. This is given as a major international contributor to high attrition rates in early career teachers (TALIS, 2012).

In contrast to the estimated 30-50% drop-out rate within the first five years among early career teachers in England, it was encouraging to discover that the numeric analysis of retention of outstanding teachers in my study showed 100% remain in teaching after 5 years and make rapid promotional progress either in the pastoral route or managerial pathway. Unfortunately, not all participants experienced the supportive programmes recommended above. Four out of ten participants in my supporting study (Document 4) described professional neglect and/or bullying from SLT which made them consider leaving the profession.

> *I was so miserable and my overall confidence never rose above 10%. I felt constantly scrutinised and criticised* (Participant De, document 4)

Fortunately, a self-belief in their own professional abilities fostered by the confidence built up during their training year, encouraged them to find subsequent school environments that matched their philosophy of teaching and learning. This same participant contacted me one year after moving schools and stated,

> *I love my job. I feel appreciated and I appreciate things back. I do not take a good happy workplace for granted and now I am wary about moving on to another post* (Participant De, document 4).

As mentioned, opportunities to 'keep in touch' (KIT events) at university and continued contact with university tutors provided outside avenues for advice.

Head teachers that provide targetted CPD opportunities to develop particular interests, for example literacy or numeracy coordinators, find retention levels remain high. Interestingly all of the outstanding trainees in my main study (Document 5) and most of the outstanding trainees in my supporting study (Document 4) went on to work in outstanding schools so exceptional effectiveness appeared to be perpetuated. Schools that provided systems of support that allowed teachers to respond positively to the challenge of improving their effectiveness as continuing professional development were the ones in which early carer teachers flourish. The most successful models include creating mentoring relationships characterised by trust and feeling supported while being sufficiently challenging to provoke change.

Building on the findings of this research, I recommend that successful strategies like "Lesson Study" are incorporated into school CPD programmes. Groups of teachers collaboratively planning, teaching, observing and analysing learning and teaching in "research lessons" (Dudley, 2014:1) provides greater teacher collaboration, sharper focus among teachers on pupils' learning, development of teacher knowledge, practice and professionalism and improved quality of classroom teaching and pupil learning outcomes (ibid.:3). School-led collaborative practice was observed on a lesser scale in the guise of 'training departments' and 'learning walks' aimed mainly at early developing professionals. Incorporating wider

colleague participation with time allowance on the timetable would engender positive outcomes as observed in Japan and the USA (Cajkler, 2014).

In my research study, outstanding trainee teachers progressed to become outstanding early career teachers. Their choice of first post school (all graded as outstanding) provided a nurturing environment which percolated from the leadership of the head teacher to the whole school community. They were retained in the profession into their early careers and had long term professional goals. Further investigation into how schools achieve and maintain (or lose) their outstanding status and whether it relates to the provision of support for RQTs is a natural progression for this research. A teacher's well-being, especially in the first year is critical to their continuing positive identity as effective and contented teachers. One of the most uplifting summaries of an NQT year is:

> *Teaching is the best job in the world for me. It is the best thing I have ever done since my paper round at school. It is like being a Blue Peter presenter and I get to do it every day* (Participant Ar, document 4).

The impact of personal and professional identity on becoming an outstanding teacher in the early career years

Learning to teach involves the whole of the individual including beliefs, emotions, identity and personality. The process of 'becoming a teacher' is an evolving process through which the developing teacher has to re-invent themselves, gaining their identity through a range of emotional, relational and cognitive experiences.

> *Intellect cannot work at its best without emotional intelligence* (Goleman, 2006: 28).

The participants in my study reported an emotional-relational dimension, a sense of self and relationships with colleagues and pupils, as being central concerns in their early teaching experiences, themes not visible in the teaching standards (McNally et al., 2008; Flores, 2001). The influence of the colleagues they met both at school and university, along with their personality and characteristics shaped the style of teaching they adopted. It was linked to transformational learning which encompassed the cognitive, the emotional, the social, the societal and the environmental aspects of learning and created new capacity within the individual (Illeris, 2014). If their personal lives and sense of self are parallel to the expectation of their schools, holistic and satisfying professional identity in an institutional climate results in professional and personal well-being. The development of the self and self-understanding is significant in terms of helping to improve their relationships on school placement if they feel there is dissonance between idealised expectations and actual experience. The trainees who felt at odds with their school environments were able to use personal reflections and shared constructive discussions with mentors, tutors, colleagues and peers to identify conflict, consider solutions and apply strategies for resolution and critical evaluation.

Initially the trainees are guided by their own experiences of being in the classroom alongside the pedagogic theories taught at university. Gradually they make the transition from trainee teacher (being taught) to classroom teacher (learning to teach) where rather than dwelling on difficulties and errors, they examine successful phases of learning in order to identify what factors underpin effectiveness. The move from being the observer to being the observed requires a self-awareness of presence and ability to command attention in those first lesson experiences regardless of inner misapprehension. This transition was rapid compared with other trainees' development on the course. All participants believed that in order to manage the learning environment, they needed an agreed set of positive behaviours and routines for interaction with pupils, which they established quickly. They felt obliged to provide appropriate professional care to all pupils by, for example, listening to their pupils and acting fairly from the start. These values underpinned their teaching on teamwork and in science their good practice in terms of safe working in the laboratory in tandem with developing personal affective attributes like perseverance, intellectual curiosity, honesty and a love of learning. AY explained in her master's assignment that:

> *Having high expectations of pupils covers more than developing their academic knowledge. It is an expectation of high standards of behaviour and positive attitude to work both in the classroom and at home.*

Not everyone in this study experienced congruence with their personal and professional environment at all times. Indeed, one participant was close to leaving the course when personal demands challenged professional expectations. How he, and the others in this study resolved their "field of struggles" (Bourdieu, 1998:85) demonstrated resilience and an ability to identify and apply solutions in collaboration with their colleagues, mentors and tutors.

Trainees flourished in schools that provided systems of support that allowed teachers to respond positively to the challenge of improving their effectiveness as part of a continuing professional development programme and had multiple avenues of discourse provision.

Implications for policy and practice

The findings of this research have identified a number of implications for successful recruitment, education and retention of early career teachers.

The training year, from a university-based or school-based route aims to establish the knowledge, disposition and skills appropriate to being an effective teacher. Knowledge encompasses knowledge of a subject specialism with its substantive and syntactic structure, knowledge of current curriculum and its ever changing expectations, general and content specific pedagogic knowledge plus knowledge of the learners and the characteristics of how pupils learn (Shulman, 1987). Those who have been educated abroad or completed their education many years ago need to appreciate the governance, financing and structure of

school communities they will work in. Individuals also need to develop their own personal and professional philosophy as their teaching identity unfolds through experiences at university and in at least two school settings. This development is informed by diverse perspectives arising from wider research and educational theories at Master's level of enquiry. Currently there appears to be too much to address in the ten-month education programme (September to July).

I would recommend that the initial teacher training programme is prolonged, as in Finland, incorporating subject content knowledge development alongside pedagogic content knowledge as seen in the current long SKE courses. This is particularly important for shortage subjects such as science or modern languages where trainees are expected to teach across the sciences or be fluent in several languages. A greater expectation of applicants having worked with young people in different settings prior to starting the training would help to ensure they had fully appreciated the demands of a teaching environment. Combining theory and practice with Master's level study would raise the profile of the profession. University lecturers working alongside classroom teachers in the same educational institution, both in school and university would ensure theory and practice were shared and understood by all contributors to the education programme.

A more gradual exposure to learning to teach through working with individuals, then small group work and onto full classes through collaborative engagement and planning with expert teachers with trainees would build confidence and develop expertise. The "Lesson Study" approach (Dudley, 2014:1) involving groups of teachers collaboratively planning, teaching and observing and analysing learning and teaching together is an excellent development and should become part of every school culture. If the current world financial situation does not lend itself to prolonged funded training, the ITT year could be the first stage in a continuous process of professional development providing purpose-designed CPD courses for the first three years of teaching. All early career teachers could obtain Master's level qualifications within those early years and have time allocation and mentoring time built in to their timetables.

A national collection of resources for each subject would be a valuable asset for early career teachers. Lock, Salt and Soares (2011) recommended a single, authoritative collection of resources to provide accurate and validated science subject knowledge for trainee teachers and NQTs, for all science topics in the National Curriculum, as a response to science trainees having to teach across all three sciences. This collection might be hosted and validated by a national organisation such as the Association for Science Education or the National Science Learning Centre. A similar resource collection could be developed for other subjects or at least for the shortage subjects of Mathematics and Modern Languages. The archiving of the excellent National Strategy material after the Coalition Government came to power in 2010 is still bemoaned by many in educational communities and seen by some as an act of professional vandalism as it is now almost impossible to retrieve these resources.

In my experience, trainees on school based routes are not made aware of the selection of enhancement opportunities and accessibility to networking communities by their mentors. They are often limited to their support relationships in school. There may be no external quality assurance mechanism and the power relationships between school mentor and trainee could limit honest, open and frank discussions about perceived progress. Mandatory requirements of external support mechanisms should form part of all school-led programmes.

The appropriate choice of first-post school is central to whether early career teachers continue in the profession. I suggest that NCTL guidance is produced for Head teachers regarding the implementation of a supportive induction programme for newly qualified teachers involving all colleagues in the school from the Head teacher and SLT through to support and technical staff, each sharing the importance of their role in the school community before term officially begins. A paid pre-induction procedure should occur in July or late August and have a planned structure. An experienced subject mentor and an expert induction tutor should be appointed who have been given time and professional development opportunities in the field of mentoring and coaching.

All newly qualified trainee teachers on a university-based course produce a Career Entry Development Plan (CEDP) in collaboration with their university tutor on completion of the training course. This identifies strengths, areas for development and main professional aims for the future and accompanies newly qualified teachers into their first post. The contents should form the basis for the first induction tutorial so that induction mentors and tutors are aware of the needs of newly qualified teacher just as all teachers are aware of the needs of their pupils. I recommend that this document be given a higher profile and form a focus for discussion in the early induction. My institution sends a copy of the CEDP to the Head teacher and Lead Induction Tutor in the first-post school asking for confirmation of receipt. The focus and dates of KIT events are included to continue liaison between school and university into that first very important formative year with continued collaborative development of CPD events for established teachers and researchers.

What feels like an overwhelming workload of planning and assessment requirements plus expectations outside the classroom can result in some early career teachers establishing an unacceptable work/life balance especially in the first term. A reduced first year timetable with protected time for planning and marking is recommended. NQTs new to the school would benefit from early advice from expert teachers on effective time management and realistic expectations of marking policies and procedures. These basic skills can be neglected in the hectic settling-in period.

The suggested pre-induction programme including a targetted welcome by the Head teacher and SLT, introduction to school procedures and key colleagues, for example the SENCO, plus provision of own teaching room and introduction to school resources should be mandatory for all newly appointed colleagues. This provision seems an obvious precursor

for personal and professional congruence among new career teachers. Possibly the high bursary provision for trainees with high level degree classifications could be channelled into enhanced reward for outstanding outcome and a return to the 'Golden Hello' payments after a certain number of years in teaching. As I found no correlation between incoming degree classification and outgoing achievement award, a common bursary for all trainees should be resumed with scholarship provision from professional associations made available. The Institute of Physics and the Royal Society of Chemistry scholarships are generous and provide subject specialist mentoring throughout training and into early years. Other educational subject bodies could be supported to provide similar incentives.

A positive school culture is essential for continuing professional development. Embedding an expectation of a programme giving opportunities to observe excellent practitioners and be observed in turn, using successful professional collaborative strategies like 'Lesson Study' should be incorporated into school CPD programmes. Hattie's (2012) emphasis on a requirement of all teachers to make the effect of their teaching visible to themselves and others by gathering defensible and dependable evidence from many sources and holding collaborative discussions with colleagues and pupils about this evidence is relevant here. Continued collaboration with university education departments could provide Master's programmes and research agendas for all staff. Possibly one day the UK will be able to achieve 50% of teachers involved in professional doctoral studies as they do in Finland.

Further research opportunities

In my research study, outstanding trainee science teachers did become outstanding early career teachers if their personal and professional identity matched the philosophy and ethos of their first-post school. I have not found any longitudinal case studies that focus on the outstanding achievement aspect of recruitment and training of early career teachers and how this impacts on their progress and retention into the profession. Continued tracking and engagement with individuals from successive science cohorts from 2010 onwards will provide comparative data for analysis over a further longitudinal period.

Extending this study to investigate the whole university secondary cohort for correlation between outcome grades and retention rates in schools would generate data from approximately 750 secondary participants in my institution over five years. Cross subject comparison and analysis of retention rates would naturally follow. Deeper analysis of schools that are particularly successful at retaining recently qualified teachers (RQTs) could become case studies of exemplary practice. The primary data is available in our institution data base so with application for ethical approval such investigations are possible. Collaboration with subject tutors would add a wider nuanced perspective to the study. Our large primary education cohort could be monitored and investigated in the same way. There are four-year and three-year BA (QTS) routes and PGCE routes for comparison both within courses and between courses.

My continued tutoring connection with school direct salaried trainees provides an opportunity to investigate whether "some school led training struggled to provide the sense of camaraderie and professional networking offered by university courses which invariably take on more trainees" (HCEC, 2012:31). The recruitment, development, progress and retention of early career teachers in school-based training routes would be an interesting extension to my current research and one of national interest as the provision of school-led practice is extended.

My findings have been shared at Science Tutors' London Providers meetings and discussed with ITT colleagues accordingly. The findings are very pertinent to the current OFSTED regime when newly qualified teachers are observed in their first term of teaching after being assessed as trainee teachers at the end of their training year. As seen from my data analysis (appendix 20) this first term is critical for future progression and success in the work place. The characteristic initial significant fall in confidence from the preliminary positive anticipation to the subsequent survival and sometimes disillusionment occurs in that first term. Fortunately, it is followed by a rejuvenation period after critical reflection. OFSTED inspectors observing new teachers in that critical first term will undoubtedly add to the pressure. Future OFSTED inspections at my institution will be directed to access a case study I have prepared regarding this issue derived from my findings in this document.

My work on the importance of subject knowledge enhancement courses in science training is being collaboratively developed further with one of the providers we recommend for our trainee teachers SKE development. Findings have been shared at mentor meetings and with prospective candidates from both institutions. The correlation between incoming degree qualifications and professional outcome awards has been supported by colleagues within the London arena as already described and results and methods shared.

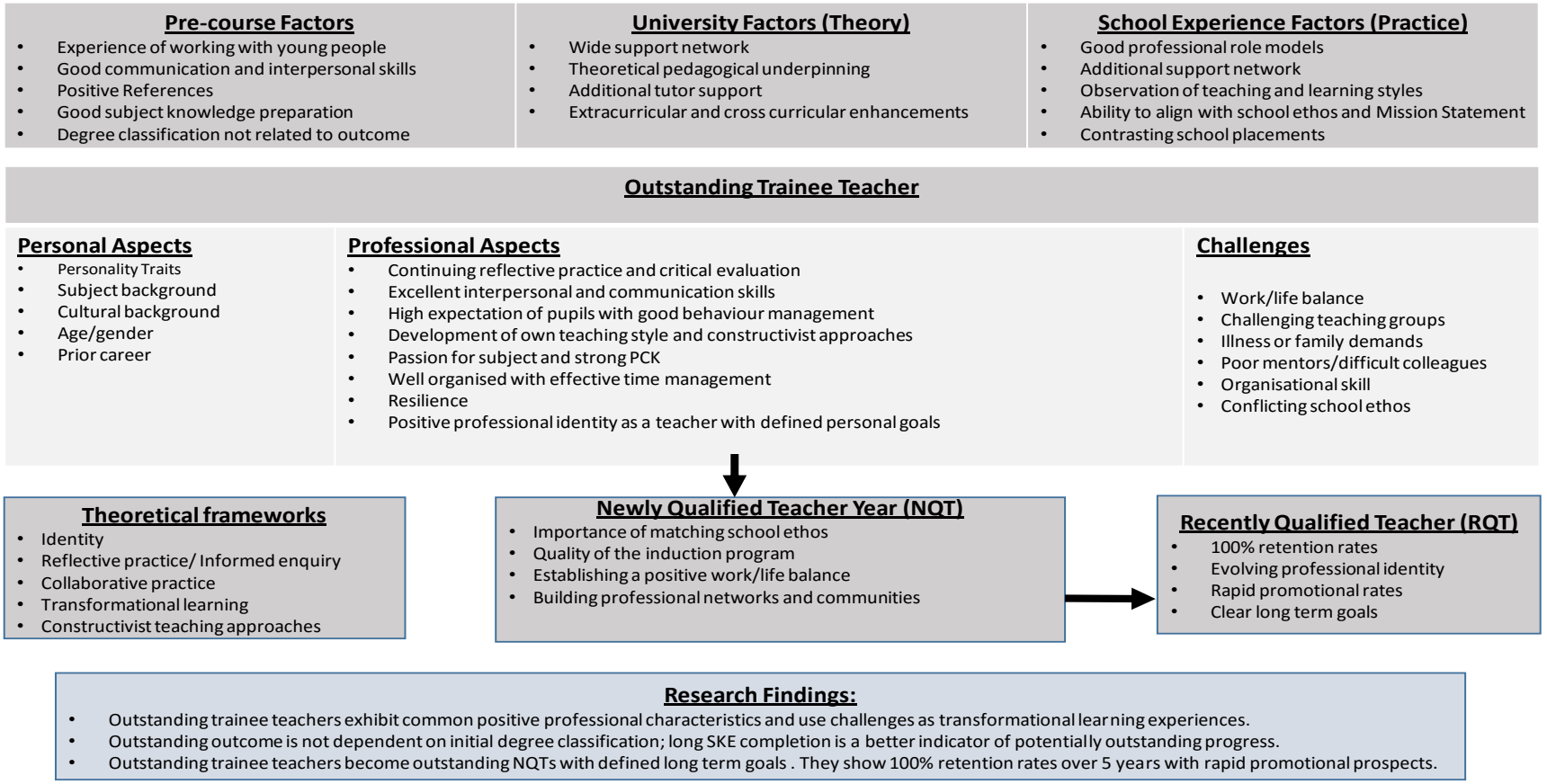
In conclusion:

Successful induction and guaranteed retention of early career teachers depends on congruent personal and professional identity transition in the first post school; supportive, developmental induction programmes and a focus on a sustainable work/life balance especially in the first term of the NQT year. Outstanding student teachers do make outstanding early career teachers given a nurturing environment which percolates from the leadership of the head teacher to the whole school community. Outstanding teachers are retained in the profession into their early careers and have long term professional goals. I have not found other research that directly investigates this link between outstanding outcome and prolonged retention within the teaching profession.

This thesis provides a comprehensive and nuanced view of how beginning to teach is experienced and interpreted by potentially outstanding trainees. It paints a complex picture of the relationship between biography, beliefs, preparation and context in the process of learning to teach. Moving away from a dependence on lists of standards to determine

excellent achievement allows an appreciation of the construct of the whole person identified as outstanding and how their identity evolves during their early professional lives. The study contributes to the literature on the recruitment, education and retention of beginning teachers. It highlights the need to develop a shared understanding amongst policy makers, teacher educators and schools regarding the multiplicity of factors that influence the development and transition of early career teachers giving an insight into the complexity and importance of the 'outstanding teacher' achievement.

Outstanding Potential in Recently Qualified Teachers. (RQT): Summary Diagram. Figure 2



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REFERENCES

Ainley, J., Luntly, M. and Jones, I. (2004) What teachers know. British Educational Research Association Annual Conference, Manchester http://www.leeds.ac.uk/educol/documents/00003870.htm (accessed July 2015)

Alheit, P. (2009) Biographical Learning within the new lifelong learning discourse. In K. Illeris (ed): *Contemporary theories of Learning*. London: Routledge

Alsop, S., Bencze, L. and Pedretti, E. (2005) *Analysing Exemplary Science Teaching.* Open University Press: McGraw-Hill

Alsup, J. (2008) *Teacher Identity Discourses: Negotiating Personal and Professional Space.* Taylor and Francis

Amos, J. A. (1998) *Managing your Time: What to do and How to do it in Order to do More.* Oxford: How to Books

Antaki, C., Billig, M., Edwards, D. and Potter, J. (2002) *Discourse analysis means doing analysis: a critique of six analytical shortcomings.* DAOL Discourse Analysis Online (electronic version), 1 (1)

Aronson, E. and Carlsmith, J.M. (1963) Effects of severity of threat in the devaluation of forbidden behaviour, *Journal of Abnormal and Social Psychology,* 66, 584-8

Assessment Reform Group (ARG). (2002) *Testing, Motivation and Learning,* Cambridge: University of Cambridge Faculty of Education

Attride-Stirling, J. (2001) Thematic networks: an analytical tool for qualitative research. *Qualitative Research* 1: 385-405

Bailey, K. (1994) *Methods of Social Research (4th Edition).* New York: The Free Press

Ball, S. (2012) The making of a neo-liberal academic. *Research in Secondary Education,* 2 (1), 29-31

Baughen, M., Chambers, J., Gordon, AL., Grounds, I. (2010) I'm a subject specialist get me out of here! *Professional Development Today,* 14 (2)

Bell, B. (2011) *Theorising Teaching in Secondary Classrooms: Understanding our practice from a sociocultural perspective,* Routledge: Oxon

British Educational Research Association (BERA, 2011) *Code of Ethics for Educational Research.* Available at: www.bera.ac.uk (Accessed 22 March 2013)

BERA-RSA. (2014) Research Report: Research and the Teaching Profession: Building the Capacity for a Self-improving Education System. Https://www.bera.ac.uk/wp-content/uploads/2013/12/BERA-RSA-Research-Teaching-Profession-full-report-for-web.pd (Accessed March 2014)

Berliner, D. C. (1986) In pursuit of the expert pedagogues, *Educational Researcher,* 159 (7): 5-13

Berliner, D.C. (1994) 'Teacher Expertise' (Chapter 14 in Moon, B. and Shelton Mayes, A. (eds) *Teaching and Learning in the Secondary School,* Routledge: OUP

Berliner, D.C. (2004) Describing the behaviour and documenting the the accomplishments of expert teachers. *Bulletin of Science Technology and Society, 24* (3), 200-212

Bernstein, R.J. (1983) *Beyond Objectivism and Relativism: Science, Hermeneutics and Praxis.* Oxford: Basil Balckwell.

Berry, A., Loughran, J. and van Driel, J.H. (2008). Revisiting the roots of pedagogical content knowledge. *International Journal of Science Education*, 30 (10) 1271-1279

Black, P. and Wiliam, D. (1998) *Inside the Black Box,* London: King's College.

Black, P., Harrison, C., Lee, C., Marshall, B. and Wiliam, D. (2003) *Assessment for Learning: Putting into Practice,* Maidenhead: Open University Press

Borko,H. And Livingston, C. (1988). *Student teachers' planning and post lesson reflections: Teachers Professional learning*. Lewes: Falmers Press

Boud, D. (2011) Using journal writing to enhance reflective practice. *New Directions for Aults and Continuing Education,* 90: 9-17

Bourdieu, P. (1977) *Outline of a Theory of Practice.* Cambridge: Cambridge University Press

Bourdieu, P. (1990) *The Logic of Practice.* CA: Stanford University Press

Bourdieu, P. (1998) *Practical Reason: On the theory of Action.* Cambridge: Polity Press

Boyatzis, R. E. (1998) *Transforming qualitative information: thematic analysis and code development.* Sage

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology,* 3 (1) 77-101. Available at www.qualresearchpsych.com (accessed 16 November 2013)

Braund, M. and Reiss, M. (2006) Towards a more authentic science curriculum: the contribution of out-of-school learning. *International Journal of Science Education,* 28 (12): 1373-1388.

Britzman, D.P. (1991) *Practice Makes Practice: A Critical Study of Learning to Teach.* Albany NY: State University of New York Press

Brook, A., Briggs, H., Bell, B. and Driver, R. (1984) *Aspects of Secondary Students Understanding of Heat: Summary Report,* Leeds: CLIS Project

Brewerton, P. and Millward, L. (2001) *Organisational Research Methods.* Thousand Oaks London: Sage

Brookfield, S. (1987) *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting.* San Francisco: Josey-Bass.

Bryman, A. (2008). *Social Research Methods.* Oxford University Press

Bucat, R. (2004). Pedagogical content knowledge as a way forward: Applied research in chemistry education. *Chemistry Education Research and Practice*, 5 (3) 215-228.

Burghes, D., Howson, J., Marenbon, J. and Woodhead, C. (2009) *Teachers matter: Recruitment, employment and retention at home and abroad.* London: Politeia

Burton, D. and Bartlett, S. (2005) *Practitioner Research for Teachers.* Paul Chapman Publishing

Cajkler, W., Wood, P., Norton, J. and Pedder, D. (2014) Lesson study as a vehicle for collaborative teacher learning in a secondary school. *Professional Development in Education,* 40 (4): 511-529

Capel, S. (1998) The Transition from Student Teacher to Newly Qualified Teacher: some findings. *Journal of In-service Education*, 24 (3): 393-418

Capel, S., Leask, M. and Turner, T. (2009) *Learning to teach in the secondary school: A companion to School Experience* (5th Ed) Abingdon: Routledge

Capel, S., Leask, M. and Turner, T. (eds) (2013 *Learning to teach in the secondary school: A companion to School Experience* (6th Ed) *Routledge*

Carr, D. (2007) Towards an educationally meaningful curriculum: epistemic holism and knowledge integration revisited, *British Journal of Educational Studies*, 55 (1): 3-20

Carr, J. (2013) Keynote address at Westminster Briefing Event, London, 14 February 2013

Cerini, B., Murry, I. And Reiss, M.J. (2003) *Student Review of the Science Curriculum: major findings.* London: Planet Science

Chapman, E. (2003) Alternative Approaches to Assessing Student Engagement Rates. *Practical Assessment, Research and Evaluation,* 8, 13

Charmaz, K. (2002) Qualitative interviewing and grounded theory analysis. In J. F. Gubrium, and J. A. Holstein, (Editors) *Handbook of interview research: context and method*. Sage, (675-694)

Chetty, R., Friedman, J. and Rockoff, J. (2011) The Long-Term Impact of Teachers: Teacher Value Added and Student Outcomes in Adulthood. *National Bureau of Economic Research, NBER, Cambridge MA, Working Paper 17699.*

Chung, J. (2013) Research seminar: Finnish teacher education and its impact, or lack thereof, on the English education system. *Sharing Doctoral Research Finding*. Held at St Mary's University, 2nd October, 2013.

Chung, J. (2015) Finland, PISA and Scandinavia: A discussion of reasons for Finland's highr outcome in PISA from the Finnish perspective, *ReflectED: St Mary's Journal of Education, 5: 4-14*

Clandinin, D. J. and Connelly, F. (1987) Teacher personal knowledge: what counts as personal in studies of the personal. *Journal of Curriculum Studies,* 19 (6): 487-500

Clarke, S. (2005) *Unlocking Formative Assessment,* London: Hodder Murray

Clarke, J. and Pye, T. (2013). 'Right turn for Gove: wrong turn for Initial Teacher Education'. Research in Teacher Education, 3 (1) 33-37

Clough, P. and Nutbrown, C. (2002) *A Student's Guide to Methodology*, London: SAGE

Coe, R., Aloisi, C., Higgins, S. and Major, L.E. (2014) What makes great teaching? Review of the underpinning research. *Centre for Evaluation and Monitoring; Durham University: The Sutton Trust*

Cohen, L. Manion, L. and Morrison, K (2011) *Research Methods in Education*, 7th Edition, Routledge

Cresswell, J.W. (2007) *Qualitative inquiry and research Design: Choosing among five approaches (*3rd Edition). Thousand Oaks. CA: Sage

Cresswell, J.W. (2009) *Research Design,* 3rd Edition, Sage Publications

Crossley, M., Broadfoot, P. and Schweisfurth, M. (2007). (eds) *Changing Educational Contexts, Issues and Identities: 40 years of comparative education.* Routledge: Taylor and Francis Group.

