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Metaleaming: PGCE students learning about learning

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Metalearning: PGCE Students Learning About Learning
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ABSTRACT

As students, trainee teachers are required to reflect upon and take ownership of their own learning, but because of their future position as teachers, they also have to understand the learning of others. Trainee teachers have many ideas about teaching, but unless they have previous experience in the field, it is likely that their main understanding of what constitutes teaching and learning will be from their experiences of themselves as students. Many trainee teachers follow an uninterrupted route from school to university and then straight onto a PGCE course and will throughout their time in education have been experiencing teaching only from one direction – that of a student. During this time, many will develop ideas about what teachers actually do, but since a lot of what teachers do is preparation outside of the classroom, can students really get a balanced idea of the working life of a teacher?

Trainee teachers, and indeed all postgraduate students need to reflect on their own learning in order to maximise their ability to assimilate and understand new information. This is the idea behind the concept of metalearning. Metalearning is a comparatively new phrase and as such, its meaning is still evolving. Originally defined by John Biggs (1985) as a process of being aware, and taking control, of one's own learning, it has subsequently been revisited and redefined. Some authors equate the concept with a practical form of metacognition, others with ideas involving reflective practice whilst others consider the phrase to mean "learning about learning" (Jackson, 2004). In the text which follows, the word is taken to mean "learning about learning" which could, in many cases be shown to subsume both the metacognitive and reflective theories. In any case, it is a very apt description of the principal role of trainee teachers.

This longitudinal study tracks a group of trainee teachers following a PGCE course in order to observe their development and understanding of learning, both their own and that of their pupils and also to gain some insights into the experience of being a PGCE student in the 21st Century.

Metalearning:

PGCE Students Learning About Learning

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Submitted for the degree of

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For Rebecca,

My inspiration

Contents

TABLE OF FIGURES

DECLARATION

None of the content of this thesis has previously been submitted for a degree in this or any other university.

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INTRODUCTION

The ability to think reflectively and understand their own and others' learning is important for both trainee teachers and teachers in general. A recent increase in interest in the concept of metalearning has highlighted the importance of reflective thinking for all undergraduate and postgraduate students in order to improve their own learning. Although most studies of metalearning relate this reflectivity to one's own learning, in the case of trainee teachers the nature of their chosen profession requires them to be just as reflective about other people's learning. Because trainee teachers are learners too, they will have different approaches to learning and different experiences on which to build in order to make them successful teachers, but they will also have to develop an awareness that not all students learn in the same way and that teachers have to provide learning opportunities that are varied and wide-ranging.

This thesis takes the concept of "metalearning" (Meyer and Norton, 2004), that is, reflecting on one's own learning approaches and conceptions about what learning is, and by doing so, enhancing the effectiveness of one's own future learning, and extends it to the unique situation of teachers who not only have to have firm ideas about how they themselves learn, but are able to place their understanding of learning in a wider context in order to facilitate the learning of others. Their understanding of the learning process has to go beyond that of their own preferred methods of learning and must include most other common ways of learning and thinking in order that they may be able to provide appropriate learning opportunities for their students. It argues that this definition of metalearning transcends the current definition in that the effective teacher not only has to understand their own learning, but has to have a far greater understanding of the concept of learning itself in order to understand more fully the learning of others.

Effective teachers are not simply people who have an enhanced understanding of learning, they tend to show other traits too. For instance, the reflective nature of their profession requires that they share with metalearners the traits of being deep learners, having high levels of self-efficacy and of intrinsic-motivation

(Pintrich and De Groot, 1990; Jackson 2004). In this thesis all these traits are examined with a view to providing insights into what makes an effective future teacher by applying simple tests as students study on their Post Graduate Certificate in Education (PGCE) course. This longitudinal study involved following a group of student teachers at a university in the North East of England for an academic year. Roughly equal numbers of volunteers