Crotty, M. (1998) *The foundation of social research: Meaning and perspective in the research process.* Allen and Unwin: Australia

Danielewicz, J. (2001) *Teaching Selves: Identity, Pedagogy and Teacher Education.* SUNY Press Albany

Day, C., Kington, A., Stobart, G., Sammons, P. (2006). The personal and professional selves of teachers: stable and unstable identities. *British Educational Research Journal,* 32 (4) 601-16

Denscombe, M. (2008) Communities of practice: a research paradigm for the mixed methods approach. *Journal of Mixed Method Research.* 2 (3) 289-291

Dewey, J. (1910) *How we think.* Boston: DC Heath. Reprinted (1997) Dover Publications Inc. Mineola New York

Dewey, J. (1933) *How we think: A Re-statement of the Relation of Reflective Thinking in the Education Process*. Chicago: Henery Regnery

DfE. (2011a) Department for Education (June 2011) *Training our next generation of outstanding teachers – an improvement strategy for discussion* Crown copyright (online) Available at http://www.education.gov.uk/schools/careers/traininganddevelopment/a0078019/training-outstanding-teachers (Accessed 24 October 2011)

DfE. (2011b) Department for Education (November 2011) *Training our next generation of outstanding teachers – Implementation Plan* (online) Available at: http://media.education.gov.uk/assets/files/pdf/t/trainingournextgenerationofoutstandingteachersnov2011.pdf (Accessed 20 November 2011)

DfE. (2012a) Department for Education (2012) *Teachers' Standards Effective from 1 September 2012* (online) Available at: https://www.education.gov.uk/publications/standard/publicationDetail/Page1/DFE-00066-2011 (Accessed 24 October 2012)

DfE. (2012b) Department for Education / Teaching Agency (2012) http://www.education.gov.uk/inthenews (accessed 26 October 2012)

DfE. (2012c) Department for Education / Teaching Agency (2012) *Funding for postgraduate teacher training* (online) Available at: http://www.education.gov.uk/get-ino-teaching (Accessed 1 November 2012)

DfE. (2014a) Department for Education (February 2014) Behaviour and discipline in schools: Advice for head teachers and school staff. (online) Available at:

https://www.gov.uk/government/publications/DFE-00023-20114 (Accessed 17th July 2014)

DfE. (2014b) Department for Education (February 2014) Get into Teaching. (online) Available at: https://www.gov.uk/government/publications/get-into-teaching (Accessed 17th August 2014)

DfE/NCTL. (2014c) School Direct: Operations manual-2014/2015. Crown copyright.

www.gov.uk/government/uploads/system/uploads/attachment-data/file326575/school-direct-operation-manual-academic-year-2014-2015. 2pdf (Accessed on October 19th 2015)

Diener, E. and Crandall, R. (1978) *Ethics in Social and Behaviour Research.* Chicago IL: University of Chicago Press.

Drever, E. (2003) *Using semi-structured interviews in small scale research.* SCRE Centre University of Glasgow

Driscoll, M. (1985) *A Study of Exemplary Mathematics Programs.* Chelmsford, MA: Northeast Regional Exchange.

Duckworth, V. (2014) *How to be a Brilliant FE Teacher: A practical guide to being effective and innovative.* Routledge

Dudley, P. (2014) *Lesson Study: a handbook.* Cambridge: LS UK http://lesson.srudy.co.uk/lesson-study-a-handbook/ Accessed 19.10.15

Dudley, P. (2015) *Lesson Study: Professional Learning for Our Time*. Routledge: Taylor & Frances Group. London and New York.

Durrant, J. and Holden, G. (2006) *Teachers Leading Change.* London: Paul Chapman

Dymoke, S. and Cajkler, W. (2010) Beginning teaching and learning at Masters level: student teachers' pedagogic and academic concerns. *Paper presented at the BERA Annual Conference, University of Warwick,* 1-4th September 2010

Dymoke, S. & Harrison, J. (2008) *Professional development and the reflective practitioner*. Sage Publications

Dysthe, O. (2002) The learning potential of web-mediated discussion in a university course. *Studies in Higher Education*, 27 (3): 339-352

Erikson, E. (1968) *Identity, Youth and Crisis.* New York: Norton

Fautley, M. and Savage, J. (2007) *Creativity in Secondary Education.* Exeter: Learning Matters

Feasey, R. (2006) Creativity in teaching and learning science, in V. Wood-Robinson (Ed) *ASE Guide to Secondary Science Education.* Hatfield: Association for Science Education.

Feiman-Nemser, S. (2001) from Preparation to Practice: Designing a continuum to strengthen and sustain teaching. *Teachers College Record,* 103 (6), 1013-1055

Festinger, L. (1957) *A Theory of Cognitive Dissonance*. Evanston IL: Row Peterson

Flores, M.A. (2004) The impact of school culture and leadership on new teachers' learning in the workplace. *International Journal of Leadership in Education*

Flores, M. A. (2005) Teachers' views on recent curriculum changes: tension and challenge. *The Curriculum Journal,* 16 (3): 401-13

Flores, M.A. and Day, C. (2006) Contexts which shape and re-shape teacher identities: a multi perspective study, *Teaching and Teacher Education,* 22(2); 219-232

Fredricks, J. A., Blumenfield, P. C. and Paris, A. (2004) School Engagement: Potential of the concept, state of evidence. *Review of Educational Research,* 74, 59-109

Frith, H. and Gleeson, K. (2004) Clothing and embodiment: men managing body image and appearance. *Psychology of Men and Masculinity,* 5: 40-45

Fuller, F.F. and Manning, B.A. (1973) Self Confrontation Reviewed: A conceptualisation of Video Playback in Teacher Education. *Review of Educational Research,* 43 (4): 469-528

Gagné, R.M. and Driscoll, M. (1988) *Essentials for Learning for Instruction*, (2nd Ed) Prentice Hall

Garvin, D. A. (2003) Making the Case. *Harvard Magazine,* 106 (1): 57-107

Geddis, A. N. (1993). Transforming subject-matter knowledge: The role of pedagogical content knowledge in learning to reflect on teaching. *International Journal of Science Education*, 15 (6) 673-683.

Gergens, K. (1991) *The Saturated Self: Dilemmas of identity in contemporary life*. New York: Basic Books

Giddens, A. (1991) *Modernity and Self-identity.* Cambridge UK: Polity Press

Glaser, B. G. and Strauss, A. L. (1967) *The discovery of grounded theory: Strategies for qualitative research.* Chicago: Aldine

Goffman, E. (1959) *The Presentation of Self in Everyday Life.* London: Allen Lane

Goldstein, L. (1998) More than gentle smiles and warm hugs: Applying the ethic of care to early childhood education. *Journal of Research in Childhood Education,* 12: 246-261.

Goleman, D. (1998) *Working with Emotional Intelligence.* London: Bloomsbury

Gordon, AL. (2015) Resilience in Early Career Teachers. *Professional Doctoral submission to Nottingham Trent University*

Grossman, P. L., Wilson, S. M., and Shulman, L. S. (1989). Teachers of substance: Subject matter knowledge for teaching. In: Knowledge base for the beginning teacher. (ed) Reynolds, M. C. New York, Pergamon.

Haggerty, L. and Postlethwaite, K. (2012) An exploration of changes in thinking in the transition from student teacher to newly qualified teacher. *Research Papers in Education,* 27 (2): 241-262

Hargreaves, A. (2000) Mixed emotions: Teachers' perceptions of their interactions with students. *Teaching and Teacher Education,* 16, 811-826

Hargreaves, A. (2013) 'Professional Capital and the Future of Teaching', in T. Seddon and J.S. Levin (eds) *Educators, Professionalism and Politics: Global Transition, National Space and Professional Projection.* Sage. Pp. 290-311

Hattie, J. A. C. (2009) *Visible Learning: A synthesis of 800+ meta-analyses on achievement.* Routledge: Taylor & Francis Group: London and New York

Hattie, J. A. C. (2012) *Visible Learning for Teachers: Maximizing Impact on Learning.* Routledge: Taylor & Francis Group: London and New York

Hattie, J. and Yates, G. C. R. (2014) *Visible Learning and the Science of How We Learn.* Taylor & Francis Group: London and New York

Hewitt, J. (2009) Redressing the balance in mental health nursing education: Arguments for a value-based approach. *International Journal of Mental Health Nursing*, 18: 368-379

Holloway, I. and Todres, L. (2003) The States of Method: Flexibility, Consistency and Coherence. *Qualitative Research,* 3 (3): 345-357

House of Commons Education Committee (HCEC) Great Teachers: attracting, training and retaining the best. *Ninth Report of Session 2010-2012 Volume 1. HC 1515-1*

Hramiak, A. and Hudson, T. (2011) *Understanding Learning and Teaching in Secondary Schools.* Longman: Pearson

Hurst, G. (2013) Third class degree? Here's £9,000 to train as a teacher. *The Times Newspaper* (18.10.2013:46) www.thetimes.co.uk/tto/education/article3897666.ece (Accessed 19th October 2014)

Husbands, C. (2010) *What do history teachers (need to) know? A framework for developing and understanding practice.* In I Davies (ed), Debates in History Teaching, London Routledge, 84-95

Illeris, K. (2014) *Transformative Learning and Identity.* Oxon: Routledge

Inglis, M., Mallaburn, A., Tynan, R., Clays, K., and Jones, R.B. (2013) Insights from a subject knowledge enhancement course for preparing new chemistry and physics teachers. *School Science Review* 94 (349) 101-107

Institute of Physics. (2015) www.iop..org/education/teach/index.html (Accessed 20.10.15)

Jarvis, P. (2009) *Towards a Comprehensive Theory of Human Learning*. London: Routledge

Jenkins, R. (2002 revised edition) *Pierre Bourdieu.* Routledge: Taylor Francis Group

Jensen, B. and Reichl, J. (2011) *Better teacher appraisal and feedback: Improving performance.* Gratton Institute, Melbourne.

Jensen, B., Sandoval-Hernandez, A., Knoll, S., and Gonzalez, E. (2012) The Experience of New Teachers: Results from TALIS 2008. OECD Publishing http://dx.doi.org/10.1787/9789264120952-en (accessed 15.7.14)

Jones, M. (2003) Reconciling Personal and Professional Values and Beliefs with the reality of Teaching: Findings from an evaluative case study of 10 newly qualified teachers during their year of induction. *Teacher Development*, 7 (3) 385-401.

Kind, V. (2009). Pedagogical content knowledge in science education: Perspectives and potential for progress. *Studies in Science Education*, 45 (2) 169-204.

Kolb, D.A. (1983) *Experiential Learning.* Upper Saddle River, NJ: Pearson Education.

Kvale, S. and Brinkmann, S. (2009) *Interviews.* London: Sage

Kyriacou, C. and Kunc, R. (2007) Beginning teachers' expectations of teaching. *Teaching and Teacher Education,* 23: 1246-57.

Langdridge, D. (2007) *Phenomenological Psychology: Theory, research and method*. Pearson Education Limited.

Lawson,M. and Watts, M. (2010) 'Case studies taken from an unpublished small scale research project' in Mercier, C. Philpott, C. and Scott, H. (eds) (2013) *Professional Issues in Secondary Teaching.* Sage pp. 57-71

LeCompte, M. D. and Schensul, J. J. (1999) *Designing and conducting ethnographic research.* Walnut Creek, CA: AltaMira

Lincoln, Y. S. and Guba, E.G. (1985) *Naturalist inquiry.* Mewbury Park, CA: Sage

Lincoln, Y. S. and Guba, E.G. (2000) Paradigmatic controversies, contradictions and emerging influences. In N. Denzin and Y. Lincoln (Editors), *Handbook of qualitative research* (2nd ed., :163-188) Thousand Oaks, CA: Sage

Lincoln, Y. S. and Guba, E.G. (2005) Paradigms and perspectives in contention. In N. Denzin and Y. Lincoln (Editors), *Handbook of qualitative research* (3nd ed., :163-188) Thousand Oaks, CA: Sage

Lock, R., Salt, D. and Soares, A. (2011). Acquisition of Science Subject Knowledge and Pedagogy in Initial Teacher Training. Report to the Wellcome Trust.

Lundeen, C. A. (2004) Teachers' development: The struggle of beginning teachers in creating moral (caring) classroom environments. *Early Child Development and Care,* 174 (6): 549-564

Luthar, S. S. (2005) 'Resilience in development: A synthesis of research across five decades', in D. Cicchetti and D. J. Cohen (eds) *Developmental Psychopathology: Risk, Disorder and Adaptation,* New York: Wiley pp 739-95

Marland, M. (1975) *The Craft of the Classroom: A Survival Guide.* Heinemann Educational: London

Marland, M. (1980) *The Craft of the Classroom: A Survival Guide.* (3rd edition) Heinemann Educational: London

Margo, J., Benton, M., Withers, K. and Sodha, S. with Tough, S. (2008) Those who can? *Institute for Public Policy Research*

Marsh, C. (1982) *The Survey Method: The Contribution of Surveys to Sociological Explanation.* London: Allen and Unwin

McBer, H. (2000) Research into Teacher Effectiveness: A Model of Teacher Effectiveness. *DfEE Research Report, Issue 216*

McDiarmid, G.W., Ball, D.L. and Anderson, C.W. (1989). Why staying one chapter ahead doesn't really work. In Reynolds, M.C. (Ed) Knowledge Base for Beginning Teachers. New York Pergamon Press

McLeod, J. (2001) *Qualitative researching counselling and psychotherapy.* Sage

McNally, J., Blake, A., Corbin, B., Gray, P. (2008) Finding an identity and meeting a standard: connecting the conflicting in teacher induction. *Journal of Educational Policy, 23* (3), 287-298.

Mercier, C. Philpott, C. and Scott, H. (2013) (eds) *Professional Issues in Secondary Teaching.* Sage

Mishler, E. G. (1990) Validation in inquiry guided research: The role of exemplars in narrative studies. *Harvard Educational Review*, 60: 415-442

Miles, M.B. and Huberman, A.M. (1994). *Qualitative Data Analysis: A sourcebook of new methods.* Thousand Oaks, CA: Sage

Milner, H. R. (2005) Stability and change in US prospective teachers' beliefs and decisions about diversity and learning to teach. *Teaching and Teacher Education,* 21, 767-786

Moon, J. (2008) *Critical Thinking: An exploration of theory and practice.* Routledge: Taylor & Frances Group. London and New York.

Moss, P. (2012) (ed) *Early Childhood and Compulsory Education: Reconceptualising the Relationship.* Routledge: Taylor & Frances Group. London and New York.

Moustakas, C. (1994) *Phenomenological Research Methods.* Thousand Oaks, CA: Sage

National Curriculum (2008) QCA. www.qca.org.uk Accessed November 2014

Neuman, W. L. (2003) *Social Research Methods: Qualitative and quantitative approaches* (4th ed). Boston: Allyn and Bacon

Neumann, A. (2006) Professions passion: Emotion in the scholarship of professors at research universities, *American Educational Research Journal,* 43(3), 381-424

Nieswiadomy, R. M. (1993) *Foundations of nursing research* (2nd ed). Norwalk, CT: Appleton and Lange

OECD. (2010) *TALIS 2008 Technical Report. OECD,* Paris

Ofsted (2012a) Office for Standards in Education. *The framework for school inspection from September 2012 Ref: 120100* (online) Available at: http://ofsted.gov.uk/resources/framework (Accessed 29 October 2012)

Ofsted. (2012b) Office for Standards in Education. *Initial teacher education handbook Ref: 120028* (online) Available at: http://ofsted.gov.uk/resources/initial-teacher-education-inspection-handbook (Accessed on 26 October 2012)

Oliver, A. (2006) *Creative Teaching: Science in the Early Years and Primary Classroom.* London David Fulton

Ollin, R. (2009) The grading of teaching observations: implications for teacher educators in Higher Education partnerships. *Project Report: University of Huddersfield: Huddersfield Consortium*

Oppenheim, A. (1966) *Questionnaire Design and Attitude Measurement.* London: Heinemann

Parkinson, M. (2012) The Times: *How to Master Personality Questionnaires.* 2nd Edition. Kogan Page

Penick, J.E. and Yager, R.E. (1983) The search for excellence in science education, *Phi Delta Kappa,* 64(9):621-3.

Pettifer, L. (2015) A Land where teachers roam free: How Finland is empowering teachers to overhaul the curriculum. *Times Educational Supplement Magazine.* 30.10.2015. (Number 5170: 24-28)

Phillips, D. and Ochs, K. (2004). Researching policy borrowing: some methodological challenges in comparative education. *British Educational Research Journal,* 30 (6) 773-784

Pinder, H. (2008) Navigating the practicum: student teacher perspectives on their learning. British Educational Research Association Annual Conference. http://www.leeds.ac.uk/educol/documents/174930.pdf (accessed July 2015)

Platt, J. (1981) 'The Social Constructivism of ''Positivism'' and its Significance in British Sociology, 1950-80' in P. Abrams, R. Deem, J. Finch, P. Rock (eds) *Practice and Progress: British Sociology 1950-1980* London: George Allen and Unwin

Pollard, A. (2008) *Reflective Teaching: Effective and Evidence-informed Professional Practice,* 3rd edn. London: Continuum

Powell, K.C. and Kalina, C.J. (2009) Cognitive and Social Constructivism: Developing tool for an effective classroom. *Education,* 130 (2): 241-250

Pring, R. (2004) *Philosophy of Educational Research.* London: Continuum

Punch, K. F. (2005) *Introduction to Social Research: Quantitative and qualitative approaches* (2nd edition). London: Sage

Punch, K. (2009) *Research Methods in Education.* Sage

QCA. (2007) *The New Secondary Curriculum*. London: Qualifications and Curriculum Authority www.qca.org.uk

Reeves, D. (2011) *Finding your leadership focus.* New York: Teachers College Press

Rockoff, J.E., Jacob, B. A., Kane, T.J., & Staiger, D.O. (2011). Can you recognise an effective teacher when you recruit one? *Education,* 6 (1), 43-74

Rogers, C. R. (1961*) On Becoming a Person.* Boston MA: Houghton-Mifflin

Rodgers, C. and Scott, K. (2008) 'The development of the personal self and professional identity in learning to teach', in M. Cochrane-Smith, S. Feiman-Nemser, D.J. McIntyre, K.E. Demers (eds), *The Handbook of Research in Teacher Education,* London: Routledge, pp.732-755

Roberts, R., Gott, R. And Glaesser, J. (2010). Students' approaches to open-ended science investigation: the importance of substantive and procedural understanding. *Research Papers in Education,* 25 (4) 377-407

Royal Society of Chemistry. (2015) www.rsc.org/membership-and-community (Accessed 20.10.15)

Rudestam, K. E. And Newton, R.R. (2007*) Surviving Your Dissertation: A comprehensive guide to content and process* (3rd edition). Sage

Ryan, G.W. and Bernard, H.R. (2000) *Data Management and Analysis Methods.* Published in: Handbook of Qualitative Research (2nd edition) N. Denzin and Y. Lincoln (eds). Thousand Oaks, CA: Sage Publications (:769-802)

Sadler, P. M., Sonnert, G., Coyle, H. P., Cook-Smith, N. And Miller, J. L. (2013). The influence of teachers' knowledge on student learning in middle schools physical science classrooms. *American Educational Research Journal,* 50(5), 1020-1049

Sahlberg, P. (2007) Educational policies for raising student learning: the Finnish approach. *Journal of Educational Policy,* 22 (2): 147-171

Sahlberg, P. (2015) Interview report in L. Pettifer. A Land where teachers roam free: How Finland is empowering teachers to overhaul the curriculum. *Times Educational Supplement Magazine.* 30.10.2015. (Number 5170: 24-28)

Santagata, R., Zannoni, C. and Stigler, J. W. (2007) The role of lesson analysis on pre-service teacher investigation. *Journal of Math Teacher Education* 10, 123-40

Sarantakos, S. (2005) *Social Research* (3rd edition). New York: Palgrave Macmillan

Schön, D. (1987) *Educating the Reflective Practitioner.* London: Jossey-Bass

Schwab, J. J. (1978). *Science Curriculum and Liberal Education*. Chicago, Chicago University Press.

Shallcross, T., Spinks, E., Stephenson, P. and Warwick, P. (2002). How primary trainee teachers perceive the development of their own scientific knowledge: Links between confidence, content and competence? *International Journal of Science Education*, 24 (12) 1293-1312.

Shapiro, S. (2010) Revisiting the teachers' lounge: Reflections on emotional experience and teacher identity. *Teaching and Teacher Education,* 26 (3), 616-621

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher,* 15 (2) 4-14.

Shulman, L. S. (1987). Knowledge and Teaching: Foundation of the new reform. *Harvard Educational Review,* 57 (1) 1-22.

Smith, T. and Ingersoll, R. (2004) What are the effects of induction and mentoring on beginning teacher turnover? *American Educational Research Journal,* 41: 681-714

Smith, R.G. (2007) Developing professional identities and knowledge: becoming primary teachers, *Teachers and Teaching: Theory and Practice,* 13 (4): 377-397

Smith, J.A. Flowers, P. and Larkin, M. (2009) *Interpretative Phenomenological Analysis: Theory, method and research.* Sage Publications Ltd

Smithers, A. and Robinson, P. (2005) *Teacher turnover, wastage and movements between Schools.* University of Buckingham/DfES Research Report 640

Smithers, A. and Robinson, P. (2012) *The Good Teacher Training Guide* CEER (Centre for Education and Employment Research) Publications.

Smithers, A., Robinson, P. and Coughlan, M-D. (2013) *The Good Teacher Training Guide* CEER (Centre for Education and Employment Research) Publications.

Stake, R.E. (1995) *The Art of Case Study Research.* Thousand Oaks London: Sage

Steiner-Khamsi, G. (2010). The Politics and Economics of Comparison. Comparative Education Review. 54 (3) 323-342

Stoll, L. and Fink, D. (1996) *Changing our schools: Linking effectiveness and school improvement.* Buckingham: Open University Press

Strauss, A. and Corbin, J. (1998) *Basics of qualitative research: Grounded theory procedures and techniques* (2nd edition). Thousand Oaks, CA: Sage

Swaffield, S. (2008) (ed) *Unlocking Assessment: Understanding for Reflection and Application,* London: David Fulton

Swain, H. (2014) Universities still the best place to train teachers. *The Guardian Newspaper,* January 14, 2014

http://www.theguardian.com/2014/jan/14/uminversities-best-place-to-train-teachers-report-says accessed 3 June 2014

Tate, P. M. (207) Academic and relational responsibility of teaching. *Journal of Education,* 187,1.

Tennant, G. (2006). Admissions to secondary mathematics PGCE courses: Are we getting it right? *Mathematics Education Review*, 18: 49-52

Tennant, M. (2012) *The Learning Self: Understanding the potential for transformation*. San Francisco, CA: Jossey-Bass

TDA. (2010). QTS Standards Guidance www.tda.gov.uk/trainee-teacher/qts-standards.aspx (accessed 6th January 2011)

The National Curriculum for England. (1988) DfE www.education.gov.uk http://stem.org.uk/rxget (Accessed October 23rd 2013)

The Royal Society. (2007). *A 'state of the nation' report: The UK's science and mathematics teaching workforce.* London, The Royal Society.

Tobin, K. and Fraser, B.J. (eds) (1987) *Exemplary Practice in Science and Mathematics Education.* Perth: Curtin University of Technology

Tobin, K. and Fraser, B. J. (1990) What does it mean to be an exemplary teacher? *Journal of Research in Science Teaching,* 27(1): 13-25

Tobin, K. and Garnett, P. (1988) Exemplary practice in science classrooms, *Science Education,* 72(2):197-208

Tomlin, A. (2013) A world of ideas. Report: *The Magazine from the Association of Teachers and Lecturers,* January 2013: 10-12 www.atl.org.uk

Training and Development Agency for School (TDA). (2011) *Professional Standards for Teachers: Core. London:* TDA

Tuckett, A. G. (2005) Applying thematic analysis theory to practice: a researcher's experience. *Contemporary Nurse,* 19: 75-87

Twiselton, S. (2004) The role of the teacher identities in learning to teach primary literacy. *Educational Review*, 56 (2): 157-64

Vygotsky, L. (1978) *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press

Wellington, J. and Ireson, G. (2012) *Science Learning, Science Teaching.* Routledge: Oxon

Westbury, I., Hansen, S-E., Kansanen, P. and Björkvist, O. (2005) Teacher Education for research based practice in expanded roles: Finland's experience. *Scandinavian Journal of Educational Research, 49 (5) 475-485.*

White, J. (2004) *Rethinking the School Curriculum: Values, aims and purposes.* Psychology Press

Wiliam, D. (2011) *Embedded Formative Assessment,* Bloomington, IN: Solution Tree Press

Wilson, H. and Mant, J. (2011a) What makes an exemplary teacher of science? The pupils' perspective. *School Science Review,93(342)121-125*

Wilson, H. and Mant, J. (2011b) What makes an exemplary teacher of science? The teachers' perspective. *School Science Review,93(343)115-119*

Wragg, E.C. (2011) *An introduction to lesson observation*. Abingdon: Routledge

Yin, R.K. (2009) *Case Study Research: Design and Method, (*4th Edition). Sage Publications Inc.

Zehm, S. J. and Kottler, J. A. (1993) *On being a teacher: The human dimension.* Thousand Oaks, CA: Corwin Press

Appendix to Support Document 5.

Research Aim: To explore outstanding teaching potential in early career teachers on their personal and professional journey to becoming newly qualified teachers.

Irena Grounds January 2016

Document 5: Appendices

Appendix 1: Document 3 Results: Analysis of numeric data collection comparing first degree classification with final achievement grades

Table 1.1: The data used for correlations involved assigning numerical values representing the degree classification and the final exit grades on completion of the PGCE for each trainee in the cohort.

Degree Class	Ordering number		Exit Grade (G1-G4)	Ordering number
First or PhD	1.1		G1 Outstanding Pass	1
Upper second(2.1)/Masters	2.1		G2 Good Pass	2
Lower second (2.2)	2.2		G3 Satisfactory Pass	3
Third	3.0		G4 Fail	4
Pass	4.0			

The final exit grades used were the internal PGCE course exit grades aggregated from university and school experience and agreed by university tutor, school mentor and trainee. These are in a scale with Grade 1 being the highest grade and Grade 4 being a fail grade.
All the results for all three years were amalgamated and a bar graph was drawn. Because of the difference in numbers of trainees for each degree classification the percentage of the total for each category was calculated. The raw data is shown in Table 1.2

Chart 1: Degree classification versus exit grades achieved for whole cohort over a 3 year period presented as percentages of the total. (2010-2013)

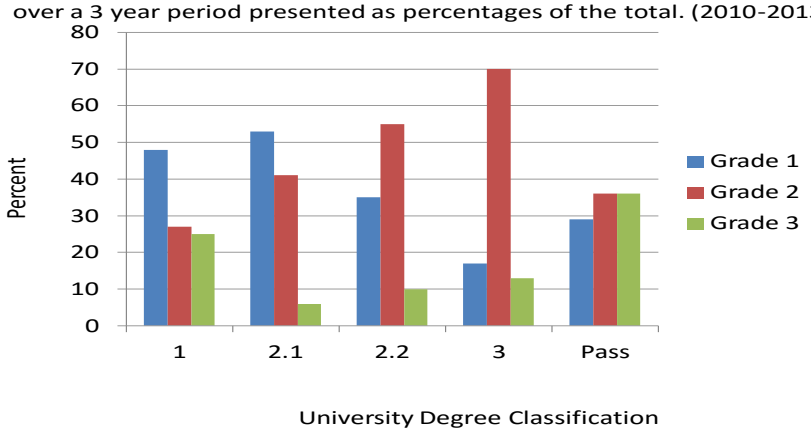


Table 1.2: Whole PGCE cohort. Two-way table: All subjects collected data 2010-2013

Degree	Grade 1	% Grade 1	Grade 2	% Grade 2	Grade 3	% Grade 3	Total	%	Mean Exit Grade
1.1	32	**48**	18	**27**	17	**25**	67	100	1.78
2.1	119	**53**	91	**41**	14	**6**	224	100	1.53
2.2	46	**35**	71	**55**	13	**10**	130	100	1.74
3.0	4	**17**	16	**70**	3	**13**	23	100	1.95
Pass	4	**29**	5	**35.5**	5	**35.5**	14	100	2.07
Total	**205**		**201**		**52**		**458**		**1.81**

Appendix 2:

Table 2.1: Doc 3: Degree Classification versus Exit outcome grades 2012.13

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	14	11	5	**30**	1.7
	2.1	39	34	5	**78**	1.56
	2.2	12	20	1	**33**	1.67
	3.0	1	2	1	**4**	2.0
	Pass	1	0	1	**2**	2.0
	Total	**67**	**67**	**13**	**147**	**1.63**

Two-way table: All subjects raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	2	4	2	**8**	2.0
	2.1	18	17	3	**38**	1.60
	2.2	3	6	0	**9**	1.67
	3.0	0	0	0	**0**	0
	Pass	0	0	0	**0**	0
	Total	**23**	**27**	**5**	**55**	**1.67**

Two-way table: Non-shortage subjects raw data AICT; GG; PE; RE

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	5	2	0	**7**	1.29
	2.1	6	4	0	**10**	1.40
	2.2	2	2	0	**4**	1.50
	3.0	0	0	0	**0**	0
	Pass	0	0	0	**0**	0
	Total	**13**	**8**	**0**	**21**	**1.38**

Two-way table: ML raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	3	3	1	**7**	1.71
	2.1	7	9	1	**17**	1.65
	2.2	4	9	0	**13**	1.70
	3.0	1	1	1	**3**	2
	Pass	1	0	0	**1**	1
	Total	**16**	**22**	**3**	**41**	**1.68**

Two-way table: Maths raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	3	2	2	**7**	1.86
	2.1	8	5	1	**15**	1.40
	2.2	3	3	1	**7**	1.71
	3.0	0	2	0	**2**	2
	Pass	0	0	0	**0**	0
	Total	**14**	**12**	**4**	**31**	**1.61**

Two-way table: Science raw data

Table 2.2: Degree Classification versus Exit outcome grades 2011.12

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	6	5	1	**12**	1.58
	2.1	39	34	7	**80**	1.60
	2.2	12	33	3	**48**	1.82
	3.0	0	10	2	**12**	2.16
	Pass	2	3	0	**5**	1.60
	Total	**59**	**85**	**13**	**157**	**1.70**

Two-way table: All subjects' raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	2	1	0	**3**	1.33
	2.1	22	11	5	**38**	1.55
	2.2	4	19	1	**24**	1.88
	3.0	0	0	0	**0**	0
	Pass	0	1	0	**1**	2.0
	Total	**28**	**32**	**6**	**66**	**1.67**

Two-way table: Non-shortage subjects' raw data AICT; GG; PE; RE

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	2	0	0	**2**	1.00
	2.1	4	5	0	**9**	1.56
	2.2	0	4	1	**5**	2.20
	3.0	0	0	0	**0**	0
	Pass	0	0	0	**0**	0
	Total	**6**	**9**	**1**	**16**	**1.68**

Two-way table: ML raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	1	2	1	**4**	2.0
	2.1	9	10	2	**21**	1.67
	2.2	5	8	1	**14**	1.71
	3.0	0	5	0	**5**	2.00
	Pass	1	1	0	**2**	1.50
	Total	**16**	**26**	**4**	**46**	**1.74**

Two-way table: Maths raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	1	2	0	**3**	1.67
	2.1	4	8	0	**12**	1.67
	2.2	3	2	0	**5**	1.40
	3.0	0	2	2	**4**	2.50
	Pass	1	1	0	**2**	1.50
	Total	**9**	**15**	**2**	**26**	**1.73**

Two-way table: Science raw data

Table 2.3: Degree Classification versus Exit outcome grades 2010.11

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	12	2	1	**15**	1.27
	2.1	41	23	2	**66**	1.40
	2.2	22	23	9	**49**	1.93
	3.0	3	4	0	**7**	1.57
	Pass	1	2	4	**7**	2.43
	Total	**74**	**54**	**16**	**144**	**1.59**

Two-way table: All subjects' raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	4	1	0	**5**	1.20
	2.1	17	12	2	**31**	1.52
	2.2	8	7	5	**20**	1.85
	3.0	2	1	0	**3**	1.33
	Pass	0	0	2	**2**	3.00
	Total	**31**	**21**	**9**	**61**	**1.64**

Two-way table: Non-shortage subjects' raw data AICT; GG; HSC; RE

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	2	0	0	**2**	1.00
	2.1	5	4	0	**9**	1.44
	2.2	2	5	0	**7**	1.71
	3.0	0	0	0	**0**	0
	Pass	0	1	0	**1**	2.00
	Total	**9**	**10**	**0**	**19**	**1.53**

Two-way table: ML raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	4	1	0	**5**	1.20
	2.1	13	4	0	**17**	1.23
	2.2	6	6	2	**14**	1.71
	3.0	1	1	0	**2**	1.50
	Pass	0	0	2	**2**	3.00
	Total	**24**	**12**	**4**	**40**	**1.50**

Two-way table: Maths raw data

	Degree	Grade 1	Grade 2	Grade 3	Total	Mean Exit Grade
	1.1	2	0	1	**3**	1.67
	2.1	6	3	0	**9**	1.33
	2.2	1	5	2	**8**	2.12
	3.0	0	2	0	**2**	2.00
	Pass	1	1	0	**2**	1.50
	Total	**10**	**11**	**3**	**24**	**1.71**

Two-way table: Science raw data

Appendix 3.

Document 3 Results: Narrative Data: Group A: Participants with First class Degrees or PhDs

Table 3.1: Questionnaire answers: Do you feel that your high qualifications will ensure that you become an outstanding teacher by the end of the course?

Respondent 1 Exit Grade 1	No. I know I am intelligent and capable of achieving high standards but I am nervous about my ability in the classroom as a teacher, as this involves so many other qualities. The personality of the person is more important their degree qualification.	SKE None	23 yrs Female Relevant degree 1st
Respondent 2 Exit Grade 3	There is so much more to successful teaching in schools than a particular degree qualification. If anything it is more difficult to explain a subject to a school child the more advanced the subject specialism. My high qualification just shows I can do better at exams than someone else.	SKE None	35-40 yrs Female Relevant degree 1st PhD Sc Career
Respondent 3 Exit Grade 3	My degree was obtained many years ago. The life skills I have acquired since then e.g. career in scientific research and being a parent are more important in developing my confidence in the classroom. If I become an outstanding teacher by the end of the course it will be because of my life experiences and not because of my degree qualifications	SKE 2 wks	45-50 yrs Male Relevant degree 1st PhD Sc Career
Respondent 4 Exit Grade 2	It cannot ensure it. There are so many other important aspects of teaching. The pedagogy and theory of learning go side by side with SK per se. A degree is a small pocket of SK and covers only a fraction of the National Curriculum. It is necessary to develop good SK but that will come with planning and time. The higher bursary did enable me to become a teacher as a mature student because of the higher financial assistance.	SKE 2 wks	35-40 yrs Male Relevant degree 1st Non Sc Career
Respondent 5 Exit Grade 1	Helps but not ensures. Soundness of SK, comprehension and application all serve to increase teacher confidence and enthusiasm and this is passed on to the learner. Many other factors are equally important e.g. communication skills, empathy, interpersonal skills and creativity No-one becomes an outstanding teacher until well into their career.	SKE 3 mths	35-40 yrs Female Relevant degree 1st, PhD Sc Career

Respondent 6 Exit Grade 3	My doctorate was obtained many years ago and much of what I learned may not be relevant now. My children are grown and I hanker for a career which incorporates utilising science and working with young people. Parenting skills are transferable skills and probably more important to successful teaching than high academic achievement.	SKE 3 mths	40-45yrs Female Part - relevant degree 1st PhD Sc Career
Respondent 7 Exit Grade 1	In order to get a high grade qualification it means that you have worked hard, applied yourself and you are well organised but this does not mean you can teach. The strategies gained through my long SKE were more important e.g. presentation skills, explaining concepts to an audience etc are more useful in the classroom. Higher bursaries for those people who have successfully complete a long SKE would have more impact on producing outstanding teachers	SKE 6 mths	35-40yrs Female 1st Part - relevant degree Non Sc Career
Respondent 8 Exit Grade Withdrawn	Using the title 'Dr' may give me a head start when gaining respect from pupils. But what follows after the introduction is more important. Everything from presence, pupil expectation, behaviour management, engaging the pupils leads to success in the classroom	SKE 6 mths	50-55yrs Male 2.1 PhD Part - relevant degree Sc career

The respondents' views are listed in order of prior teaching experience. The minimum requirement when starting the course is to spend five days observing in schools. Respondents 1 and 2 have completed the minimum requirement and have no SKE experience. Respondents 3 and 4 have completed a two week SKE involving practical interaction and group work. Respondents 5 and 6 completed a distance learning three months SKE course. One has come from a career which involved demonstrating and lecturing small groups of university students, the other hoping to start a new career now that her children are grown. Respondents 7 and 8 have completed a six months' full time SKE and their comments show a much deeper awareness of what may be required to be an effective teacher. One exited with a grade 1 outcome the other withdrew part way through the course. Each respondent had firm views on the contribution their high degree qualifications would make on become outstanding teachers which they summarised in writing prior to being interviewed.

Appendix 4:

Document 3 Results: Group A: First class degrees/PhD achievers:

Thematic analysis of interviews

When analysing the semi-structured interview transcripts of these eight highly academic participants, there were several common themes (Braun and Clarke, 2006).

Positive work ethic

All 8 trainees stated that hard work, a positive work ethic, single mindedness and dedication had contributed to their degree success. When asked how high academic achievement might contribute to outstanding teaching potential, all participants stated that the positive work ethic and determination to succeed was important. This gave an inner confidence and the potential to make lessons interesting. One respondent stated that the 'pupils will not know and will not care about qualifications' and another stated that the 'pedagogy needed to be addressed before subject knowledge would have an impact on teaching potential'.

Deep interest in their chosen science degree

5 out of 8 described a deep interest in and passion for their chosen degree subject. Those with broader degrees felt able to prepare any science subject to be taught. Those with very specific degrees e.g. physics, knew they would be challenged when teaching the other sciences e.g. biology even at a basic level. The requirement to teach across the sciences places considerable demand on trainees developing their subject knowledge, regardless of the level of their degree qualification. Even when teaching their subject specialism, trainee teachers need pedagogical content knowledge to transform good subject matter knowledge into effective lessons (Van Driel, De Jong and Verloop, 2002; Kind, 2009). All respondents acknowledged that PCK (Shulman, 1987) was essential for outstanding teaching potential, even if they did not use this terminology. Comments like 'the art of explaining at the (pupils') correct level of understanding' and 'using different ways developing and embedding the same concept' showed appreciation of the necessity of transformational learning (Goleman, 1998).

Higher training bursary for higher qualifications

All the mature trainees were appreciative of the additional funding they received to train and one of these stated that he would not have been able to start the PGCE without this additional funding because of family financial commitments. However, two felt that the government bursaries may have been better spent on encouraging Subject Knowledge Enhancement courses to be taken prior to starting the PGCE. The advantage of being aware

of the pedagogy required to develop good teaching skills was already being understood by these two individuals. This approach is central to high performing countries like Finland where teacher training takes 4 years in all and includes research opportunities awarding a Master's-level qualification on completion (Sahlberg, 2007).

Personal attributes

Whilst all 8 trainees identified attributes such as excellent communication skills, kindness, and enthusiasm for science as important factors for successful teaching, the evidence base for their assumptions varied for each individual. Those with children of their own extended their list to include the ability to explain difficult concepts at the correct level and the importance of good listening skills. The two trainees who had completed the long SKE included creativity, perseverance and critical self-reflection at this stage of their journey to becoming teachers. They had also been exposed to theory of learning and the learning process and were already using pedagogical jargon at this early stage in their careers. These examples support the view that identity is dynamic and that a teacher's identity shifts over time under the influence of a range of factors both internal to the individual, such as emotions (Rodgers and Scott, 2008) and external to the individual, such as life and work experiences (Flores and Day, 2006). Recent research (Smith, 2007) indicates that development of the self and self-understanding would appear to be advantageous for the classroom teacher personally and professionally and how their personal characteristics could affect their professional role. It could be significant in terms of helping to improve their relationships on school placement if they feel there is dissonance between idealised expectations and actual experience (see section on time related concerns next).

Time related concerns

Three respondents were concerned that they had completed their degrees many years ago. Two felt they needed to enhance their subject knowledge, the other felt that the basic science concepts did not change. He was more worried about the not being able to relate to young people and the 'age gap' that might exist, not only between teacher and pupil but between trainee and mentor in school. He was very perceptive. If I fast forward to the end of the course, his advice to trainee teachers was 'know your place as a student teacher; show gratitude and don't over step the mark'' (Section C, page 37). In this instance a secure professional identity as a respected and knowledgeable member of the scientific research community becomes the inexperienced novice in the classroom. Taking advice from colleagues and even more important, asking for advice, often from much younger mentors, challenges personal identity expectations.

Bourdieu has tried to understand the relationship between people's practices and the contexts in which those practices occur (Jenkins, 2002). He refers to these contexts-discourses, values, rules and regulations which produce and transform attitudes and practices as 'cultural fields'. These are fluid and dynamic rather than static entities. The

habitus can be understood as the values and dispositions gained from our cultural history which usually stays with us across contexts as they are durable and transposable. These values and dispositions allow us to respond to cultural rules and contexts in a variety of ways, because they allow for improvisation, but the responses are always largely regulated by where and who we have been in culture.

Creative thinking

One trainee (respondent 7) mentioned that a creative approach and thinking outside the box had been important during her degree dissertation and had helped her obtain her high final degree award. Interestingly half the group identified lack of creativity as a perceived weakness and something they hoped to develop during their training course. They were all physical scientists. Three obtained a grade 3 final award and one withdrew from the course. This creative aspect links to teaching and learning styles and is another key consideration when developing PCK. The ability to present material in an engaging and exciting way does not automatically come with deep understanding of subject content knowledge. This is supported by Day's (2006) work on the positive influences on learning moving from a teacher-centred approach to a pupil-centred approach. With this change in emphasis, the accountability falls on the teacher to "address the learning of each pupil" (Stoll and Fink, 1996:122).

Feasey (2005) has helpfully identified three dimensions of the creative classroom, the physical environment, the social and emotional environment and the thinking environment. Creative learning has elements of enjoyment, motivation, experiential learning and divergent thinking that helps pupils to develop problem solving skills in an imaginative and fun way (Fautley and Savage, 2007). The experience of learning becomes memorable and can also facilitate higher order thinking skills enabling the difficult concepts to be tackled because pupils have "not dulled their emotional response" (Oliver, 2006:57).

The training journey of respondent 3 and respondent 7 are introduced as case study pen-portraits in Appendix 7 of this document.

Appendix 5:

Document 3 Results: Science Subject Knowledge Enhancement (SKE) versus Outcome Grades (2008-2013) Raw Data

Table 5.1 All data from 2008-2013.

	2012.13						
	Science	**Grade1**	**Grade2**	**Grade3**	**Grade 4**	**Withdraw**	**Total**
	12 unit	**5**	**2**	**0**		**(1)**	**7 (1)**
	6 unit	3	2	3			**8**
	2 unit	3	3	0			**6**
	0 units	1	0	2			**3**
	Total	**11**	**7**	**3**			**21**

	2011.12						
	Science	**Grade 1**	**Grade2**	**Grade 3**	**Grade 4**	**W/D**	**Total**
	12 unit	**1**	**5**	**0**			**6**
	6 unit	2	2	1			**5**
	2 unit	5	9	1			**15**
	0 units	1	1	0			**2**
	Total	**8**	**16**	**2**			**26**

	2010.11						
	Science	**Grade1**	**Grade2**	**Grade3**	**Grade 4**	**Withdraw**	**Total**
	12 unit	**5**	**2**	**0**			**7**
	6 unit	N/A	N/A	N/A			**N/A**
	1 unit	2	13	2			**17**
	0 units	1	1	1			**3**
	Total	**7**	**15**	**2**			**24**

	2009.10						
	Science	**Grade 1**	**Grade2**	**Grade 3**	**Grade 4**	**W/D**	**Total**
	12 unit	**1**	**2**	**0**			**3**
	6 unit	N/A	N/A	N/A			**N/A**
	1 unit	6	10	0			**16**
	0 units	2	1	0			**3**
	Total	**7**	**12**	**0**			**19**

	2008.09						
	Science	**Grade1**	**Grade2**	**Grade3**	**Grade 4**	**Withdraw**	**Total**
	12 unit*	**5**	**1**	**0**			**6**
	6 unit	N/A	N/A	N/A			**N/A**
	1 unit	3	4	0			**7**
	0 units	2	4	0			**6**
	Total	**4**	**9**	**0**			**13**

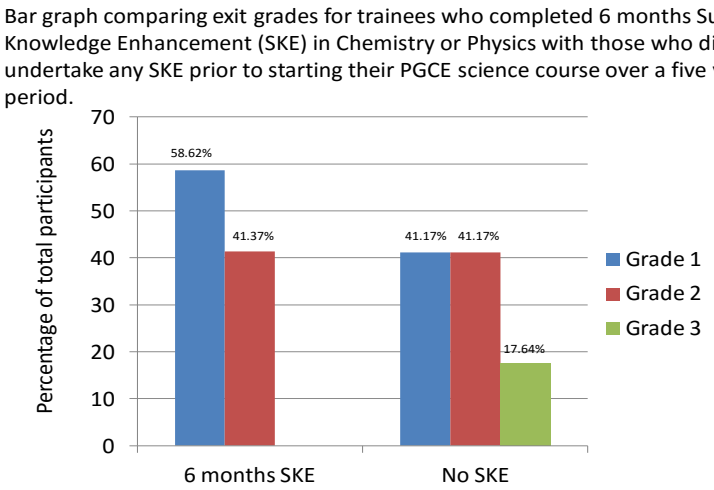
***12 unit=24 weeks=6 months**

6 unit=12 weeks=3 months (Distance Learning);2 units=4 weeks=1 month (replaced the 1 unit courses run in the preceding years);1 unit=2 weeks; 0 units= did not attend any pre-course SKE

Table 5.2: Grades achieved at the end of the PGCE course by those successfully completing a six months SKE in science prior to starting the course and those who did not attend any formal SKE provision before starting their PGCE course.

	Total 2008-20013							
SKE	**Grade 1**	**% G1**	**Grade 2**	**% G2**	**Grade 3**	**% G3**	**Total Number**	**Mean exit grade**
12 unit	17	**58.62**	12	**41.37**	0	**0**	**29**	**1.41**
0 unit	7	**41.17**	7	**41.17**	3	**17.64**	**17**	**1.76**

Chart 5.1: Bar graph to show grades achieved at the end of the PGCE course by those successfully completing a six months SKE in science prior to starting the course and those who did not attend any formal SKE provision before starting their PGCE course.



Analysis of numeric data

The numeric data display indicates that the trainees who successfully completed the long subject knowledge enhancement courses in physics and chemistry do better than any other group of trainees analysed. Their mean exit grade of 1.41 is the highest overall. If specifically compared with those trainees who are deemed to have sufficient and appropriate science qualifications, their exit grades are higher as a percentage of the whole. Two thirds of long SKE participants in my institution enter the teaching profession as 'outstanding' teachers and no-one obtained a grade 3 exit award. This compares with 18% of trainees who do not undertake formal SKE of any sort obtaining a grade 3 exit award.

Appendix 6:

Document 3 Results: Group B: Long SKE Participants: Narrative Data

Table 6.1. Questionnaire answers: Did the six months SKE address your subject knowledge needs?

Respondent 1 Exit Grade 2	A very comprehensive course that has increased my subject knowledge and **confidence** in the subject area. It enabled me to mix with other people with similar abilities which allowed us to bounce ideas off each other and then work together to come to conclusions and achieve set goals.	40-45 yrs Female Part-relevant degree 2.1 Sc Career
Respondent 2 Exit Grade 2	Definitely. It was a wonderful experience and provided a solid foundation for what is to come on the PGCE course. I did my A level chemistry so long ago that it was difficult to remember it all. I developed a depth of subject knowledge; how to structure an essay; microteaching practice and the routine of meeting deadlines. This was all essential for me. It gave me the **confidence** I needed.	25-30 yrs Female Part-relevant degree 2.2 Non Sc Career
Respondent 3 Exit Grade 1	This SKE has been very beneficial for me. Not only did it educate me in chemistry, it also introduced different teaching methods and scenarios for evaluation. The course has made me more **confident as a person** when presenting my work in front of a class in my subject area.	20-25 yrs Female Part-relevant degree 2.1 Non Sc Career
Respondent 4 Exit Grade 1	Yes definitely. The SKE has provided me with the background knowledge that will be useful when starting the PGCE. It was a good refresher on the A level content. Overall the SKE has provided me with **increased confidence** before starting my PGCE year through sharing common misconceptions with my peers, preparing and presenting material for presentation and giving me the time to really assess what I don't know.	20-25 yrs Female Part-relevant degree 2.1 Non Sc Career
Respondent 5 Exit Grade 1	I feel **confident** that I can go into any chemistry classroom with a good framework of information. Knowing the SK has given me that **confidence.** Although all the information may not be at my fingertips, I am familiar with the topics and have an understanding of how to approach them. This contributes massively to my professional development as I now feel that with some pre-topic preparation I will be able to **confidently t**each the entire chemistry curriculum.	20-25 yrs Female Part-relevant degree 2.1 Non Sc Career
Respondent 6	The course gave me an awareness of the necessary pedagogy in education to teach my subject. It boosted my **confidence** and provided a supportive environment. The education module was	20-25yrs Female Part -relevant

Exit Grade 1	particularly useful. We were in school for 2 weeks during the course so I already know the procedures and expectations of school.	degree 2.1 Sc Career
Respondent 7 Exit Grade 1	I am so pleased that I have done the physics SKE. I feel very **confident** when helping pupils and do not have to refer to the classroom teacher. I can cover anything that is thrown at me. It has contributed to my development as a teacher through lesson progression; exam question practice; good subject knowledge; development of practical skills; knowledge of the GCSE requirement.	35-40yrs Female 1st Part -relevant degree Non Sc Career
Respondent 8 Exit Grade 1	The SKE was of tremendous benefit for me. It gave me the opportunity to restore my knowledge of physics. My 'O' and 'A' levels were 40 and 38 years ago and my degree was 35 years ago. Working together and going through the same thing is very beneficial. You gain **confidence** from the group dynamics.	50-55yrs Male 2.1 PhD Part -relevant degree Sc career

Summary and Conclusions from group interviews and questionnaires

Overall the long SKE courses have had a positive impact on a range of outcomes for beginning teachers who have successfully completed them. There was an overwhelming sense that having done the course would place them in a better position for going onto the PGCE and some felt that they would be better placed than those who had studied the subject at degree level as their knowledge would be more grounded and applicable at school level. The SKE provided

- Familiarity with the subject and curriculum developed through working individually, in pairs and in small groups on subject specific presentations. The planning, resourcing, concept clarification and construction of appropriate questions for these presentations was one of the most important aspects of subject knowledge confidence building.
- Subject knowledge with the right content and at the correct level for teaching in school which would enable them to better relate/explain/understand pupils' needs and understand misconceptions or areas pupils struggle with.
- The SKE providers who incorporated school experience into their programme were especially commended by the participants. Tasks focussing on pupil progress within a single lesson and how this progress can be identified, monitored and assessed were especially thought provoking. A familiarity with assessment pedagogy and its associated vocabulary allowed for accelerated understanding of the PGCE programme once on the course.
- Practical experience with apparatus that they would meet in school. Having to order, set up and explain practical procedures developed understanding of 'How Science Works' (HSW) and the development of investigative skills and thought processes associated with scientific method.
- A network of people in similar positions. The camaraderie and opportunity to develop ideas and question misunderstandings in a secure setting without fear of ridicule meant that time could be spent fully understanding difficult concepts at the learner's own pace.

Appendix 7:

Document 3: Case study pen portraits:
Two Trainees' evaluation of progress through the PGCE course.

TRAINEE X (Respondent 3)

Trainee X is a mature student and a career-changer. He has a first class physics degree from an elite university and was awarded his PhD during his career as a research scientist. Re-organisation within his industry offered the opportunity for redundancy and the top bursary available for teacher training made the financial transition possible during the year of study. His subject knowledge audit revealed gaps in chemistry and biology and revision targets were agreed to be completed during the weeks before the PGCE course started.

His response to the initial questionnaire shows a reflective attitude towards transformational learning and he was aware of factors, other than subject knowledge, that would impact on his progress as a teacher.

'My degree was obtained many years ago. The life skills I have acquired since then e.g. career in scientific research and being a parent are more important in developing my confidence in the classroom. If I become an outstanding teacher by the end of the course it will be because of my life experiences and not because of my degree qualifications'.

Trainee X has the academic qualifications that this government associates with outstanding potential yet the transition from research scientist to secondary classroom teacher has proved challenging.

Personal reflections at the start of the course

Using an analysis of strengths and weaknesses (areas for development) trainee X states that his personal qualities of *'positive work ethic, methodical approach and attention to detail have been developed through years of meticulous practical observation. My patience, co-operation and understanding of child development have been developed through my role as a parent.* He is '*secure in his physics subject knowledge and has a deep interest in science*' which he has engendered in his own children through example and enquiry. He is '*amazed at their capacity to learn and question through curiosity'.*

Personal reflections throughout the course

Working with good role models in his first school placement, he '*enjoyed the initial venture into teaching science'* and the *'discussion that followed each observation'.* However, as the timetable increased and the preparation ventured into biology and chemistry topics he was less professionally confident and this impacted on his home life relationships.

In his reflective assignment he described the aspects of teaching that he had not expected to be so demanding. *'The long hours of preparation, the all-consuming marking burden and the realisation that pupils did not all find science fascinating, or at least the way I taught it,*

added to my feeling of isolation in the workplace. I had never felt this before. I had always been the one to give advice and now I was constantly seeking advice, acting on it (or so I thought) and still not making progress. If it had not been for the support of my university tutor and the social-media contact with PGCE colleagues I would have withdrawn from teaching'.

Time back at university to evaluate and reflect on practice was essential for this trainee. Finding out that *'I am not the only one struggling and having space and time to share experiences in a non-threatening environment'* were vital. The return to an academic environment was a *'tonic'*.

This trainee needed a supportive mentor and a supportive science department if he was going to thrive in his second placement. He needed a school ethos that matched his own core values and beliefs and a slower increase in timetable demands. After the first few weeks his reflective journal showed much more positive entries. *'The preparation is getting easier and more second nature. There are some outstanding role models who are prepared to work with me through team teaching and my university tutor is superb. Her advice on effective lesson planning at the correct level for my pupils with engaging materials has made all the difference. Teaching to my strength, physics at a high cognitive level, has boosted my confidence, increased my enjoyment and allowed me to develop positive relationships with pupils and staff'.*

Personal reflections at the end of the course

In response to questions relating to essential qualities needed to be an effective teacher and whether any were more important than possessing good subject knowledge, trainee X had firm views.

'Confidence, enthusiasm, patience, interest in young people, consistency in approach and creativity (of which I have none) are all essential for effective teaching and learning. Good subject knowledge is equally important. The other qualities are part of your personal identity and help you to bond with pupils and gain respect-all part of a jigsaw that makes for outstanding teaching when everything fits'.

He elaborated that by 'good subject knowledge' he meant a combination of deep subject knowledge, curriculum knowledge and pedagogic content knowledge, underpinned by generic pedagogic knowledge and understanding the learners and their needs. *'I found taking timetabled revision lessons with gifted and talented pupils the most difficult. I had the physics knowledge and could develop their understanding but trying to be creative in approach to maintain interest was difficult for me. I am not a creative person and relied on more experienced colleagues and my tutor for inspiration.*

This summary encompasses Shulman's (1987) knowledge bases that identify the teacher understanding needed to promote comprehension among pupils. In the second placement

trainee X's personal and professional identities were in harmony (Alsup, 2008) and so he was able to make progress.

Advice to incoming PGCE trainees from an NQT

- The PGCE course is very hard work throughout. Don't expect to eat, sleep or be merry until the end!
- Social contact (e.g. Facebook) must be maintained with your PGCE colleagues for moral support and for sharing of ideas.
- Be very careful to 'know your place' as a student teacher. Show gratitude and don't overstep the mark.

The last comment was very telling and this self-awareness came for personal reflections after mentor/tutor, trainee meetings.

TRAINEE Y (Respondent 7)

Trainee Y is a mature student and a career-changer. She has a first class degree in bio-mechanics from a red-brick university and worked as a project manager in the aviation industry. Re-organisation within her industry offered the opportunity for redundancy. At interview for her PGCE her audits revealed gaps in subject knowledge in all three sciences so she used her savings to support her for one year during a long SKE physics course. Being eligible for the top bursary for teacher training made the financial transition possible during the following PGCE year and she had encouragement and moral support from her husband and daughter.

Personal reflections at the start of the course

Her response to the initial questionnaires at the beginning of the course is very revealing about her competitive and determined personality.

'In order to get a high grade academic qualification it means that you have worked hard, applied yourself and you are well organised but this does not mean you can teach. The strategies gained through my long SKE were more important e.g. presentation skills, explaining concepts to an audience etc. are more useful in the classroom. Higher bursaries for those people who have successfully complete a long SKE would have more impact on producing outstanding teachers'

Personal reflections throughout the course

Trainee Y likened her professional and personal journey during the PGCE course to learning to ride a unicycle in the circus. The skills in school were developed slowly whilst trying to juggle university demands (e.g. assignments) and family commitments. '*My first school placement gave me the freedom to develop my own style in the classroom and welcomed*

me as part of the community. As trainee teachers we were encouraged to get involved in school life outside our subject specialist department. The school ethos and moral values matched my own. Even by the end of first placement I felt like a qualified teacher. I was determined to get an outstanding grade in my teaching just as I had been determined to get a first on my degree course'.

The feeling of belonging translated into developing good relationships with the pupils. Trainee Y compared getting pupils on her side *'like reeling in a big fish; it needs strength of character tempered with flexibility. You have to find the correct thickness of line and this differs for each fish'. Returning to her 'unicycle'* metaphor, by the end of her first placement she was *'riding the monocycle and starting to juggle'. A 'plaster was sometimes needed as I did fall off the bike once or twice, but with the support from colleagues at school and university and my fabulous mentor and tutor, I was beginning to juggle a couple of balls and ride the unicycle at the same time'.*

The challenges that made her 'fall off the bike' included a disappointing first assignment result, some lessons that did not go according to plan and one-year group that she found challenging. She did continue to make excellent progress, achieved her outstanding grade by Christmas and was offered a post at her first placement school. By the time she had finished her second placement she was *'able to juggle and ride on demand and was looking forward to doing it all on a high wire as a newly qualified teacher!'* She felt that the following year could only get easier as through reflecting on her practice and learning to take a step back when considering how to solve issues, she had become more self-aware, more patient and a calmer person.

Personal reflections at the end of the course

In response to questions relating to essential qualities needed to be an effective teacher and whether any were more important than possessing good subject knowledge, trainee Y was clear.

'Creativity, empathy, organisational skills, good subject knowledge and caring about each class and their learning experience are all essential qualities of an outstanding teacher. I produce exciting lessons, have enthusiasm for science and this translates into good behaviour management. My classes are learning and having fun/engaging with the material at the same time'.

Advice to incoming PGCE trainees from an NQT

- Establish a strong support network from family and personal friends,
- Keep in contact with the people from the PGCE and from the SKE course throughout the course and beyond.

- Understand the demands of the year from the beginning. You will be juggling everything at once, university assignments, school lesson plans and resources and family commitments so be prepared to ask for help.
- Your mentor and your school department are very important. If you feel part of the school community, you will flourish. Get involved from the start.
- Enjoy your year and choose your first post carefully so that you can ride a unicycle, juggle and be on the high wire with confidence knowing that there is a strong safety net just in case!

The personal reflections of these two trainee teachers constitute a small part of the whole picture of their professional development. However, even from these snapshots of information, they identify that some factors have influenced their professional progress more than others. They both concur that subject content knowledge as exhibited by high academic qualifications does not automatically produce an outstanding teacher (Pye and Clarke, 2013). Pedagogic content knowledge is equally important (Shulman, 1987) and is developed at various stages on the learning journey. When PCK is combined with SCK prior to starting the PGCE course e.g. in a subject knowledge enhancement programme, professional progress can be accelerated. A strong support network and school experiences that match a trainee's core beliefs allows an early career teacher to flourish (Alsup,2008). How the inter-relationship of all these factors contributes to outstanding teacher potential is the focus of my main research project.

Appendix 8:
Document 4 Results: Overview of Participants and Retention Rates

Table 8.1: Outstanding Trainees 2010.11. 90% Retention in teaching after 4 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2010	School B 2011	NQT School 11.12	NQT+1 School 12.13	NQT+2 School 13.14	NQT+3 School 14.15
An (24 yrs) F ScBi	2 weeks PCEC	Parks and Gardens	2.1 Landscape Management	3:2:1 60M credits	A	B	C	D	D	D Mentor
Ar (25 yrs) F ScCh	Exam Papers	Accounts Assistant	2.1 Biomed Sc	3:2:1 0M credits	A	B	B	B	B	B HOY
Br (22 yrs) F ScPh	6 months PEC	Lab Research	1.1 Sports Sc	1:2:1 60M credits	A	B	B	B	B	X
De (24 yrs) F ScCh	2 weeks PCEC	Accounts Assistant	2.2 Science	3:1:1 0M credits	A	B	C	B	B	B HOY
Df (26 yrs) F ScPh	6 month PEC	Teaching Assistant (TA)	2.1 Sports Sc	1:2:1 30M credits	A	B	C	C	C	C HOD
Gn (23 yrs) F ScPh	2 week PCEC	MSc /TA	2.1 MSc Physics	3:1:1 60M credits	A	B	A	A	A	A HOD
Lc (50 yrs) F ScCh	6 months CEC	Doctor	MBBS Medicine	1:1:1 30M credits	A	B	C	C	C	C 2/c HOY
Lk (22 yrs) M ScPh	2 week PCEC	Student/ waiter	2.1 MPhysics	3:1:1 60M credits	A	B	C	D	D	E HOD
Na (25 yrs) F ScCh	6 months CEC	Hospital Psychologist	2.1 Psychology	2:1:1 60M credits	A	B	B	B	C	C HOD
Tn (38 yrs) M ScPh	6 months PEC	Engineer	Pass Engineering	3:2:1 60M credits	A	B	C	C	C	C HOD

Key to table 8.1

- M/F=Male/Female; ScBi=Biology; ScCh=Chemistry; ScPh=Physics.

- SKE=Subject Knowledge Enhancement; PEC=Physics; CEC=Chemistry; PCEC=one-week physics, one-week chemistry

- Grades awarded at the end of each phase. Foundation Phase; Development Phase; Consolidation Phase of training.

- Grades: Grade 1=Outstanding; Grade 2=Good; Grade 3=Satisfactory.

- Master's credits: Two assignments submitted worth 30 M credits each. 60M credits results in award of Postgraduate Certificate in Education (PgCE); under 60 M credits results in Professional Graduate Certificate in Education (PGCE)

- Consecutive School Placements A and B. Letters in subsequent columns indicate either remaining in one of the placement schools (A or B)or moving to other schools (C, D, E).

- X= Left school teaching (Sports Coach); HOD=Head of Department; HOY=Head of Year; 2 i/c=second in charge.

Appendix 9: Consent letter and ethical statement.

Appendix 9a: Consent Letter

Irena Grounds

PGCE Science Tutor

Department of Theology, Education and Leadership,

St Mary's University

Twickenham TW1 4SX

1 July 2011

As part of my Professional Doctorate, I am currently researching transition from trainee teacher to newly qualified teacher in those trainees who achieved an 'outstanding' exit grade at the end of their PGCE year. The importance of providing a nurturing professional environment is essential for early career teachers to flourish and remain in the teaching profession. Key research questions are:

- Do outstanding trainees become outstanding newly qualified teachers?
- What are the factors that support or challenge professional and personal development in early career teachers?

I would like to invite you to participate in my research this year. Your participation would involve a small scale questionnaire and interview discussion at the end of your PGCE course and a follow up interview at specific times during your NQT year.

The activities include short writing tasks and brief questionnaires, as well as the possibility of follow-up interviews next year.

Clearly, your involvement would be appreciated by me as the researcher, but I hope that your participation may also inform your own reflective practice throughout the PGCE year.

I have attached an ethical statement in relation to this pilot research. If you are happy to participate, please complete the permission statement.

Thanking you in advance,

Best wishes,

Irena Grounds

Appendix 9b: Ethical Statement

ETHICAL STATEMENT

This statement is to assure you of good ethical practice throughout the pilot research activities.

This means that:

- The research activities have been approved by St Mary's University and Nottingham Trent University;
- An outline of the research has been provided in a letter to participants;
- Written consent of the participants will be secured before the research commences;
- Confidentiality will be observed at all times and no individual will be identifiable at any stage of the research;
- Participants will have the right to withdraw from particular research activities or the research as a whole and all data relating to them will be destroyed in the latter case;
- Participants may contact me at any time with questions or for clarification about any aspect of the research;
- No recording of interviews will take place without prior consent of participants;
- Time and venue for research activities will be negotiated with the participants to cause the least disruption and demands on time as possible;
- All participants will be informed of interim findings of the pilot research from September 2014.

Irena Grounds

Science PGCE Tutor

St Mary's University College

PERMISSION

Name (in capitals):

I have read the letter outlining research activities to be undertaken by Irena Grounds between July 2011 and September 2015. I have read the ethical statement and am happy to participate in the research.

Signed: Date:

Appendix 10:

Semi-Structured Interview Questions

Appendix 10a: Semi-structured Interview PGCE 2012.13

Name:

Personal Profile

Identify where your perception of the extremes of personality traits are located

- Extrovert_____ Introvert
- Tough-minded _____Tender-minded
- Conforming _____ Creative
- High structure _____ Low structure
- Confident _____Emotional

Academic Confidence?

What were your expectations about teaching before you started the course?
What values and beliefs did you hold at the beginning of the course?
Did they change once you started the course?

- University experience
- School A experience
- School B experience

Have your ideas changed now that you have finished the course?

Professional profile

School A

Did you feel comfortable in school A? Were you being yourself?

Describe your biggest challenge

What was your biggest support?

School B

Did you feel comfortable in school B? Were you being yourself?

Describe your biggest challenge?

What was your biggest support?

Draw a timeline from September to June tracking your confidence level (0-100%) and indicating on the illustration any factors that influenced your confidence levels. (mentor, school ethos, tutor, colleagues, family, friends, pupils, critical incidents, workload, personal qualities etc.)

Draw a picture to represent how your personal identity and your professional identity interrelated when in school A, School B and at university. Challenge? Synergy?

Appendix 10b: Semi-structured Interview NQT 2013.14

Name:

As part of my research I would like to find out how my Science PGCE trainees fared during their NQT year. This may provide an idea of the optimum teaching environment for success during this very important year. Please could you consider the questions below.

At the end of your PGCE training year:

- What were your strengths?
- What did you need to develop?
- How confident were you? (on a scale of 0-100% with 100% being the highest)

I would like to get a picture of how you progressed during your NQT year and whether the PGCE grade you received contributed to your progress in any way.

Task

Draw a time line from September 2013 to July 2014 and consider how your confidence has developed throughout your NQT year (100=very confident; 0=confidence is rock bottom)

Add any important factors/milestones along the way and explain how they affected your progress and confidence.

You could consider type of school, strength of mentoring, subject knowledge confidence, home life, other commitments, organisational skills, teaching timetable, support of other colleagues etc.

How often were you observed during your NQT year? Do you feel that you have had a successful NQT year?

Continuing as an NQT+1

Has your confidence level changed as you start your post induction year? Explain.

What advice would you give to those starting their NQT year in September?

What is an outstanding teacher?

Thank you for your time in helping with my research. Best wishes, Irena

Irena.grounds@stmarys.ac.uk 020 8240 4285

Appendix 11:

Personality Questionnaire (Parkinson 2012): How to master personality questionnaires: The essential Guide.

Most questionnaires identify five main aspects or dimensions to personality known as 'The Big Five' (Parkinson, 2012:22). The names given to the five dimensions vary, depending on who designed the questionnaire though they can broadly be described as follows.

- Extrovert/Introvert: Extroverts are outgoing, talkative and lively individuals. They tend to be comfortable with strangers and search out company. Introverts are introspective and reserved and prefer their own company. They prefer to get n with things quietly by themselves.
- Tough minded/Tender minded: Tough minded people are assertive, energetig and can sometimes appear to be rather insensitive. Tender minded people are caring and supportive and put great value on warm and trusting relationships.
- Conforming/Creative: Those who are conforming are down to earth and moderate. They tend to apply common sense to whatever they do. The creative person is more interested in having ideas, practical or not, and may fight against rules and regulations.
- High structure/Low structure: Highly structured individuals are precise, formal and methodical. They believe that there is a place for everything and are detail conscious. And tidy. Low structured individuals are casual and spontaneous. They dislike routine and can be disorganised.
- Confident/Emotional: Confident people are relaxed and unruffled. They tend to be easy going and can take things in their stride. Emotional people are prone to anxiety and bottle up their tensions.

In reality people may be at extremes of these dimensions or somewhere in between. Questionnaires therefore produce scales that run between each pole, for example, it is possible to be a tough-minded person and be caring and empathetic when necessary.

The Mind Style Questionnaire used is found on pages 55-58 of Parkinson (2012). How to interpret the responses is given on pages 58-71.

Appendix 12:

Document 5 Results: Personality traits summary for each participant

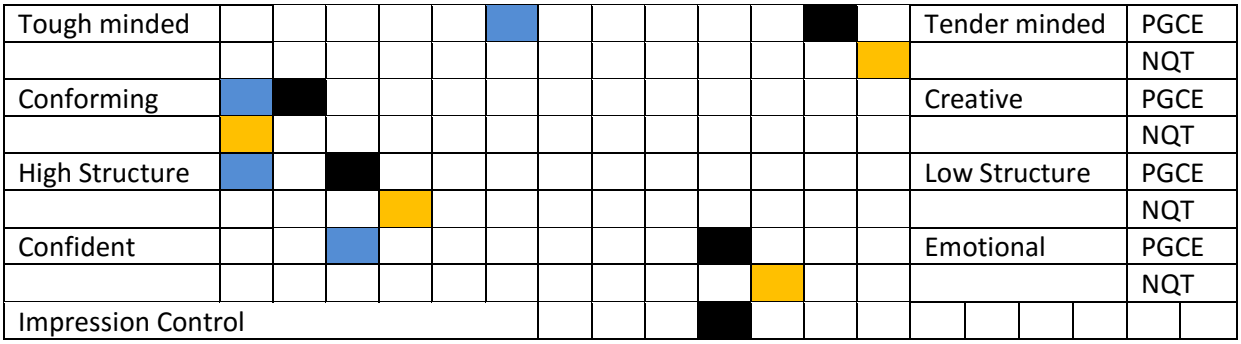
-score	6	5	4	3	2	1	0	1	2	3	4	5	6	+score	**SA**
Extrovert														Introvert	PGCE
															NQT
Tough minded														Tender minded	PGCE
															NQT
Conforming														Creative	PGCE
															NQT
High Structure														Low Structure	PGCE
															NQT
Confident														Emotional	PGCE
															NQT
Impression Control															

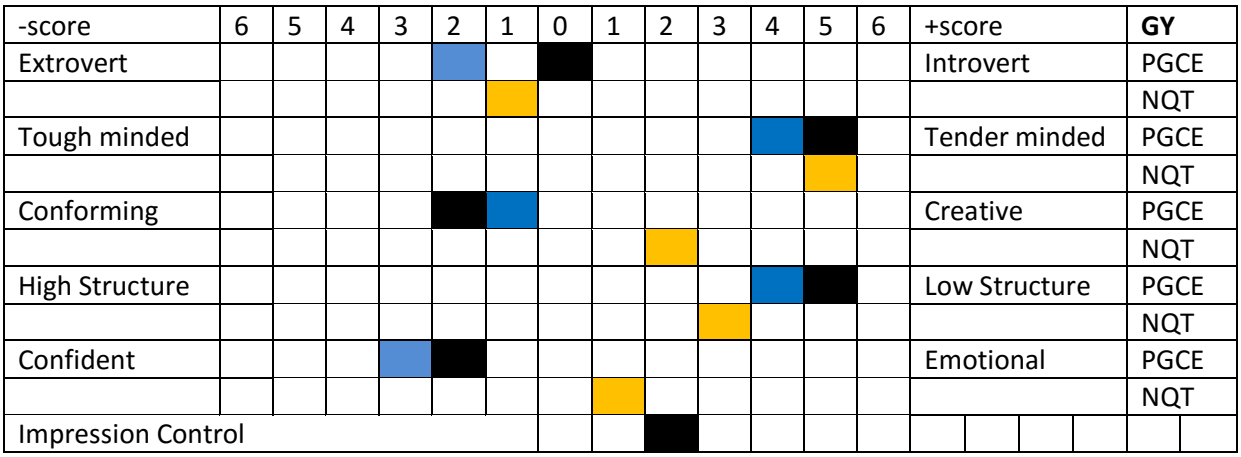
Actual Personality Trait PGCE Perceived Trait PGCE NQT Year Actual Trait

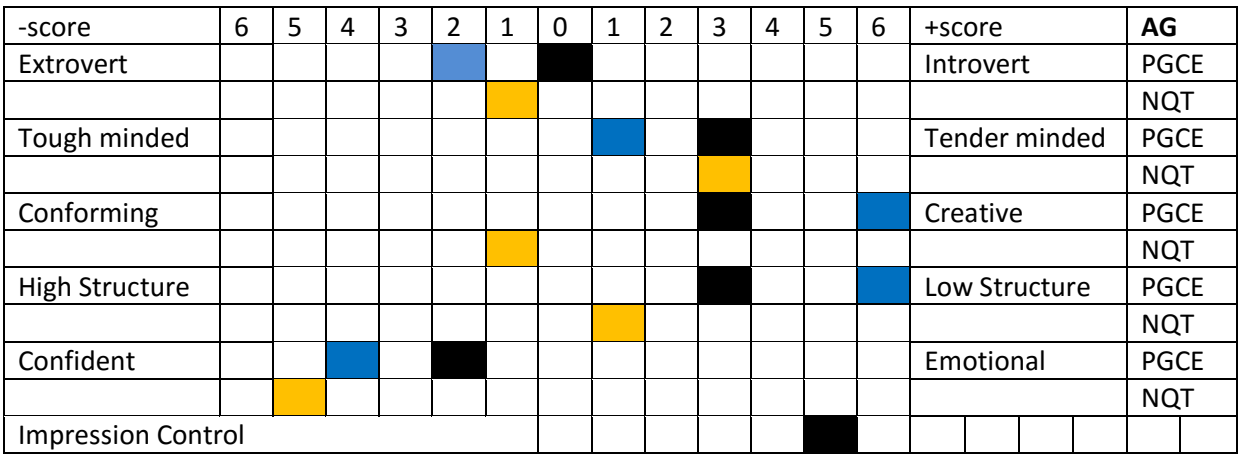
-score	6	5	4	3	2	1	0	1	2	3	4	5	6	+score	**AB**
Extrovert														Introvert	PGCE
															NQT
Tough minded														Tender minded	PGCE
															NQT
Conforming														Creative	PGCE
															NQT
High Structure														Low Structure	PGCE
															NQT
Confident														Emotional	PGCE
															NQT
Impression Control															

-score	6	5	4	3	2	1	0	1	2	3	4	5	6	+score	**AY**
Extrovert														Introvert	PGCE
															NQT
Tough minded														Tender minded	PGCE
															NQT
Conforming														Creative	PGCE
															NQT
High Structure														Low Structure	PGCE
															NQT
Confident														Emotional	PGCE
															NQT
Impression Control															

-score	6	5	4	3	2	1	0	1	2	3	4	5	6	+score	**LA**
Extrovert														Introvert	PGCE
															NQT


Tough minded
Tender minded
PGCE
NQT
Conforming
Creative
PGCE
NQT
High Structure
Low Structure
PGCE
NQT
Confident
Emotional
PGCE
NQT
Impression Control


-score 6 5 4 3 2 1 0 1 2 3 4 5 6 +score GY
Extrovert
Introvert
PGCE
NQT
Tough minded
Tender minded
PGCE
NQT
Conforming
Creative
PGCE
NQT
High Structure
Low Structure
PGCE
NQT
Confident
Emotional
PGCE
NQT
Impression Control


-score 6 5 4 3 2 1 0 1 2 3 4 5 6 +score AG
Extrovert
Introvert
PGCE
NQT
Tough minded
Tender minded
PGCE
NQT
Conforming
Creative
PGCE
NQT
High Structure
Low Structure
PGCE
NQT
Confident
Emotional
PGCE
NQT
Impression Control

Appendix 13:

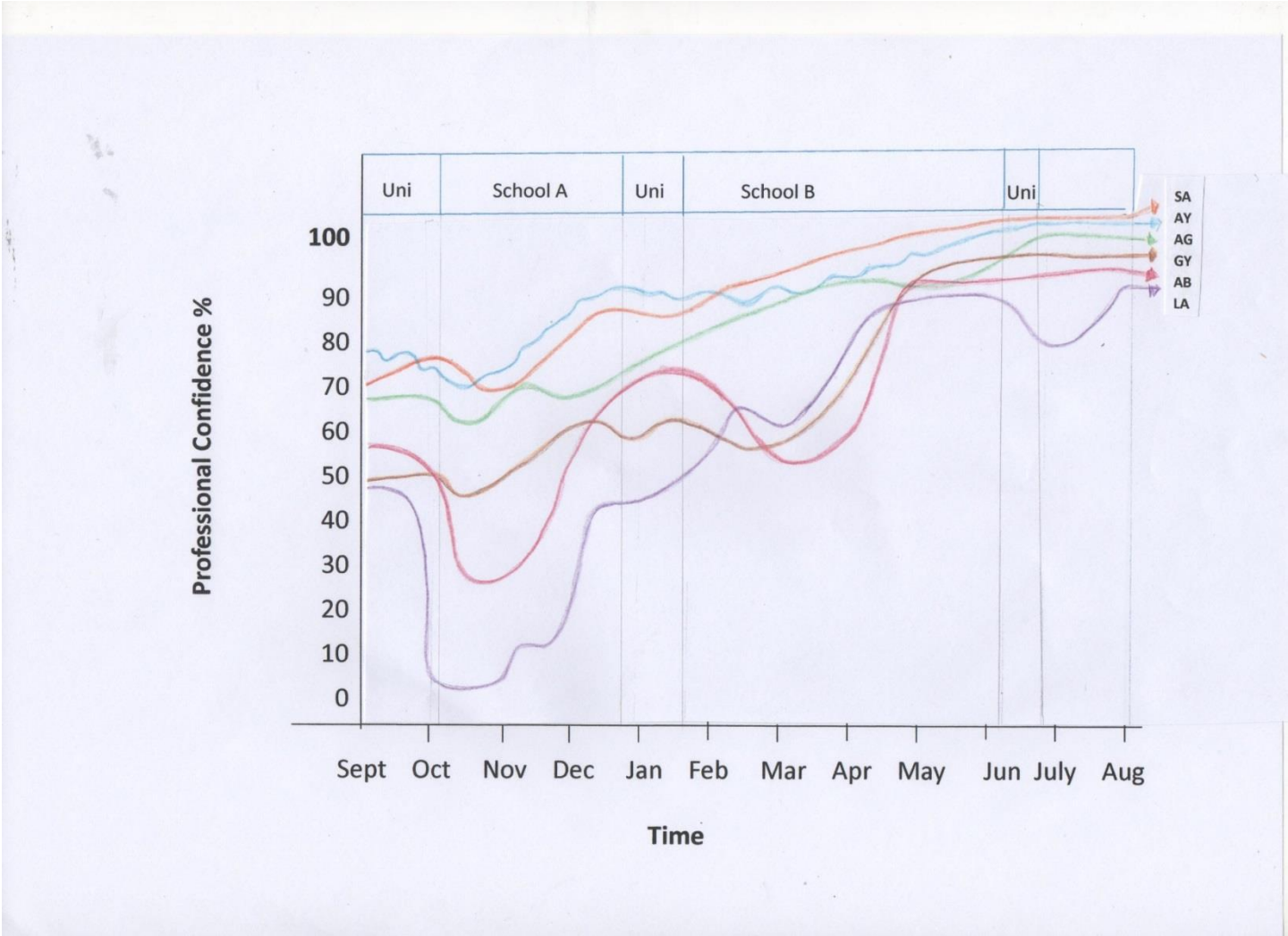
Phases of Thematic Analysis (Braun and Clarke, 2006)

Table 13.1

Phase		Description of process
1	Familiarising yourself with your data	Transcribing data (in necessary), reading and re-reading the data, noting down initial ideas
2	Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3	Searching for themes	Collating codes into potential themes, gathering all data relevant in each potential theme.
4	Reviewing themes	Checking if the themes work in relation to the coded extracts (level 1) and the entire data set (level 2), generating a thematic 'map' of the analysis.
5	Defining and naming themes	Ongoing analysis to refine the specifics of each theme, and overall story the analysis tells, generating clear definitions and names for each theme.
6	Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Appendix 14: Document 5 Results: Outstanding Trainee details from Recruitment Interview 2012.13

Name	Personal	Degree Assignments	Prior career	Date of Application	Start Date	Interview	Personal Statement	Reference	GCSE	A Level
SA Physics M 1child	41 years Female SKE 6 months M1 58; M2 68	Ist Psychology Reading HND Engineering PhD Phys and Psych Pending	Project manager, Aviation Coach, equestrianism dance; aerobics	27/6/11 SKE 6 months 2 School Visits	1/9/12	Excellent Enthusiastic impressive preparation 5dys obs; 2 schs 2ry schools	Excellent Project manager led teams in various industrial settings	Excellent Strong work ethic Prepared for choice	Ph C Ch B Eng A Maths B	Ph C Mths C Eng C Psych C
AB Chem S	21 Female SKE 6 months M1 63 M2 48	2.1 Physiol Westminster	SAS Hospital Charity work NVQ 2 childcare	20/7/11 SKE 6 months 3 weeks in school SAS Scheme	1/9/12	Excellent Enthusiastic Well prepared 21 dys obs; 2ry school. 5days 1ry school	Excellent Wide experience of working with people	Excellent Good involvement in university life	Sc AA Eng B Maths A	Chem D Biol C Maths B RS B
AY Chem S	23 Female SKEC 12 wks M143 M243	2.2 Human Science King's	Youth worker YMCA Charity work	7/6/12 3 months ASKE	1/9/12	Excellent Enthusiastic and single minded about future 2 dys; 2 sch;2ry	Excellent Wide experience of working with young people	Fully supported	Sc A*A* Eng A* Maths A*A* ICTA*	Biol A Chem B Maths B Gen St A Hist B
LA Biol S	37 Female M1 63 M2 63	BDS Dentistry Wales Dr therefore equivalent to 1st.	Hospital dentist and lecturer. Sunday school teacher.	3/4/12 Could not SKE because of work commitment.	1/9/12	Clear career path chosen. Skilled in current post. X/C activities 5dys;3sch;2ry	Outstanding in preparation for career change.	Oustanding praise work and communication skills	Phys B Chem A Biol A Eng A Maths A	Biol A Chem C Maths B
AG Biol S	21 Female No SKE M1 53 M2 53	1st Human Bioscience Exeter	Student ambassador	23/1/12 Finals Year so no SKE	1/9/12	Enthusiastic, Well prepared Professionally aware. 10dys; 2schs; 1ry 2ry	School observation during uni Student ambassador	Outstanding praise. Recommend without reservation	Science A* Maths A* Eng A	Biol A Phys A Maths A Geog A Cr Think A
GY Biol S	21 Male SKEP 1 week M158 M258	2.1 Biology RHU	Scout Leader Drama Gold Medal	16/4/12 Finals Year 1 week Phys SKE	1/9/12	Enthusiastic modest, well prepared. 5dys 1ry; 0days 2ry	Worked as scout leader Drama loved biology	Outstanding Praise Recommend without reserva	Science A Maths A Eng A	Biol B Chem C His C German C



Appendix 15: Document 5: Summary Timeline PGCE 2012.13

Appendix 16:
Document 5 Results:
Individual Summary Table and Timeline for each Participant
PGCE 2012.13

Table 16.1 Summary AB PGCE 2012.13

Professional Persona

- Creative (different, interesting ways to teach)
- Confident (high expectations from the start)
- High structure (well organised) all documentation is thoroughly and appropriately completed
- Extrovert/Introvert depends on situation (built up strong networks and communities but takes a while)
- Tender minded (good discipline but being very strict and adhering rigidly to school policy does not suit me)

Preparation before course

- 6 months SKE (big commitment) Important in supporting subject knowledge, practical work and initial school observation.
- Work skills; working in different settings in hospitals and schools often voluntary to get more experience
- Family supportive of career path

Support

- Family and friends
- School network (mentor was very important; collaborative placement gave me confidence and support)
- University network
- Learning communities are very important

Expectations for pupils

- High expectations of behaviour and learning
- Instil moral values not just academic aspect. Pupils have to respect teachers and each other
- Enjoy lessons and make them appropriate for pupils' needs. Be creative with lesson planning

Essential for success as a teacher

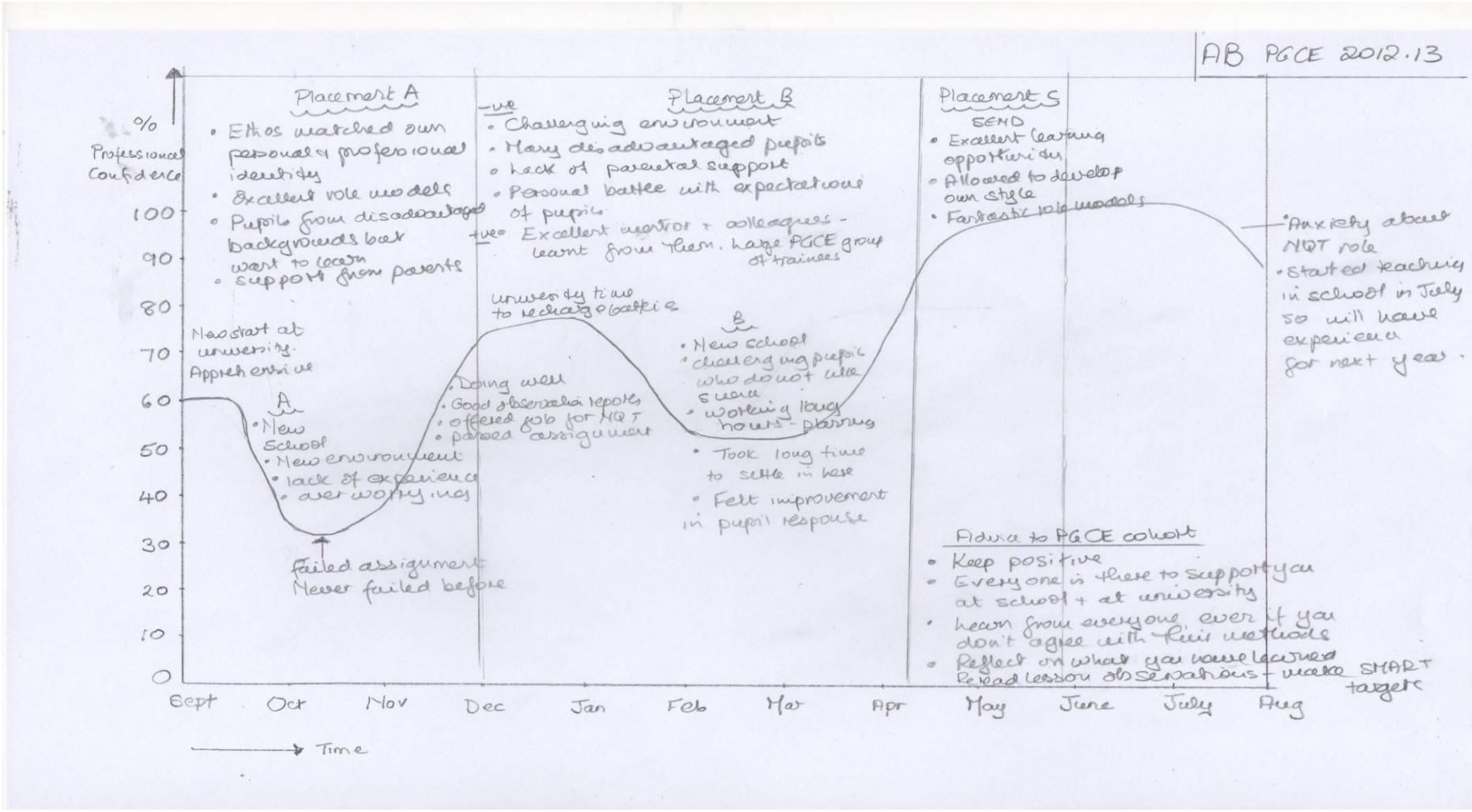
- High expectations of self
- High expectations for pupils
- Understand pupils and their needs. Their learning is central to all planning. Importance of differentiated learning outcomes is so important.
- Maintain good relationships with colleagues
- Be reflective
- Don't take things to heart, be less sensitive. Try not to be anxious
- Be well organised in your personal and professional life
- Your values must match those of the school or you will not be happy. This will affect your confidence.
- Work life balance: ways to reduce planning time (IRS) and not be so dependent on Powerpoint.

Aims for the future

- Excellent teacher status
- Head of department

Summary

1. Very confident inside the classroom when comfortable with school ethos and expectations
2. Needs to feel respected by pupils in all aspects of school life.
3. High structure to personal and professional life: very well organised with good time management skills
4. Becomes anxious when faced with the unknown
5. Treats pupils as adults but has empathy with difficult situations encountered by some pupils. Would not flourish in an extremely challenging environment. Freely admits to this.
6. Good network. Helps others and accepts help. Fits in well in all communities
7. Creative: lessons are interesting and pupils enjoy them
8. Well supported at home: has back-up and support
9. Realises how school, university and home are there to support her.
10. Reflective: Very perceptive on how to improve using peers and colleagues for advice. Evaluations and reflections are of a high quality, SMART and are followed up.
11. Paper work and progress reports are meticulously kept



Appendix 16: Individual Timeline 16.1: AB PGCE 2012.13 (Document 5)

Table 16.2: Summary AG PGCE 2012.13

Professional Persona

- Very creative (interesting lessons essential)
- Confident (high expectations from the start)
- Low structure (well organised when planning but need flexibility to develop the lesson)
- Extrovert (built up strong networks and communities) and introvert. Depends on the situation
- Tender minded as cares very much for the pupils. Developed a classroom persona to ensure behaviour is good

Preparation before course

- Final degree year
- Work skills; student ambassador. Worked in schools with Year 12 and 13 pupils. Really enjoyed it,
- Prepared with exam questions especially in chemistry

Support

- Family and friends
- School network in both schools peer support very necessary.
- Cannot function in an unsupportive environment
- University network. Built up support network from the first day.
- Learning communities are very important

Expectations for pupils

- High expectations of behaviour and learning
- Instil moral values not just academic aspect
- Enjoy lessons. The lessons must be relevant and interesting so they question and become curious
- Respect me and each other

Essential for success as a teacher

- High expectations of self. Do not want to let the pupils down
- High expectations for pupils. They need to show mutual respect
- Understand pupils and their needs
- Work with parents and guardians to ensure ambitions of pupils achieved
- Be reflective and work with colleagues and experience teachers and listen to their advice
- Academic achievement is important if they are to be successful adults in the workplace
- Use humour and be very creative when planning lessons

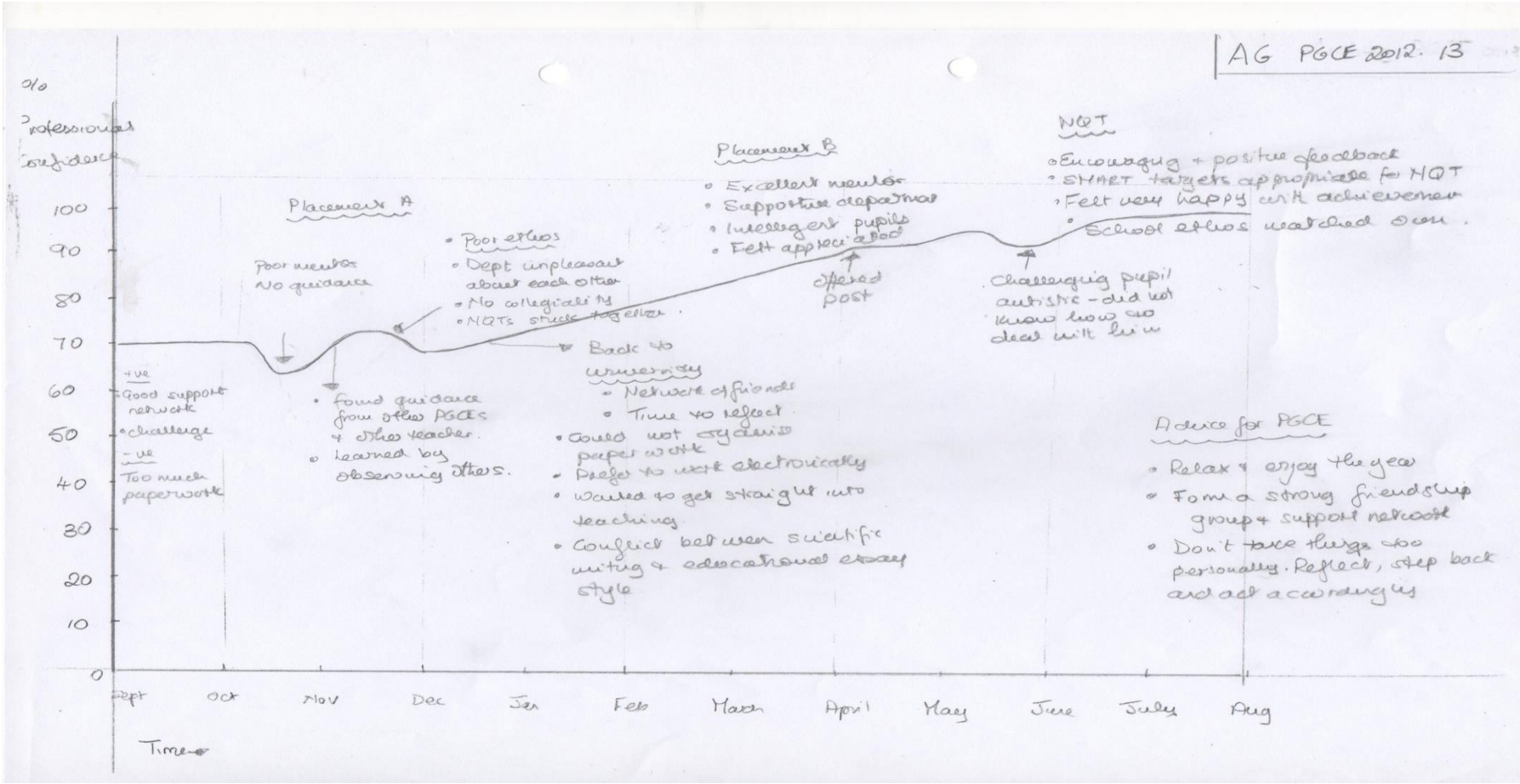
Aims for the future

- Become an excellent teacher
- Teach A level

Summary

1. Very confident inside and outside the classroom
2. Low structure to personal and professional life: needs flexibility to be creative and react to classroom environment. Lessons are very detailed and planned carefully. Resources are very innovative.

3. Organised electronically but not on paper. Resists keeping hard copies. Handwriting is difficult to read.
4. Develops excellent rapport with pupils by using humour and ensuring they enjoy their lessons.
5. Has a surprisingly firm approach with classes. Once she knows them she relaxes a little
6. Good network. Helps others and accepts help. Fits in well in all communities
7. Creative: lessons are interesting and pupils enjoy them
8. Is passionate about science and feels that all pupils should study science for as long as possible.
9. Very independent. Has a support network but gives more than takes.
10. Not oversensitive: realised that pupils' behaviour is not personal
11. Reflective: sets appropriate goals short term, medium term and long term. Needs a supportive encouraging department in order to flourish.



Appendix 16: Individual Timeline 16.2: AG PGCE 2012.13 (Document 5)

Table 16.3: Summary AY PGCE 2012.13

Professional Persona

- Creative (Try to do something new but can adapt other tried and tested resources)
- Confident (high expectations from the start) Personally and professionally
- High structure (well organised. Finish everything in school before leave for home)
- Extrovert (built up strong networks and communities)
- Tough minded (good discipline right from the start)
- Not ambitious. Do not want to be head teacher but do want to be an excellent teacher. I have found my vocation

Preparation before course

- 3 months SKE (big commitment)
- Work skills; Temporary career as receptionist (transferable skills)
- Living at home so building up funds

Support

- Family and friends
- School network. Have to feel comfortable and well supported
- Excellent school mentors in both schools
- University network of peers. Very close friendships developed
- University tutor very supportive

Expectations for pupils

- High expectations of behaviour and learning.
- Take responsibility for progress of own pupils
- Enjoy lessons and make them interesting

Essential for success as a teacher

- High expectations of self
- High expectations for pupils
- Understand pupils and their needs
- Be reflective and act on constructive criticism
- Don't take thinks to heart
- Be proactive and get involved in everything both at school and at university
- Be honest and open with others
- Networking and communication is very important
- Find a post that fits your own values and beliefs

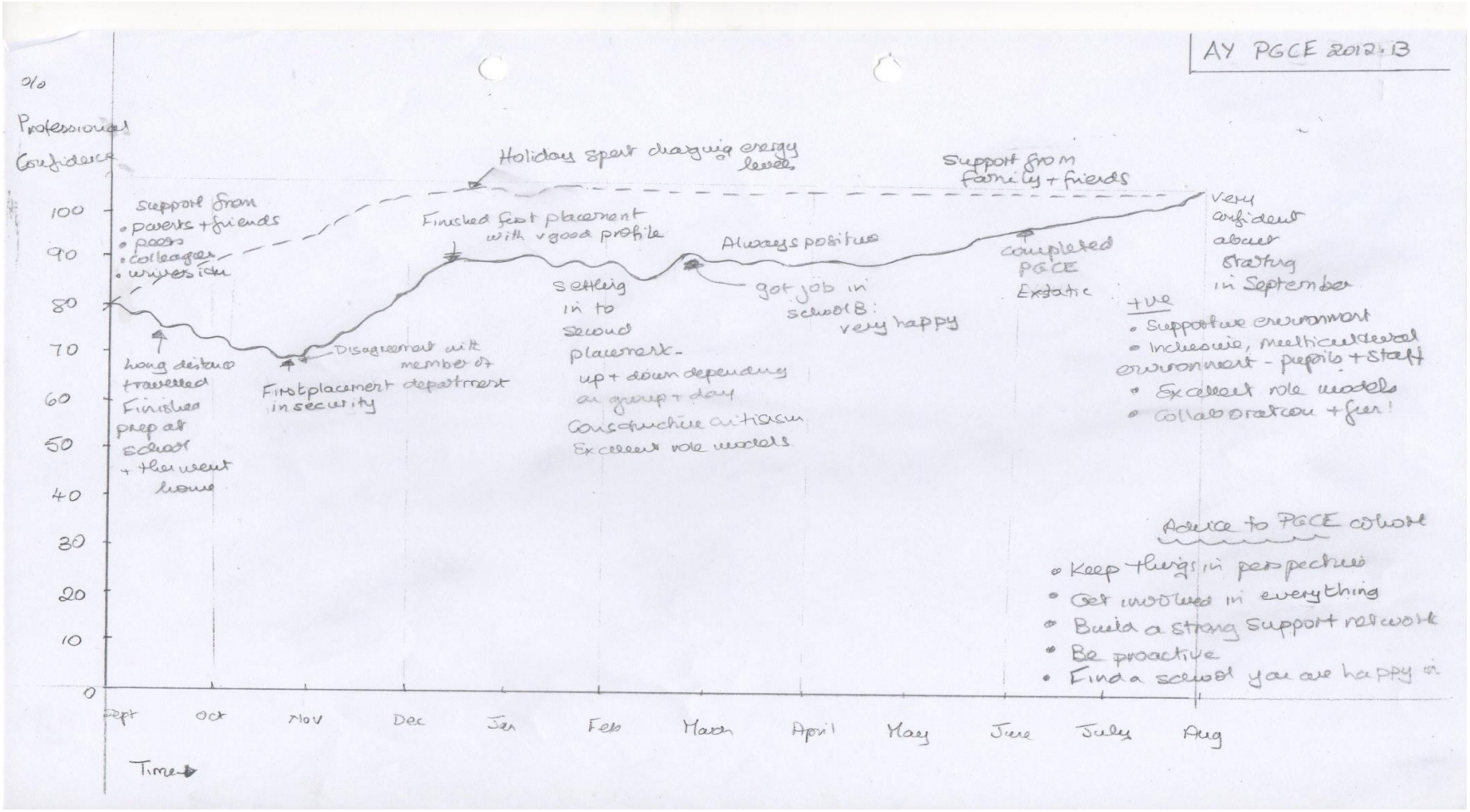
Aims for the future

- Mentor: Loves advisory roles
- Pastor role and form group
- No ambitions to be head teacher. Love advisory positions
- Found my calling

Summary

1. Extremely confident inside and outside the classroom
2. High structure to personal and professional life: very well organised with good time management skills
3. Treats pupils as adults but has empathy with difficult situations encountered by some

4. Good network. Helps others and accepts help. Learn from excellent role models
5. Creative: lessons are interesting and pupils enjoy them
6. Well supported at home: has back-up and support
7. Not oversensitive: does not learn from failure but learns from it
8. Realises how school, university and home are there to support her. Support communities are very important
9. Reflective: good listener and enjoys an advisory role working with parents, pupils and colleagues.



Appendix 16: Individual Timeline 16.3: AY PGCE 2012.13 (Document 5)

Table 16.4: Summary GY PGCE 2012.13

Professional Persona

- More of an introvert but put on an act in the classroom of being extrovert. Also built up good relationships with peers and colleagues
- Confident mask in the classroom Love of acting and drama
- Low structure when executing lesson plan but higher structure with organisation of paperwork
- Tender minded naturally but had to build up good discipline, follow through and be consistent

Preparation before course

- More school observations. Very useful as saw many ways of teaching and learning
- Explorer Scout Leader and committee member. Led own summer camp
- Speech and Drama studies 4 years: Gold Medal
- 1 week SKE Physics Practical Charterhouse

Support

- Family and friends. Lived at home during course
- School network in both school
- University network

Expectations for pupils

- High expectations of behaviour and learning
- Instil moral values not just academic aspect
- Enjoy lessons and have fun learning

Essential for success as a teacher

- High expectations of self. Role model
- High expectations for pupils. Exceed their own perceived potential
- Understand pupils and their needs. Care about the pupils as individuals. Pastoral side important
- Get involved in as many extra-curricular activities as possible
- Have the freedom and desire to develop your own style
- Be reflective and believe in yourself. Believe what other people say about your progress
- Work in teams of peers and more experienced colleagues to help improve.
- Collegiality and sharing
- Honesty with self and with colleagues and pupil. Listen to others
- Be resilient. Issues with mentor were not a barrier as rest of support network took over

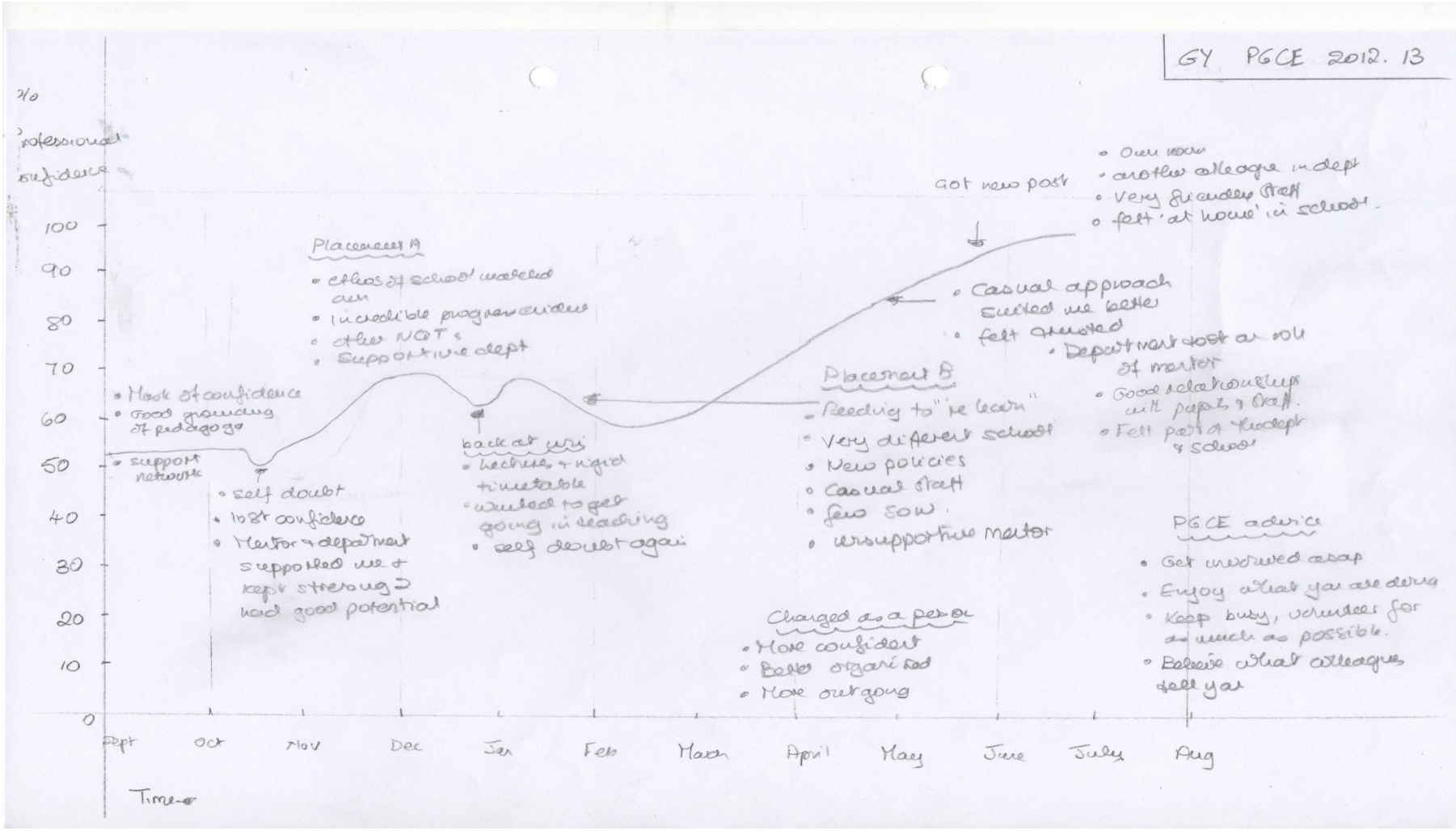
Aims for the future

- Mentor as realise how important it is to be well supported and mentored. Had one excellent mentor, two excellent tutors and one very poor mentor.

Summary

1. Confident inside and outside the classroom by the end of the year
2. Personal and professional identity matched in both schools
3. Naturally low structure approach but had to develop high structure with documentation.
4. Treats pupils as adults but has empathy with difficult situations encountered by some
5. Good network. Helps others and accepts help. Fits in well in all communities

6. Have learned to be more creative: lessons are interesting and pupils enjoy them
7. Well supported at home: has back-up and support
8. Has had to become more tough minded: realised that pupils' behaviour is not personal
9. Realises how school, university and home are there to support her. Problem solver and resilient.
10. Reflective: sets appropriate goals short term, medium term and long term Very perceptive on how to improve
11. Has a passion for science and wants to instil this into his pupils



Appendix 16: Individual Timeline 16.4: GY PGCE 2012.13 (Document 5)

Table 16.5: Summary LA PGCE 2012.13

Professional Persona

- Not Creative, very conforming so had to pick up creative approach
- Confident (high expectations from the start) Could improve this in NQT year
- High structure (well organised)
- Extrovert (built up strong networks and communities) externally but introvert inside
- Tough minded could be tougher. In retrospect would have been tougher especially in school A

Preparation before course

- Worked out my notice so unable to attend SKE
- Work skills; successful career (transferable)
- Observed in many schools to support my career change
- Sunday School Teacher

Support

- Family and friends
- School network especially in School B
- University network
- Learning communities are very important

Expectations for pupils

- High expectations of behaviour and learning achievable in School B
- Instil moral values not just academic aspect
- Enjoy lessons
- Come to terms that not all can be outstanding

Essential for success as a teacher

- High expectations of self
- Highly organised
- High expectations for pupils
- Understand pupils and their needs
- Be reflective
- Don't take thinks to heart
- Make strong relationships with staff and pupils
- Be resilient listen to advice and try to improve
- Become creative

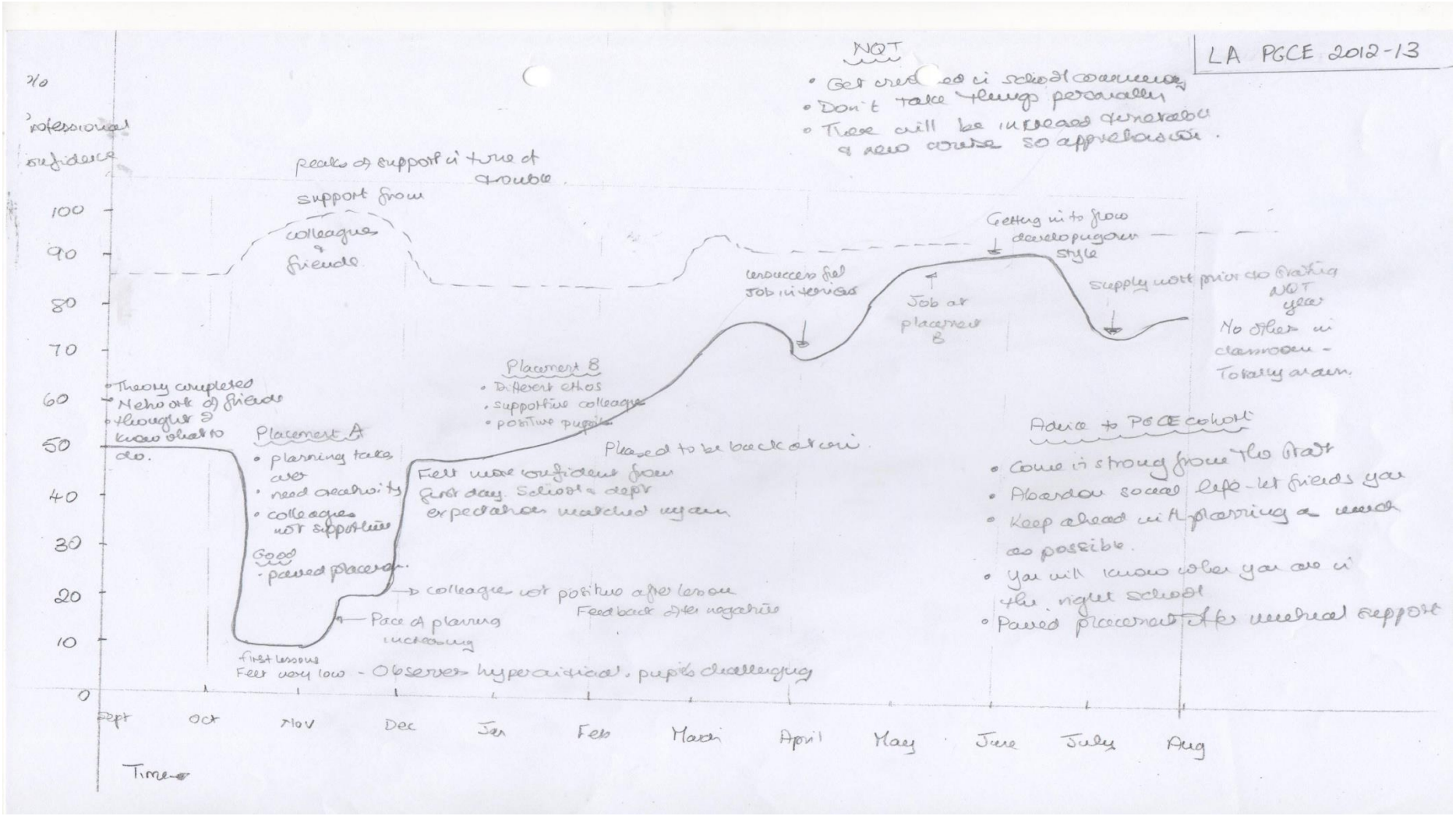
Aims for the future

- Become an outstanding teacher
- Become involved in the school community, extra-curricular
- Pastoral side and maybe mentoring. Working with ITT trainees

Summary

1. Very confident inside and outside the classroom. Acting. Not really that confident
2. High structure to personal and professional life: very well organised with good time management skills
3. Treats pupils as adults but has empathy with difficult situations encountered by some
4. Good network. Helps others and accepts help. Fits in well in all communities

5. Not naturally creative: l have strived to make lessons are interesting and pupils enjoy them
6. Good support network, family and friends
7. Not oversensitive: realised that pupils' behaviour is not personal
8. Realise how theory and practice inform each other. Stricter BM necessary for consistent learning
9. Reflective: sets appropriate goals short term, medium term and long term Very perceptive on how to improve



Appendix 16: Individual Timeline 16.5: LA PGCE 2012.13 (Document 5)

Table 16.6: Summary SA PGCE 2012.13

Professional Persona

- Creative (quirky interesting lessons)
- Confident (high expectations from the start)
- High structure (well organised)
- Extrovert (built up strong networks and communities)
- Tough minded (good discipline 'frosty face')

Preparation before course

- 6 months SKE (big commitment)
- Work skills; successful career (transferable)
- Family and children so understand pupils

Support

- Family and friends
- School network
- University network
- SKE network
- Learning communities are very important

Expectations for pupils

- High expectations of behaviour and learning
- Instil moral values not just academic aspect
- Enjoy lessons
- Come to terms that not all can be outstanding

Essential for success as a teacher

- High expectations of self
- Clear goals and ambitions
- High expectations for pupils
- Understand pupils and their needs
- Be reflective
- Don't take thinks to heart
- Honesty with self and with colleagues and pupils
- Be a problem solver
- Be resilient

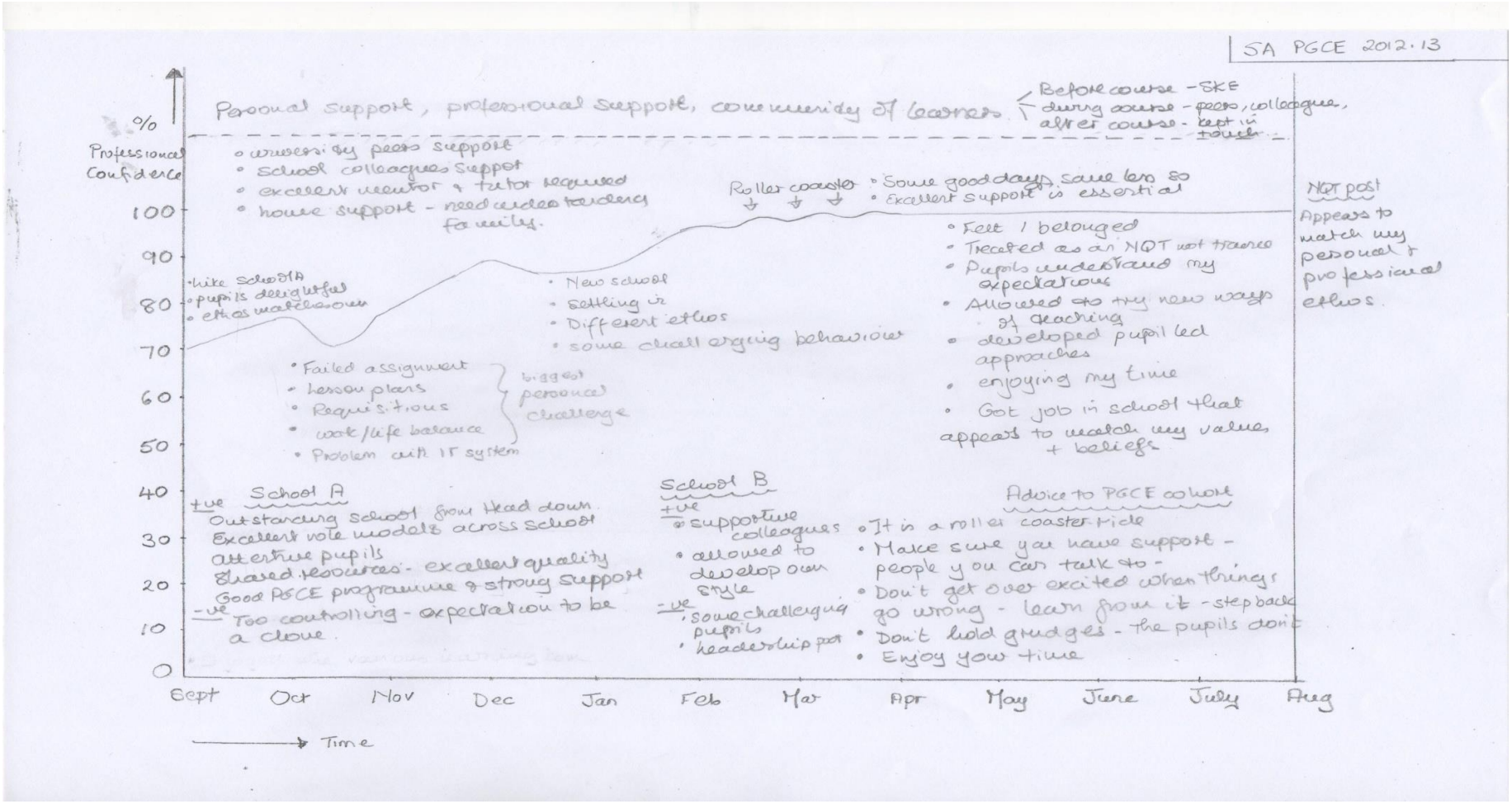
Aims for the future

- Mentor
- Deputy head in 7 years
- Head teacher soon after.

Summary

1. Very confident inside and outside the classroom
2. High structure to personal and professional life: very well organised with good time management skills
3. Very ambitious. Aiming for Head teacher eventually
4. Treats pupils as adults but has empathy with difficult situations encountered by some
5. Good network. Helps others and accepts help. Fits in well in all communities

6. Creative: lessons are interesting and pupils enjoy them
7. Well supported at home: has back-up and support
8. Not oversensitive: realised that pupils' behaviour is not personal
9. Realises how school, university and home are there to support her. Problem solver and resilient.
10. Reflective: sets appropriate goals short term, medium term and long term Very perceptive on how to improve



Appendix 16: Individual Timeline 16.6: SA PGCE 2012.13 (Document 5)

Appendix 17: Document 5 Results: Outstanding Trainees: School Experience Assessment Profile Summary

SA

PCM:
SA has made a valued impact during her PGC E placement. She has proactively and consistently enhanced all areas of her professional development to 'Outstanding' across her practice. SA has also continued to go above and beyond the requirements of a PGCE this year and has taken an active role across the school. I wish her the very best going forward and have no doubts she will further grow to be a highly inspiring teacher.

Mentor:
SA has had a fantastic placement, as can be seen from the above report (assessment profile) and her lesson observations. She will be missed by both pupils and staff and I wish her all the best with her teaching career.

University Tutor:
SA has made a huge impression on everyone she has worked with during the year. She has tirelessly supportive of other trainees and is one of the most gifted teachers it has been my privilege to work with as an HEI tutor. I look forward to her rapid development and increasing success in her aspirations of leadership.

Trainee:
I am a firm believer of how important it is to have a solid, reliable support structure in place both within and outside school. The support from my department in the school was amazing and I felt nurtured and protected in my school environment. This allowed me to develop the confidence to try challenging and different ways of trying lessons and excellent coaching and feedback enabled me to reflect on how to be even better.

AY

PCM:
AY's time here has been an incredible success. I have never worked with a candidate of this calibre. We are delighted to appoint her.

Mentor:
AY is an outstanding PGCE student. In fact, she is the best one I have ever mentored in 10 years of teaching. Her commitment, adaptability and moral compass are superb and she has become a well-liked and professionally valued member of the faculty. I am delighted that she is joining us as a full time member of staff next year.

University Tutor:
AY has made outstanding progress during this placement. She has worked with excellent role models across the school. She has asked for and taken advice, then acted upon it to and her lesson evaluations show reflective practice is being embedded in her development. Thank you

Trainee:
I have thoroughly enjoyed my time. The support and encouragement I have received from all members of staff, both in and out of the department has been outstanding. Working with my mentor has been truly amazing. I have learned so much about being not only an outstanding teacher, but being professional and maintaining high standards from yourself and your students.

I am extremely happy I am working here next year and am excited to build on the foundations I have laid down during my 10-week placement

GY

PCM:
GY has been an excellent member of the school and the department. I am sure he will make an outstanding contribution to his first teaching post.

Mentor:
GY has shown excellent subject knowledge and a natural flair for engaging the pupils in their learning. His lesson resources and activities are very well thought out. Well done GY. You have worked hard and you are mostly a Grade 1 in most teaching areas. Apply what you know about behaviour management and AfL to excel.

University Tutor:
GY has made excellent progress. He is an outstanding teacher who cares deeply about the pupils in his care and the progress they are making. He has developed his own teaching style which is engaging, creative and provides a secure learning environment. He has been a pleasure to work with and I wish him every success in the future.

Trainee:
I have really enjoyed my time. The staff have been excellent and really supported and encouraged me to try new ideas. It has been a great experience teaching KS4 & 5 classes with fantastic support which has allowed me to thrive in these circumstances. I will really miss the school, staff and pupils.

AB

PCM
AB has demonstrated consistently high standards of practice. Her planning is meticulous and her differentiation identified as model practice. She has listened to guidance, taken it on board and significantly improved aspects, that to be fair, were out of her experience in terms of complexity of needs to be addressed. Behaviour management was addressed by excellent planning, student centred approach and a calm but assertive manner. She had some imaginative and exciting media approaches to learning, well-pitched for certain students, including excellent quizzes used as plenary activities. AB has not been fazed or lost focus by anything such as ICT and creativity. Her 'can do' approach is reflected in the classroom, enabling every pupil to think they 'can do' well. AB is an excellent teacher who will be an asset to any science department.

Mentor
During her time here, AB has been an asset to the school in general and to the Science Department in particular. AB's lessons have been innovative, engaging and planned with careful regard to pupils' individual needs. She has consistently responded positively to feedback, showing reflective practice and high standards of professionalism. Whilst working with students who have complex educational needs, AB has produced a wide range of creative resources that have engaged students in leaning and has used innovative methods of assessment to inform her planning effectively. AB has been involved with the wider school community, working collaboratively with colleagues to support planning and preparation of a staff lunch by the sixth form pupils as well as participating in school outings. AB is held in high regard by colleagues and pupils alike and is a consistently outstanding teacher.

University Tutor:
AB has made outstanding progress during this very challenging placement thanks to her own reflective practice and the support and expertise of all those who have supported her.

Trainee
I have really enjoyed my time. I have had a great experience and have learned so much from the special needs school environment with regard to differentiated learning and working with experienced staff members. The feedback from the observations has been beneficial leading to continually working to better and improve my teaching practice.

LA

PCM:
We are delighted that LA will be joining us next year after a very successful first placement,

Mentor:
LA has been a true professional in every aspect of her teaching practice. She will make a big difference to the pupils' and their learning potential in the teaching profession. Thank you.

University Tutor:
LA has blossomed during this placement under the support and guidance of the science department and the whole school community. She feels part of a team pulling together to promote pupil progress. Thank you for ensuring LA has achieved her outstanding potential.

Trainee:
I feel that I have made genuine progression in this phase and especially in the last two weeks I have delivered some of my best lessons yet. I look forward to starting my career in this ultra-supportive environment.

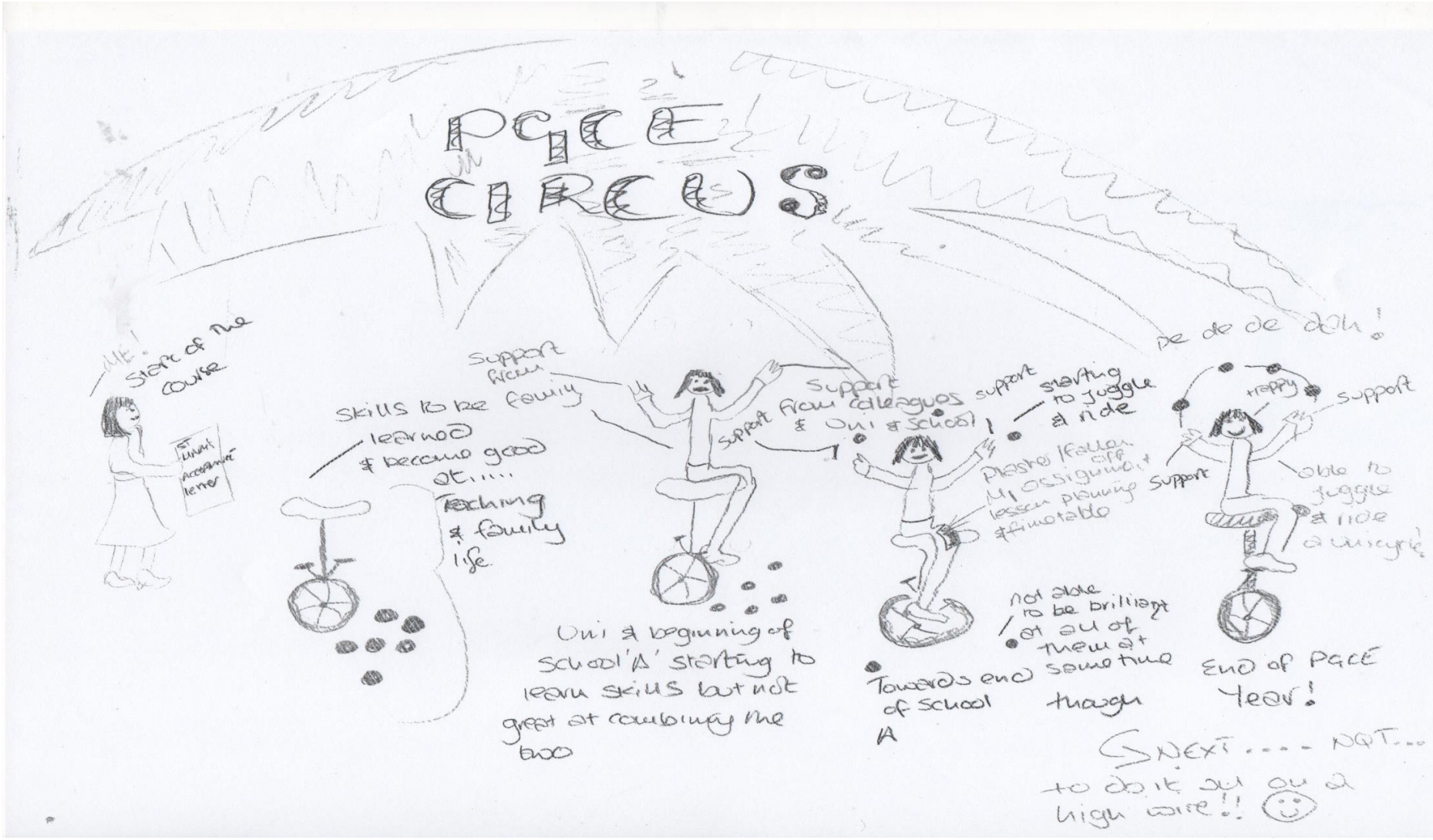
AG

PCM:
AG has flourished during her time here through both Developmental and Consolidation placements. She has shown clear signs of progression and has taken on board the clear and constructive advice of her mentor. I am thoroughly impressed. Keep up the good work. Well done AG.

Mentor:
AG has continued her outstanding development and has shown impressive, systematic progress. I wish her all the best for her NQT year.

University Tutor:
AG has made excellent progress during this placement. She has thoroughly enjoyed her time here. Thank you.

Trainee:
I agree with all the comments made. I have enjoyed my placement and am looking forward to my NQT year here.



Appendix 18: Document 5 Results: Participant SA PGCE 2012.13: Circus Skills Analogy

Appendix 19: Document 5: Outstanding Trainee summary details 2012.13

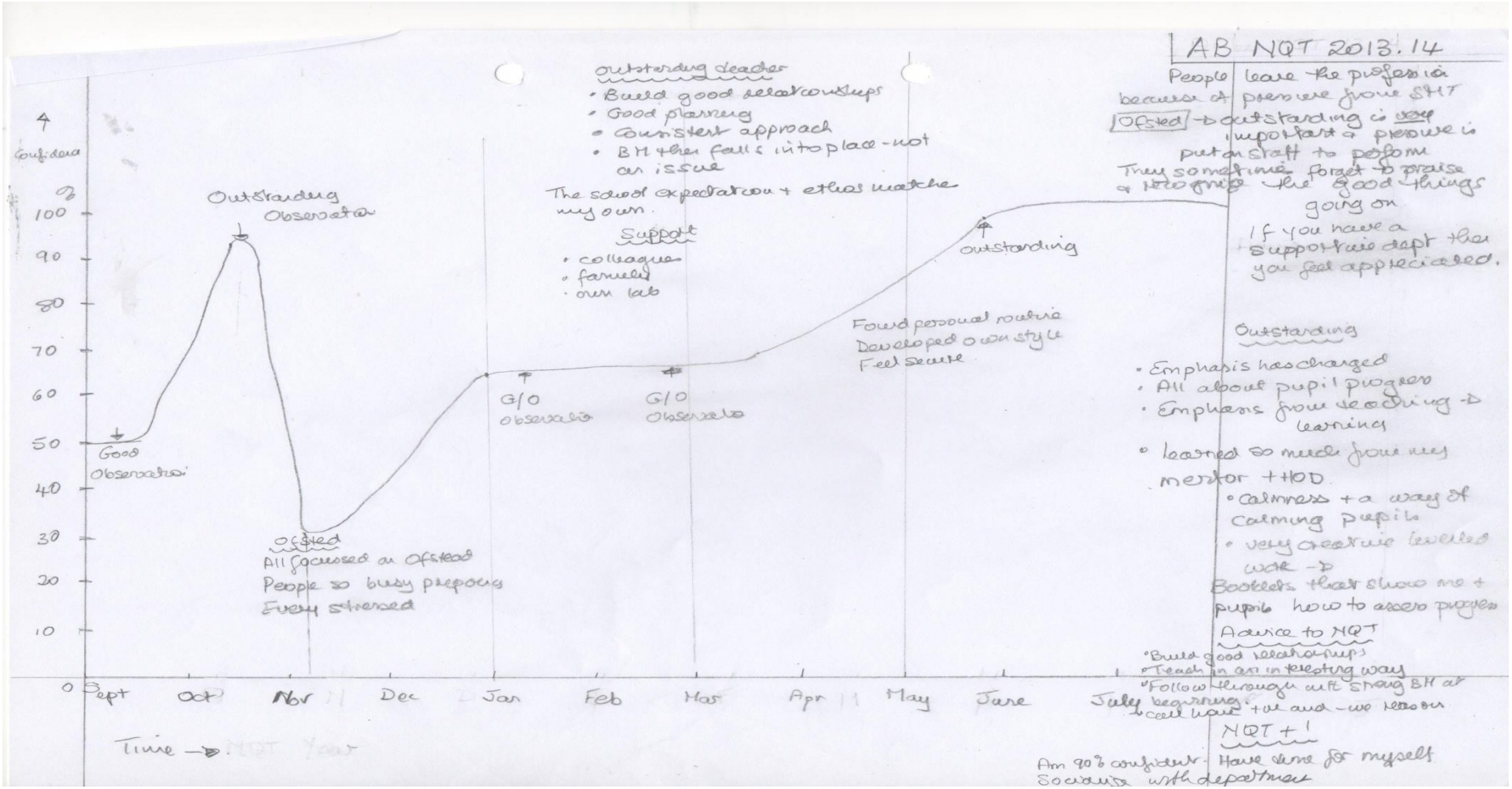
Name	Personal	Degree Assignments	Foundation Phase	Development Phase	Consolidation Phase	Personality 1	Personality 2	NQT 13.14	NQT+1 14.15	NQT+2 15.16
SA Physics M 1child	41 years Female SKE 6 months M158;M268	Ist Psychology (Project Manager Aviation)	F1,2,1,1,3,3,2,1 **F2** **School A**	D1,1,1,1,1,1,1,1 **D1** **School B**	C1,1,1,1,1,1,1,1 **C1** **School B**	I=+1; TM=-2 CR=+1;LS=+3 Cf=-3;IC=+4	E=-5;TM=--4 CR=+2;HS=-3 Cf=-5;IC=+4	Grade 1 **School C**	**School C**	HOY **School C**
AB Chem Single	21 Female SKE 6 months M163; M248	2.1 Physiol (Student Associate Scheme)	F1,2,2,1,2,2,1,1 **F1** **School A**	D1,1,1,1,1,1,2,1, **D1** **School B**	C1,1,1,1,1,1,2,1 **C1** **School B +SEN**	I=+4;TM=+6 CO=-2;HS=-4 Cf=-1;IC=+4	I=+5;TM=+4 C=0;LS=+1 Cf=-2;IC+4	Grade 1 **School A**	**School A**	KS3 Co **School A**
AY Chem Single	23 Female SKEC 12 wks M143; M243	2.2 Human Science (Youth Worker)	F1,1,2,1,2,1,2,1 **F1** **School A**	D2,1,1,1,1,2,2,1, **D1** **School B**	C1,1,1,1,1,1,2,1, **C1** **School B**	E=-4;TM=+2 Co=-1;HS=-2 Cf=-5;IC=+4	E=-1;TM=+4 Cr=+1;HS=-1 Cf=-4;IC+4	Grade 1 **School B**	**School B**	KS3 Co **School B**
LA Biol Single	37 Female SKE 2 weeks M163; M263	BDS Dentistry (Dentist & Lecturer)	F2,2,2,3,2,3,3,1 **F2** **School A**	D2,2,2,2,2,2,1,2 **D2** **School B**	D1,2,1,1,2,2,1,1, **C1** **School B**	I=+2;TM=+5 Co=-5;HS=-4 Em=+3;IC=+3	I=+4; TM=+6 Co+-6;HS=-3 Em=+4;IC=+3	Grade 1 **School B**	**School B**	Literacy Co **School B**
AG Biol Single	21 Female No SKE M153;M2 53	1st Human Bioscience (Student Ambassador)	F2,2,2,2,2,2,2,1 **F2** **School A**	D2,2,2,2,3,2,2,2 **D2** **School B**	C1,2,1,1,1,1,1,1 **C1** **School B**	E=-2;TM=+3 Cr=+3;LS=+3 Cf=-2;IC=+5	E=-1;TM=+3 Co=-1;LS=+1 Cf=-5;IC=+4	Grade 1 **School B**	G&T Co **School B**	G&T Co **School C**
GY Biol Single	21 Male SKEP 1 wk M158; M258	2.1 Biology (Scout Leader)	F2,2,2,2,2,2,3,2 **F2** **School A**	D2,1,1,2,2,2,3,1 **D2** **School B**	C1,1,1,1,2,2,3,1 **C1** **School B**	E=-2;TM=+5 Co=-2;LS=+5 Cf=-3;IC=+2	E=-2;TM=+5 Cr=+2;LS=+3 Em=+1;IC=+3	Grade 1 **School C**	DoE Co **School C**	Doe Co Charities **School C**

Appendix 20: Document 5 Results: Summary Timeline NQT Participants 2013.14

Appendix 21:
Document 5 Results: Individual Summary Tables and Timelines NQT 2013.14

Table 21.1: AB Summary NQT 13.14 Document 5 Appendix 21

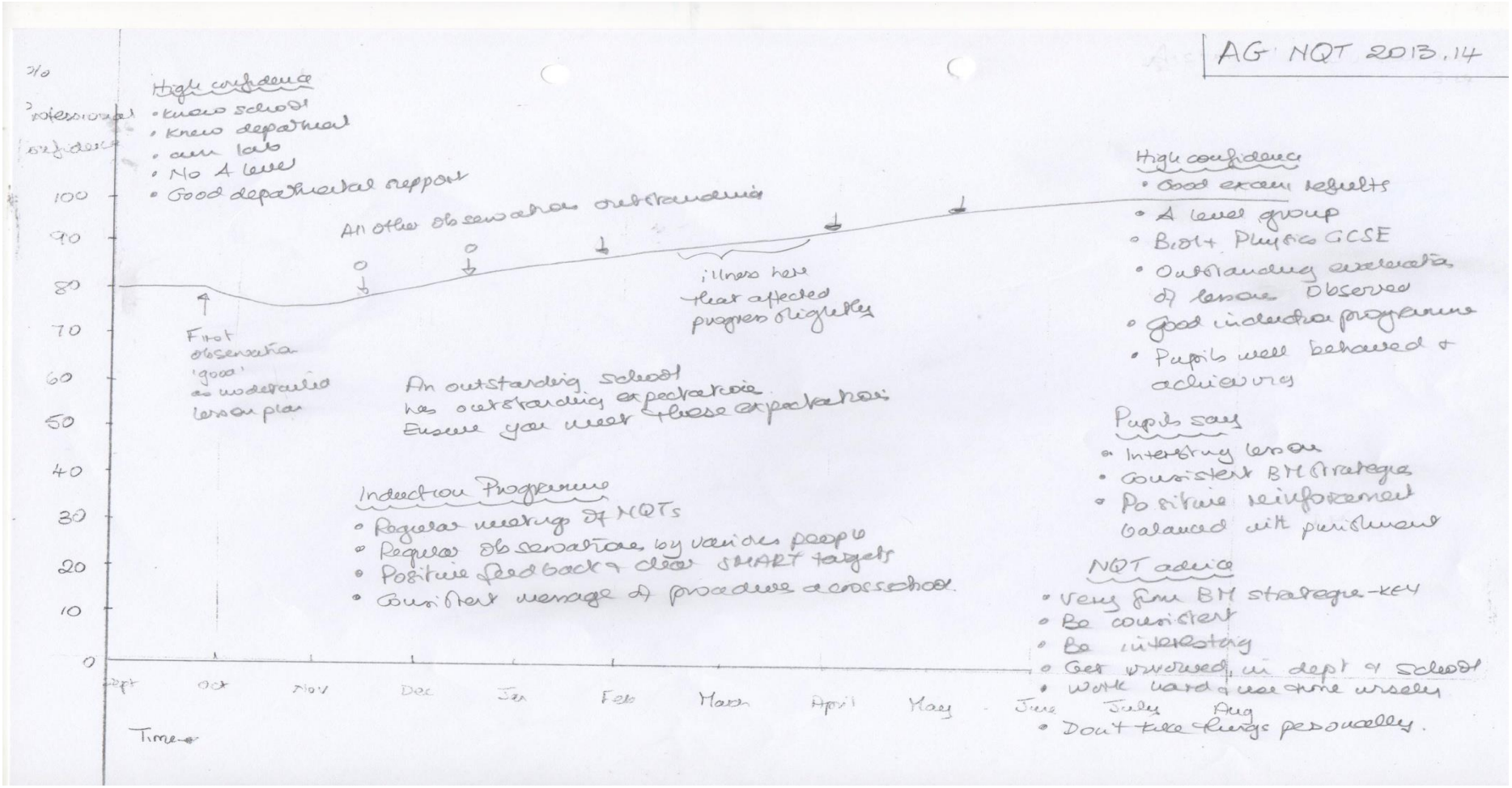
<table>
<tr><td>Participant</td><td>Professional confidence (0-100%)</td><td>Perceived reasons for score</td><td></td></tr>
<tr><td>AB</td><td>Start 50%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (21 yrs)F
Previous career: TA
Degree: Physiology (2.1)
SKEC 6 months
Contrasting placements
NQT in placement school
Assignment 30 M credits
M1 63% M2 48%
Personality in school
Confident
High Structure
Creative
Introvert
Tender Minded</td><td>Positive contribution at start
• Head welcoming
• Excellent Induction programme
• Supportive mentor and tutors
• 5 NQTs starting together; collegiality and sharing
• Developed excellent working relationships
• School mission statement matched own values
• Own lab aided organisation
Apprehensions:
• OFSTED
• Year 12 Form group
• High expectations of school</td><td>PGCE contribution
• Good SK from 6 months SKE
• Good pedagogical underpinning of teaching and learning strategies
• Peer support and close network of colleagues
• Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 90%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT Placement A
NQT +1 in same school
NQT+2 in same school
KS3 Coordinator</td><td>Positive contribution at end
• Ethos of school matches own
• Confidence in teaching ability
• Outstanding grading as NQT
• SK secure
• Colleagues supportive
• Own lab and own routines
• Added responsibilities</td><td>As an NQT+1 I will:
• Develop own teaching strategies further
• Be even more involved in school community
• Am Year 13 tutor
• Find time to socialise</td></tr>
<tr><td></td><td>Stress point(s) 30%</td><td>Crisis contributors
• OFSTED at beginning of year. No one had time for me
Survival strategies
• Manage time
• Socialise with the department and other NQTs
• Supportive family</td><td>Advice to NQT:
• Build good relationships
• Teach in an interesting way
• Find teaching style
• Be consistent
• Develop strong BM
Ethos of school matches own</td></tr>
<tr><td colspan="4">Would like pupils to say:
Pupils should say I was a good teacher, they respect me and look up to me, my lessons are fun, I am flexible and cater for their needs. I care about them and want them to achieve their best</td></tr>
<tr><td colspan="4">What is an outstanding teacher? Having genuine care and affection for your pupils.
• Developing positive relationships and gaining their respect. Ring home for +ve and –ve comments. Praise and sanctions equally important.
• Identifying the individual needs of each pupil and those of the class
Plan thoroughly. Providing challenge and support as required. Develop independent thinkers</td></tr>
<tr><td colspan="4">Other: School comments: Please send us trainees like AB. She is a major asset to the school and to her department. (PCM)</td></tr>
</table>



Appendix 21: Timeline 21.1: Participant AB NQT 2013.14 Document 5

Table 21.2 AG NQT 13.14 Summary Document 5 Appendix 21

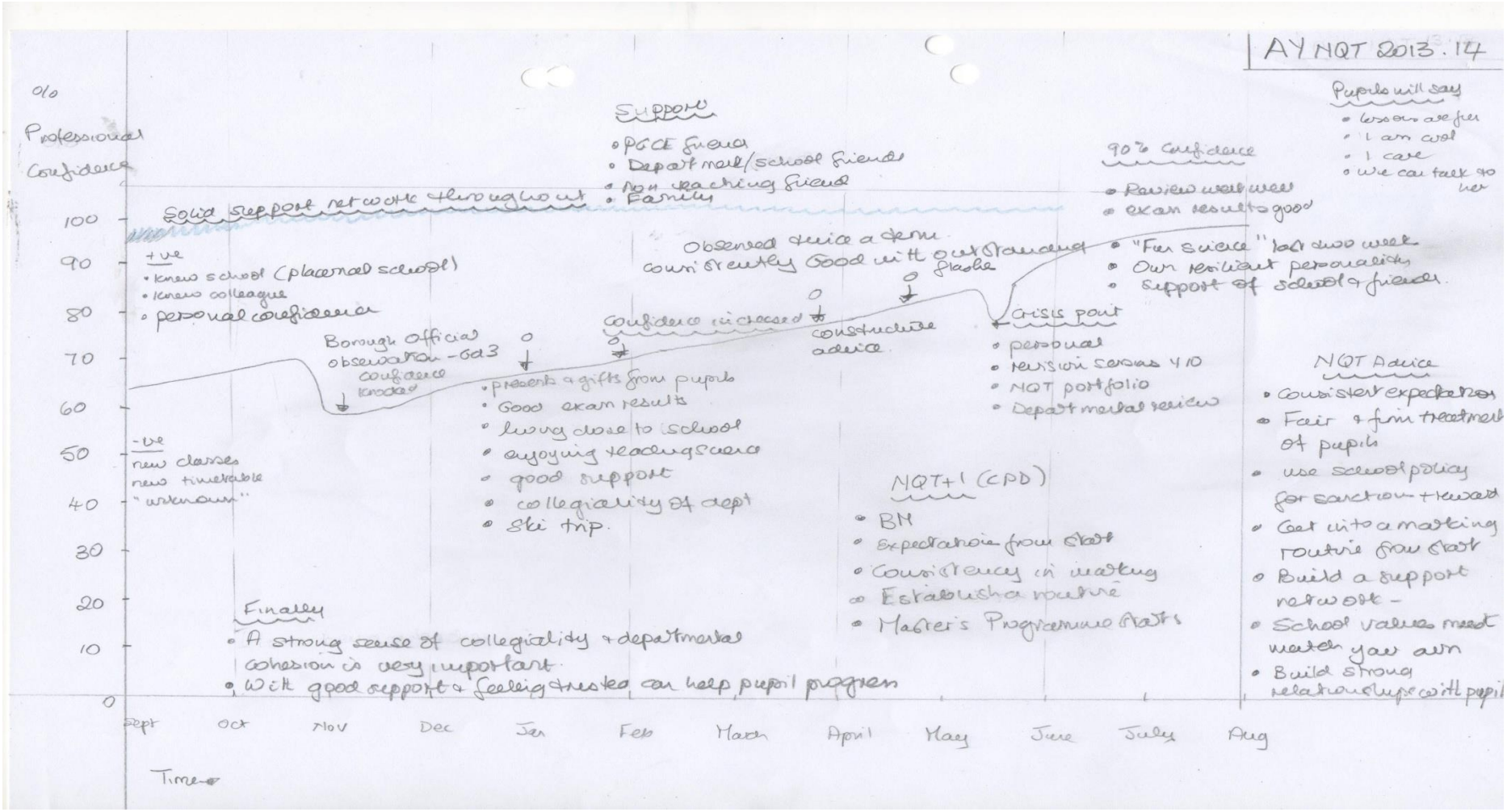
<table>
<tr><td>Participant</td><td>Professional confidence (0-100%)</td><td>Perceived reasons for score</td><td></td></tr>
<tr><td>AG</td><td>Start 80%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (21 yrs)F
Previous career: Uni: Student Ambassador
Degree: Human Biosciences (2.1)
SKE: None
Contrasting placements
NQT in placement school
Assignment 0 M credits
M1 53% M2 53%
Personality in school
Confident
Low Structure
Creative
Mildly Extrovert
Tender Minded</td><td>Positive contribution at start
Know school
Know department
Own lab
No A level
Excellent departmental support and Induction Programme
Apprehensions:
New classes
Personal administration is poor
Fear of unknown</td><td>PGCE contribution
Had good PGCE Year
Developed personal confidence
Good pedagogical underpinning of teaching and learning strategies
Peer support and close network of colleagues
Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 90%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT Placement B
NQT +1 in same school
NQT+2 moved school. KS3 Coordinator</td><td>Positive contribution at end
Ethos of school matches own
Colleagues supportive
Cohesive department
Own lab and own routines
Pupils well behaved and achieving
Excellent Induction Programme</td><td>As an NQT+1 I will:
Develop own BM strategies further
Develop consistent marking procedure
Instil high expectations from the first day
Start Master’s programme</td></tr>
<tr><td></td><td>Stress point(s) 75%</td><td>Crisis contributors
Illness
Survival strategies
Socialise with the department and other NQTs
Be honest about progress and support needs</td><td>Advice to NQT:
Be very firm. Strong BM strategies are key to success
Keep up with assessment and bookmarking
Get involved and meet socially if you can.
Work hard.</td></tr>
<tr><td colspan="4">Would like pupils to say:
My lessons are fun and interesting; I have strict behaviour expectations; I treat pupils fairly; I reward as well as punish and I achieve good results so pupils will progress.</td></tr>
<tr><td colspan="4">What is an outstanding teacher?
Work must be at the correct level for the pupils; Don’t overcomplicate explanations; Excellent and consistent behaviour management strategies which are followed up; Don’t take things personally</td></tr>
<tr><td colspan="4">Other: Personal observation comments: Make sure the ethos of the school matches your own. Outstanding schools have outstanding expectations on every level so you have to be prepared to work very hard.</td></tr>
</table>



Appendix 21: Timeline 21.2: Participant AG NQT 2013.14 Document 5

Table 21.3: AY NQT 13.14 Summary Document 5 Appendix 21

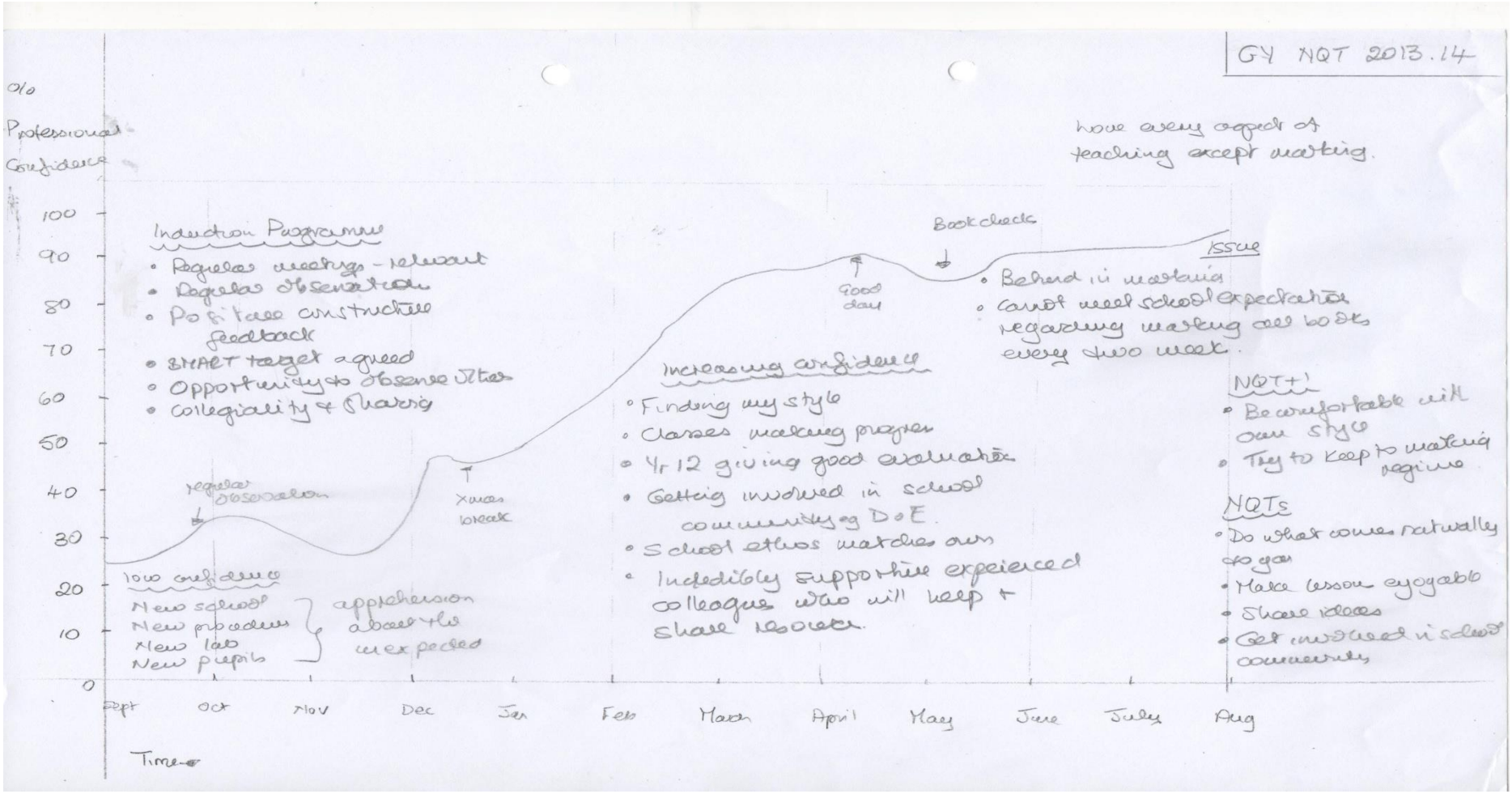
<table>
<tr><td>Participant</td><td>Professional confidence (0-100%)</td><td>Perceived reasons for score</td><td></td></tr>
<tr><td>AY</td><td>Start 65%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (23 yrs)F
Previous career: Youth Worker
Degree: Human Sciences (2.2)
SKEC 3 months
Contrasting placements
NQT in placement school
Assignment 0 M credits
M1 43% M2 43%
Personality in school
Confident
High Structure
Creative
Extrovert
Tender Minded</td><td>Positive contribution at start
Supportive mentor and tutors
7 NQTs starting together; collegiality and sharing
Developed excellent working relationships
HOY and HOD support network
School mission statement matched own values
Own lab aided organisation
Knew school
Apprehensions:
New classes
Year 7 Form group
Fear of unknown</td><td>PGCE contribution
Good SK from 3 months SKE
Good pedagogical underpinning of teaching and learning strategies
Good embedding of reflective practice
Peer support and close network of colleagues
Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 90%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT Placement B
NQT +1 in same school
NQT+2 in same school
2i/c HOY; PGCE mentor</td><td>Positive contribution at end
Ethos of school matches own
Confidence in teaching ability
Good exam results
Colleagues supportive
Cohesive department
Own lab and own routines
Added responsibilities
Love teaching here</td><td>As an NQT+1 I will:
Develop own BM strategies further
Develop consistent marking procedure
Instil high expectations from the first day
Start Master’s programme</td></tr>
<tr><td></td><td>Stress point(s) 50%</td><td>Crisis contributors
Borough Official observation criticism
Survival strategies
Pupils showing appreciation
Socialise with the department and other NQTs
Supportive family
Living very close to school
Enjoying teaching</td><td>Advice to NQT:
Build good relationships with pupils. High expectations
Build a support network
Find your teaching style
Get into a routine for marking from day one
Follow through with strong BM
Make sure ethos of school matches own</td></tr>
<tr><td colspan="4">Would like pupils to say: Pupils should say my lessons are fun. I am cool. I care about them and want them to achieve. I will go the extra mile for them</td></tr>
<tr><td colspan="4">What is an outstanding teacher? Having genuine care and affection for your pupils; Developing positive relationships and gaining their respect; identifying the individual needs of each pupil and those of the class; Plan thoroughly. Providing challenge and support as required. Develop independent thinkers</td></tr>
<tr><td colspan="4">Other: Personal observation comments: I love teaching and I love teaching here. Collegiality and a supportive network in school is very important. I would be very wary of moving schools.</td></tr>
</table>



Appendix 21: Timeline 21.3: Participant AY NQT 2013.14 Document 5

Table 21.4: GY Summary NQT 13.14 Document 5 Appendix 21

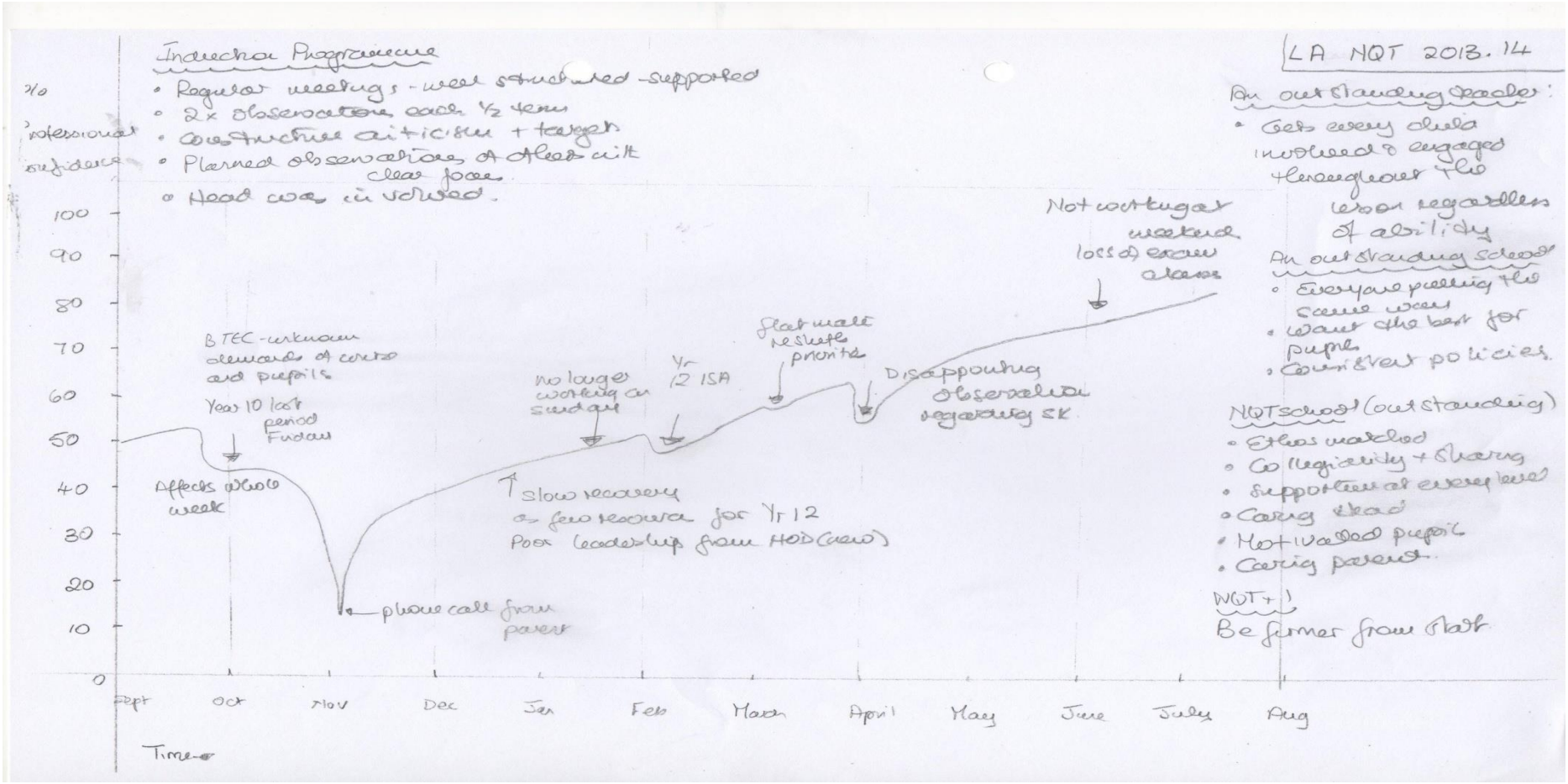
<table>
<tr><td>Participant</td><td>Professional confidence (0-100%)</td><td>Perceived reasons for score</td><td></td></tr>
<tr><td>GY</td><td>Start 25%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (21 yrs)M
Previous career: Uni. Scout leader, Drama
Degree: Biology (2.1)
SKEP 1 Week
Contrasting placements
NQT in new B
Assignment 60 M credits
M1 58% M2 58%
Personality in school
Mildly extroverted
Low Structure
Creative
Confident
Tender Minded</td><td>Positive contribution at start
Own lab
Head welcoming
Excellent Induction programme
Supportive mentor and tutors
6 NQTs starting together; collegiality and sharing
School mission statement matched own values
Apprehensions:
New school
New procedures
Short pre-preparation time before starting</td><td>PGCE contribution
Good pedagogical underpinning of teaching and learning strategies
Peer support and close network of colleagues
Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 85%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT in new B
NQT +1 in same school
NQT+2 in same school
DoE Co-ordinator
Charities Organiser</td><td>Positive contribution at end
Ethos of school matches own
Supportive experienced colleagues who share resources.
Getting involved in community e.g. DoE
Classes making progress
Finding own style</td><td>As an NQT+1 I will:
Comfortable with own teaching style
Try to establish a workable marking regime</td></tr>
<tr><td></td><td>Stress point(s) 20%</td><td>Crisis contributors
Very behind in marking. Cannot meet school expectations regarding assessment schedule
Survival strategies
Try not to worry.
Prioritise marking at regular intervals.</td><td>Advice to NQT:
Do what comes naturally to you
Make lessons enjoyable
Share ideas
Get involved in the school community</td></tr>
<tr><td colspan="4">Would like pupils to say:
That they love science and love coming to my lessons.</td></tr>
<tr><td colspan="4">What is an outstanding teacher?
Keeping pupils engaged whatever their ability
Make sure they enjoy science and continue to talk about it outside lessons</td></tr>
<tr><td colspan="4">Other: Own comment: I love teaching and definitely want to continue as a teacher, but I cannot keep up with the marking demands. This is a major issue for me.</td></tr>
</table>



Appendix 21: Timeline 21.4: Participant GY NQT 2013.14 Document 5

Table 21.5: LA Summary NQT 13.14 Document 5 Appendix 21

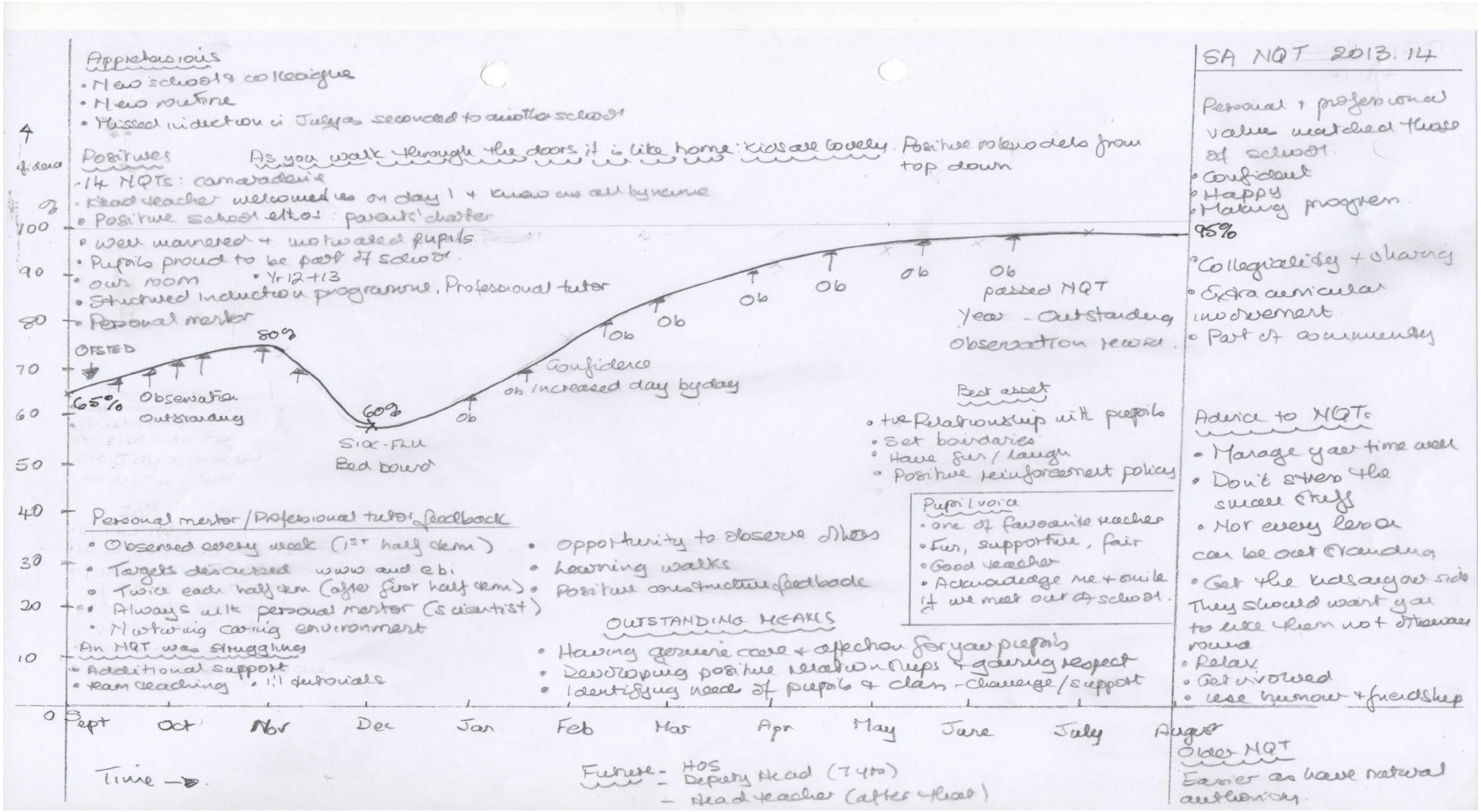
<table>
<tr><th>Participant</th><th>Professional confidence (0-100%)</th><th>Perceived reasons for score</th><th></th></tr>
<tr><td>LA</td><td>Start 50%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (37 yrs)F
Previous career: Dentist and lecturer
Degree: Dentistry (BDS)
SKE none
Contrasting placements
NQT in school B
Assignment 60 M credits
M1 63% M2 63%
Personality in school
Mildly Introverted
High Structure
Conforming
Emotional
Tender Minded</td><td>Positive contribution at start
Knew school, own lab
Worked through July
Head welcoming
Excellent Induction programme
Supportive mentor and tutors
6 NQTs starting together; collegiality and sharing
School mission statement matched own values
Apprehensions:
New classes
New courses BTEC
High expectations of school</td><td>PGCE contribution
Good pedagogical underpinning of teaching and learning strategies
Peer support and close network of colleagues
Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 85%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT in school B
NQT +1 in same school
NQT+2 in same school
KS3 Co-ordinator</td><td>Positive contribution at end
Ethos of school matches own
Confidence in teaching ability
SK secure
Colleagues supportive
Motivated pupils
Caring parents
Time management and marking achieved</td><td>As an NQT+1 I will:
Be firmer from the start
Prepare for new courses in the summer
Develop own teaching strategies further
Be even more involved in school community</td></tr>
<tr><td></td><td>Stress point(s) 10%</td><td>Crisis contributors
Challenging Year 10 BTEC Friday afternoon
Poor HOD (new) support
Survival strategies
Observed others
Took advice
Asked for replacement mentor, excellent support.</td><td>Advice to NQT:
Manage your time effectively
Don’t worry about your planning. You will get better.
Get involved in school life
Relax, use humour and enjoy your year</td></tr>
<tr><td colspan="4">Would like pupils to say:
Pupils have said that I am humorous, caring and fair. They know I want them to do well.</td></tr>
<tr><td colspan="4">What is an outstanding teacher?
Gets every child involved and engaged throughout the lesson regardless of ability
What is an outstanding school?
Everyone pulling the same way; All want the best for the pupils; consistent adherence to policies across all departments.</td></tr>
<tr><td colspan="4">Other: Own comment: I look forward to starting my career in this ultra-supportive environment.</td></tr>
</table>



Appendix 21: Timeline 21.5: Participant LA NQT 2013.14 Document 5

Table 21.6: SA Summary NQT 13.14 Document 5 Appendix 21

<table>
<tr><td>Participant</td><td>Professional confidence (0-100%)</td><td>Perceived reasons for score</td><td></td></tr>
<tr><td>SA</td><td>Start 65%</td><td></td><td></td></tr>
<tr><td colspan="2">Biography
British Graduate (41 yrs)F
Previous career: Project Manager for BA
Degree: Psychology (1.1)
SKEP 6 months
Contrasting placements
NQT in new school
Assignment 60 M credits
M1 58% M2 68%
Personality in school
Confident
High Structure
Creative
Extrovert
Tough Minded</td><td>Positive contribution at start
Head welcoming
Excellent Induction programme
Supportive mentor and tutors
14 NQTs starting together; collegiality and sharing
Developed excellent working relationships
School mission statement matched own values
Apprehensions:
New school
Getting to know pupils and colleagues
High expectations of school</td><td>PGCE contribution
Good SK from 6 months SKE
Good pedagogical underpinning of teaching and learning strategies
Peer support and close network of colleagues
Contrasting school placement alerted me to ethos of school I wanted to work in</td></tr>
<tr><td></td><td>Finish 95%</td><td></td><td></td></tr>
<tr><td colspan="2">Retention
NQT in new school
NQT +1 in same school
NQT+2 in same school
2i/c HOY</td><td>Positive contribution at end
Ethos of school matches own
Confidence in teaching ability
Outstanding grading as NQT
SK secure
Colleagues supportive
Own lab and own routines
Added responsibilities</td><td>As an NQT+1 I will:
Prepare for new courses
Develop own teaching strategies further
Be even more involved in school community
Am SiC Year 8 tutor</td></tr>
<tr><td></td><td>Stress point(s) 60%</td><td>Crisis contributors
Very severe flu. Too ill to come in to work
Survival strategies
Manage time
Finish prep at school and don’t take anything home
Supportive family</td><td>Advice to NQT:
Manage your time effectively
Don’t stress the sall stuff
Get the kids on your side
Get involved in school life
Relax, use humour and enjoy your year</td></tr>
<tr><td colspan="4">Would like pupils to say:
Pupils have said that I am fun, supportive and fair. A good teacher. One of their favourite teachers. They acknowledge me outside school</td></tr>
<tr><td colspan="4">What is an outstanding teacher?
Having genuine care and affection for your pupils.
Developing positive relationships and gaining their respect
Identifying the individual needs of each pupil and those of the class
Providing challenge and support as required. Develop independent thinkers</td></tr>
<tr><td colspan="4">Other: School comments: One of the most outstanding trainees that I have ever worked with. (Mentor)
Personal comment: You have to love teaching. There is no point in teaching if you don’t enjoy it.</td></tr>
</table>



Appendix 21: Timeline 21.6: Participant SA NQT 2013.14 Document 5

Appendix 21: Document 5: 2010.11 Retention Rates: Overview of Trainees (Outstanding Outcome Grade)

Table 21.1: Outstanding Trainees 2010.11. 100% Retention in teaching after 5 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2010	School B 2011	NQT School 11.12	NQT+1 School 12.13	NQT+2 School 13.14	NQT+3 School 14.15	NQT+4 School 15.16
An (24 yrs) F ScBi	2 weeks PCEC	Parks and Gardens	2.1 Landscape Management	3:2:1 60M credits	A	B	C	D	D	D Mentor	D HOY
Ar (25 yrs) F ScCh	Exam Papers	Accounts Assistant	2.1 Biomed Sc	3:2:1 0M credits	A	B	B	B	B	B HOY	B HOY
Br (22 yrs) F ScPh	6 months PEC	Lab Research	1.1 Sports Sc	1:2:1 60M credits	A	B	B	B	B	X	C
De (24 yrs) F ScCh	2 weeks PCEC	Accounts Assistant	2.2 Science	3:1:1 0M credits	A	B	C	B	B	B HOY	B HOY
Df (26 yrs) F ScPh	6 months PEC	Teaching Assistant (TA)	2.1 Sports Sc	1:2:1 30M credits	A	B	C	C	C	C HOD	C HOD
Gn (23 yrs) F ScPh	2 week PCEC	MSc /TA	2.1 MSc Physics	3:1:1 60M credits	A	B	A	A	A	A HOY	A HOY
Lc (50 yrs) F ScCh	6 months CEC	Doctor	MBBS Medicine	1:1:1 30M credits	A	B	C	C	C	C 2/c HOY	C 2/c HOY
Lk (22 yrs) M ScPh	2 week PCEC	Student/ waiter	2.1 MPhysics	3:1:1 60M credits	A	B	C	D	D	E HOD	E HOD
Na (25 yrs) F ScCh	6 months CEC	Hospital Psychologist	2.1 Psychology	2:1:1 60M credits	A	B	B	B	C	C HOD	C HOD
Tn (38 yrs) M ScPh	6 months PEC	Engineer	Pass Engineering	3:2:1 60M credits	A	B	C	C	C	C HOD	D HOD

App 21: 2010:11 Retention Rates (Good or Satisfactory Outcome)

Table 21.2: Good/Satisfactory Trainees 2010.11. 50% Retention in teaching after 5 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credit	School A 2010	School B 2011	NQT School 11.12	NQT +1 School 12.13	NQT +2 School 13.14	NQT +3 School 14.15	NQT +4 School 15.16
Ze (30yrs) F ScBi	2 weeks PCEC	Manager	2.2 Human Anatomy	1:3:30M credits	A	B	C	C	C	A Mentor	A Mentor
Ja (56 yrs) F ScCh	2 weeks PCEC	NHS Manager	2.1 Environmental Sc	1:3:260M credits	A	B	C	C	C	X Retired	X Retired
Ni (22yrs) F ScCh	6 months PEC	TA	2.2 Psychology	3:2:20M credits	A	B	C	C	D	D Mentor	D Mentor
Ja (46 yrs) F ScCh	2 weeks PCEC	IT Consultant	2.2 Chemistry	3:2:260M credits	A	B	X	X	X	C P/T	C P/T
Nc (24yrs) F ScCh	2 weeks PCEC	Research Genetics	2.1 Forensic Sc	1:3:260M credits	A	B	C	C	C	C Mentor	C Mentor
Ja (29 yrs) M ScBi	2 week PCEC	Youth Worker	2.2 Human Biology	3:3:260M credits	A	B	C	C	X Youth work	X Youth work	X Youth work
Jn (21yrs) M ScCh	2 weeks PCEC	Student Bar work	2.1 Biomed Sc	2:2:230M credits	A	B	B	B	B	B 2 i/c HOD	B HOD
Jn (53yrs) F ScCh	Exam Papers	Environmental Advisor	3.0 Natural Sc	4:2:260M credits	A	B	C	C	C	D HOY	D HOY
Ar(23 yrs) F ScCh	6 months CEC	VSO	3.0 Chemistry	3:2:20M credits	A	B	C	C	C	C	C
Va (48yrs) F ScCh	6 months CEC	TA/ Administrator	2.2 Molecular Science	3:2:20M credits	A	B	C Supply work	C Supply work	C Supply work	D	D
Rb(29) M ScBi	2 weeks PCEC	Landscape Gardener	Pass Horticulture	3:3:20M credits	A	B	C Supply work	C Supply work	C Supply work	X Gardener	X
Su(41yrs) F ScCh	2 weeks PCEC	Research Science	2.2 Chemistry	3:3:230M credits	A	B	C	C	X	X	X
Ka(27yrs) F ScPh	2 week PCEC	PhD Nano Sc	1.1 Physics	2:3:330M credits	A	B	C	C	C	X Started Family	X
Jm(26yrs) F ScBi	Exam Papers	Exam Tutor	2.2 Biology	3:3:30M credits	A	B	C Supply work	C Supply work	X Started Family	X Started Family	X

Appendix 21: Retention Rates (Outstanding Outcome Grade) 2011.12

Table 21.3: Outstanding Trainees 2011.12. 100% Retention in teaching after 4 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2011	School B 2012	NQT School 12.13	NQT+1 School 13.14	NQT+2 School 14.15	NQT+3 School 15.16
Le (23 yrs) M ScBi	2 weeks PCEC	Travel Agent	2.1 Forensics	2:2:1 30M credits	A	B	B	B	B Mentor	B 2/c HOD
El (21 yrs) F ScCh	2 weeks PCEC	Student. Receptionist	2.1 Medical Genetics	2:2:1 60M credits	A	B	C	C	C KS3 RAL	C
Do (22 yrs) F ScCh	6 months CEC	Catering Manager	Pass Science	3:2:1 60M credits	A	B	C	C	C Voc Co Science	D Eire
Je (24 yrs) F ScBi	2 weeks PCEC	TA/LSA	1.1 Biology	2:2:1 60M credits	A	B	C	D	D	D
Ma (26yrs) F ScCh	3 months CEC	Physio	2.1 Physiotherapy	2:1:1 60M credits	A	B	X Moved	C	C	C
Je (23 yrs) F ScBi	2 weeks PCEC	Youth Worker	2.2 Biology	2:1:1 0M credits	A	B	C	C	C	C
Pa (27 yrs) F ScPh	Exam Papers	Structural Engineer	2.2 Engineering	2:2:1 0M credits	A	B	A	A	A	B Eire
Pe (28yrs) M ScBi	2 weeks BCEC	Surveyor	2.2 BioMed Sc	2:1:1 60M credits	A	B	B	B	C HOD	C HOD
Ma (26yrs) F ScCh	3 months CEC	Ed Psych/ TA	2.1 MPsychology	2:1:1 60M credits	A	B	C	C	C	C

Appendix 21: Trainees (Good or Satisfactory Outcome Grade) 2011.12

Table 21.4: Science Trainees 2011.12. 87.5% Retention in teaching after 4 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades MCredits	School A 2011	School B 2012	NQT School 12.13	NQT+1 School 13.14	NQT+2 School 14.15	NQT+3 School 15.16
Na (22 yrs) M ScCh	3 month CEC	Student	2.2 Biochemistry	3:3:2 60M credits	A	B	C	D	E	E
Ch (25 yrs) M ScP	6 month PEC	Climbing Instructor	2.1 Sports Sci	3:2:2 30M credits	A	B	C	C	C	C
Ro (45 yrs) M ScPh	2 weeks PEC	Systems Analyst	3.0 Physics	2:2:2 30M credits	A	B	X ITConsultant	X	X	X
Ho (31 yrs) F ScCh	3 month CEC	Insurance	2.1 MPhil Medical Research	2:2:2 60M credits	A	B	B	B	B	B
Er (39yrs) F ScBi	Exam Papers	Marketing	1.1 Science	2:2:2 0M credits	A	B	C	C	X	X
Ca (27 yrs) F ScCh	6 month CEC	EAL Tutor	2.1 Psychology	2:3:2 0M credits	A	B	C	C	C	C
Mi(31 yrs) M ScBi	2 weeks PCEC	Sales Exec	2.1 Biology	2:2:2 60M credits	A	B	B	B	B 2i/c HOD	B
Ji (27yrs) M ScCh	2 weeks PCEC	Sound Engineer/ Roadie	Pass Applied Science	2:2:2 0M credits	A	B	C	C	C	C
An (23yrs) M ScCh	2 weeks PCEC	TA/Rowing Coach	3.0 Chemistry	3:2:2 60M credits	A	B	C	C	C	C
Ka(22yrs) F ScCh	9 month CEC	Army Cadet	2.2 Biomed Sc	3:3:2 0M credits	A	B	C	C	C	C
Vi(31yrs) F ScCh	6 month CEC	PhD Research	2.1 Biochem PhD	2:2:2 60M credits	A	B	C	C	C	C
Ro(24yrs) M ScPh	2 weeks PCEC	Customer Service Retail	3.0 Physics	3:3:3 30M credits	A	B	C	C	D	D
Do(36yrs) F ScCh	6 month CEC	MSc Business	3.0 Chemistry	3:2:2 0M credits	A	B	C	D	E	E
Ch(45yrs) F ScCh	6 month CEC	NHS Administrator	2.1 Microbiology	2:2:2 60M credits	A	B	C	C	C	C
Su(23yrs) M ScPh	3 month PEC	Student Scout Master	3.0 Forensic Sc	2:2:3 0M credits	A	B	C	C	C	C

Ga(25yrs) F ScCh	2 weeks PCEC	MSc Research	2.2 Biomedical Sc	2:2:2 0M credits	A	B	C	C	C KS3 Co	C

Overview of Trainees (Outstanding Outcome Grade) 2012.13

Table 21.5: Outstanding Trainees 2012.13. 100% Retention in teaching after 4 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2012	School B 2013	NQT School 13.14	NQT+1 School 14.15	NQT+2 School 15.16
La (21 yrs) F ScBi	2 weeks PCEC	Student Ambassador	2.1 Human Biology	2:2:1 30M credits	A	B	C	C Mentor	C 2i/c HOD
Ag (21 yrs) F ScBi	Exam Papers	Student Ambassador	1.1 Human Bio Sc	2:2:1 60M credits	A	B	B	B Mentor	C KS3 Co
Ni (34 yrs) F ScBi	2 weeks PCEC	Army Medical Corps	2.1 Nursing	2:2:1 60M credits	A	B	C	C	C HOBi
La (37 yrs) F ScBi	Exam Papers	Dentist Lecturer	BDS Dentistry	2:2:1 60M credits	A	B	B	B	B KS3 Co
Gy (21 yrs) M ScBi	2 weeks PCEC	Student Scout Leader	2.1 Biology	2:2:1 30M credits	A	B	C	C DoE	C Charity Org
Va (23 yrs) F ScCh	6 months CEC	Research Assistant	2.1 Nutrition	2:1:1 0M credits	A	B	C	C	C 2 i/c HOD
Ab (21 yrs) F ScCh	6 months CEC	SAS Student	2.1 Pharmacy	1:1:1 30M credits	A	B	A	A	A KS3 Co
Me (23yrs) F ScCh	6 months CEC	Research Assistant	2.1 BioMed Sc	2:1:1 0M credits	A	B	C	X Started Family	D
Ki (24 yrs) F ScCh	6 months CEC	Hospitality/Events	2.1 Natural Sc	2:1:1 30M credits	A	B	B	B	B
Mi (22 yrs) F ScCh	3 months PEC	Student	2.2 Science	2:2:1 0M credits	A	B	C	C	D Eire
Ma (22yrs) F ScCh	3 months CEC	Student	2.1 Equine Sc	2:1:1 60M credits	A	B	C	C	C 2 i/c HOD
Ay (23 yrs) F ScCh	3 months CEC	Receptionist Charity Org	2.2 Human Sc	2:1:1 0M credits	A	B	B	B Mentor	B 2 i/c HOY
Sa (41yrs) F ScPh	6 Months PEC	Aviation	1.1 Psych HND Eng	1:1:1 60 M credits	A	B	C	C	C 2 i/c HOY

Overview of Trainees (Good or Satisfactory Outcome) 2012.13

Table 21.6: Trainees 2012.13. 77% Retention in teaching after 3 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2012	School B 2013	NQT School 13.14	NQT+1 School 14.15	NQT+2 School 15.16
Da (21 yrs) M ScBi	Exam Papers	Student	2.1 Sports Sc	2:3:3 0M credits	A	B	C	C	C
Sa(27 yrs) F ScCh	6 Months CEC	Banking Advisor	2.2 Psychology	2:2:2 30M credits	A	B	C	C	C
Ca(38 yrs) F ScCh	4 weeks CEC	Clinical Data Manager	2.1 BioMed Sc	2:2:2 60M credits	A	B	A	A	A
Ct (37 yrs) F ScCh	4 weeks CEC	Industry	1.1 Chemistry	3:2:2 60M credits	A	B	C	X	X
Bi (22 yrs) M ScCh	3 months CEC	Sales Assistant	2.2 Biology	2:2:3 0M credits	A	B	X Travelling	X	X
Mt(26 yrs) M ScCh	3 months CEC	Sports Coach	2.1 Sports Rehab	2:1:2 60M credits	A	B	C	C	C
Lc (48 yrs) F ScCh	3 months CEC	Research	2.1 Agriculture PhD	1:1:1 30M credits	A	B	C	C	C
Pe (22yrs) M ScPh	4 weeks PEC	Scout Leader/ Student	2.1 MPhysics	2:2:2 30M credits	A	B	C	C	C HoPh
Mv(40 yrs) F ScPh	6 months PEC	Physio-therapist	2.1 Physiotherapy	3:2:2 30M credits	A	B	C	C	C
Fl(38 yrs) F ScPh	3 months PEC	Software Engineer	2.2 Physics	3:3:2 30M credits	A	B	C	C	C
Fa (30yrs) F ScPh	3 months PEC	Retail	1.1 Science	3:3:3 0M credits	A	B	C	D	X
Je (28 yrs) F ScPh	3 months PEC	Research NPL	2.1 MApplied Physics	2:2:2 0M credits	A	B	B	B	B
Br (47yrs) M ScPh	2 weeks PEC	Sound Engineer	1.1 Environmental Science	3:2:2 30 M credits	A	B	C	C	C

Overview of Trainees (Outstanding Outcome Grade) 2013.14

Table 21.7: Outstanding Trainees 2013.14. 100% Retention in teaching after 2 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2013	School B 2014	NQT School 14.15	NQT+1 School 15.16
Ea(29 yrs) M ScBi	2 weeks PCEC		2.1 Horticulture	1:1:1 30M credits	A	B	C	D Eire
Am (22yrs) F ScBi	2 weeks PCEC	Student Ambassador	2.2 Biomedical Sc	2:1:1 60M credits	A	B	B	B
Mt (22 yrs) F ScBi	2 weeks PCEC	TA	2.2 Biomedical Sc	3:2:1 60M credits	A	B	C	C
Jo (27 yrs) M ScBi	2 weeks PCEC	Bar Manager	2.1 Biology	2:2:1 0M credits	A	B	B	B
Si (31 yrs) M ScCh	2 weeks PCEC	Expedition Organiser	2.2 Biochemistry	1:1:1 30M credits	A	B	B	B
Ab (39 yrs) F ScCh	6 months CEC	Self Employed Cook	2.1 Chemistry	2:2:1 60M credits	A	B	C	D
Ce (31 yrs) F ScCh	3 months CEC	Pharmacist	1.1 Pharmacy	2:2:1 0M credits	A	B	C	C
Dm (25yrs) F ScCh	3 months CEC		2.2 Chemistry	2:2:1 60M credits	A	B	C	C
Sl (39 yrs) F ScCh	3 months CEC		2.2 Chemistry	2:1:1 30M credits	A	B	C	D
La(48 yrs) M ScPh	4 week PEC	Research	3.0 Natural Science	1:2:1 60M credits	A	B	C	C
Ra (23yrs) F ScCh	4 week PEC	Student	2.1 MPhys	1:2:1 60M credits	A	B	A	A

Overview of Trainees (Good or Satisfactory Outcome Grade) 2013.14

Table 21.8: Science Trainees 2013.14. 60% Retention in teaching after 2 years.

	Pre PGCE SKE	Prior Career	Degree Class and Subject	School Grades M Credits	School A 2013	School B 2014	NQT School 14.15	NQT+1 School 15.16
Jo(22 yrs) F ScBi	2 weeks PCEC	Student Ambassador	1.1 Microbiology	2:2:2 60M credits	A	B	C	C
Sa (23yrs) F ScBi	2 weeks PCEC	Student Ambassador	2.2 Biomedical Sc	2:2:2 60M credits	A	B	C	C
Gr (28 yrs) FM ScCh	3 months CEC	Sales Rep	2.2 Biology	2:1:2 60M credits	A	B	C	C
St (21 yrs) F ScCh	3 months CEC	Student	1.1 Physiology	2:2:2 60M credits	A	B	C	C
Ha (24 yrs) F ScCh	3 months CEC	Research Science	2.1 Physiology	3:3:2 30M credits	A	B	C	X Research
Ch (24 yrs) M ScCh	6 months CEC		2.2 Zoology	2:2:2 60M credits	A	B	A	A
Co (49 yrs) F ScPh	6 months PEC		3.0 Physics	3:3:2 30M credits	A	B	C	X
Be (22yrs) F ScPh	Exam Papers	Athlete	2.1 Physics	2:2:2 30M credits	A	B	C	C
Mz(32yrs) M ScPh	6 months PEC	Research NPL	1.1 Biotechnology	3:2:2 0M credits	A	B	C	X Research
Gg(23yrs) M ScCh	Exam Papers	Student	1.1 MChem	2:2:2 60M credits	A	B	C	X Sport

M/F=Male/Female; ScBi=Biology; ScCh=Chemistry; ScPh=Physics.
SKE=Subject Knowledge Enhancement; PEC=Physics; CEC=Chemistry; PCEC=one-week physics, one-week chemistry
Grades awarded at the end of each phase. Foundation Phase; Development Phase; Consolidation Phase of training. Grades: Grade 1=Outstanding; Grade 2=Good; Grade 3=Satisfactory.
Master's credits: Two assignments submitted worth 30 M credits each. 60M credits results in award of Postgraduate Certificate in Education (PgCE); under 60 M credits results in Professional Graduate Certificate in Education (PGCE)
Consecutive School Placements A and B. Letters in subsequent columns indicate either remaining in one of the placement schools (A or B)or moving to other schools (C, D, E).
X= Left school teaching; HOD=Head of Department; HOY=Head of Year; 2 i/c=second in charge.

Appendix 22: Summary Overview of Trainees Outcome Grades and Retention Rates (2010- 2015).

Table 22.1: Early Career Teacher Retention Rates (2012-2015)

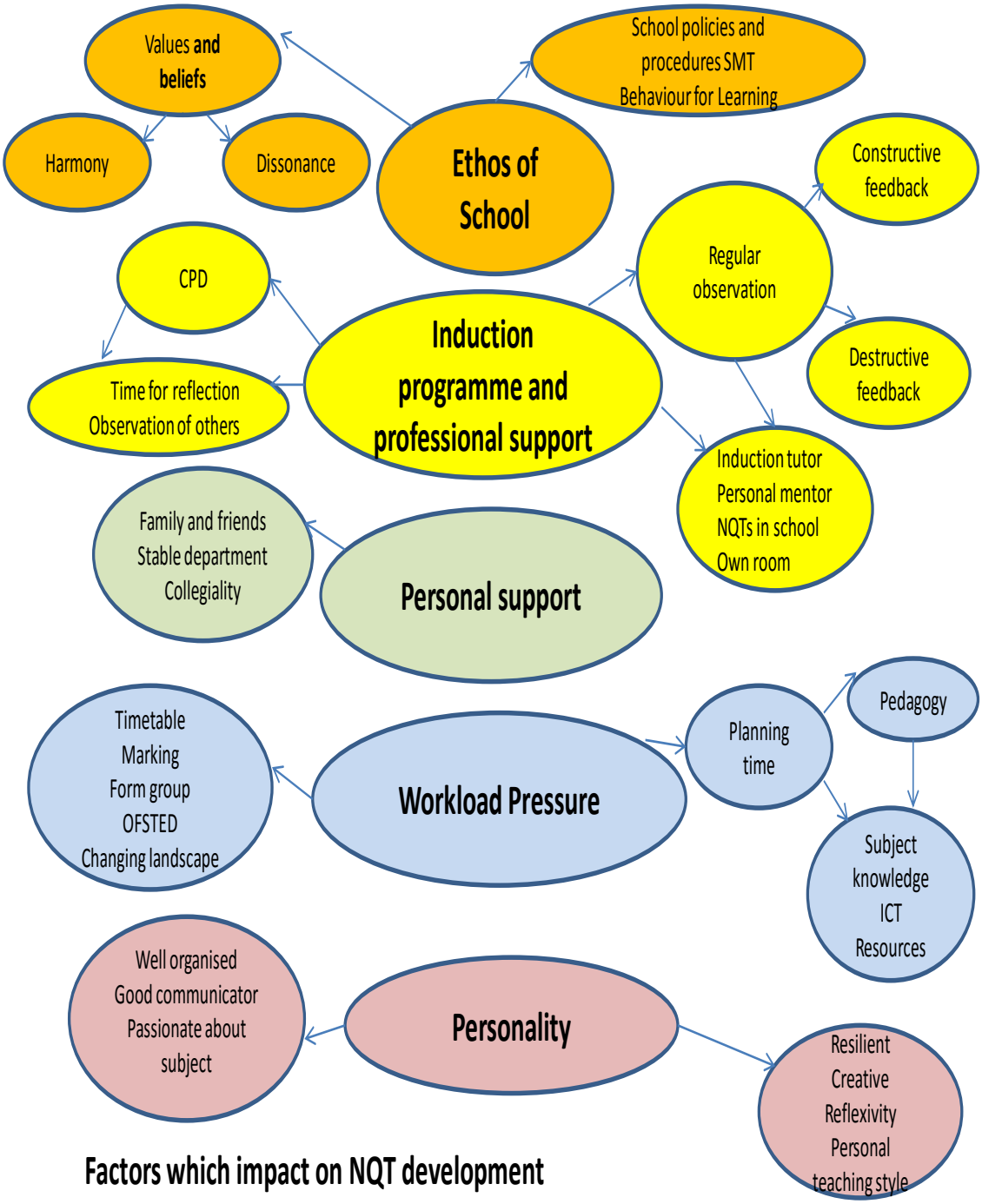
Number of years in teaching to date	Science cohort dates	Retention rates by September 2015	
		Outstanding	Good/Satisfactory
5	2010-2011	100% (10 trainees)	50% (14 trainees)
4	2011-2012	100% (9 trainees)	87.5% (16 trainees)
3	2012-2013	100% (13 trainees)	77% (13 trainees)
2	2013-2014	100% (11 trainees)	60% (10 trainees)
First year	2014-2015	100% employment rate as NQTs (9 outstanding, 18 good)	

The 2010-2011 'outstanding' (grade 1) individuals of science trainees have 100% retention rate in their fifth year of teaching with 80% having important posts of responsibility in their schools.

In comparison those individuals from 2010-2011 who were awarded 'good' or 'satisfactory' grades (grades 2 and 3) have 50% retention rates at the end of their practice, in line with national figures.

The figures for 2011-2012, 2012-13 and 2013 -2014 show similar 100% retention rates for outstanding achievers and retention rates for those awarded 'good' or 'satisfactory' grades (grades 2 and 3) are lower.

Further research into the factors that contributed to individuals remaining or leaving the teaching profession are suggestions for post-doctoral research.



Appendix 23: Inter-relation of Factors which Impact on NQT Development

Appendix 24: What is an outstanding teacher? Participants Views

Table 24.1

AB	*Consistency in the way I teach. If I want good behaviour management, I need to deliver engaging, relevant lessons and the pupils will behave and learn. Good planning, good relationships and modelling myself on what the pupils expect from an outstanding teacher.*
AG	*Do not over think things don't make the lesson over complicated. Keep things at right level for the pupils. Do not to take things too seriously or personally and develop a positive relationship with every pupil. Behaviour management is the most important thing through consistent rewards and sanctions and very engaging and relevant lesson structure.*
AY	*I don't think one outstanding lesson makes an outstanding teacher. There is a lot of building up before a consistency of outstanding can be achieved. It is the relationship with the pupils that matters. Creating a positive learning environment that is creative and interesting ensures engagement regardless of what has gone on before they arrive at your door*
GY	*Outstanding teachers can keep every student engaged. You can hear some students talking about their experience outside lessons. They carry on talking about what they have learned after the lesson has finished, if you can focus on making them enjoy the lesson. Trusting relationships with pupils is the key to success, it shows them that you care.*
LA	*In order to be outstanding I think you need the ability to get everyone engaged on some level regardless of ability. Every child has to be involved at some level and be aware of their progress*
SA	*It is having a genuine care and affection for the children you teach. Developing relationships and knowing the limits of each child.*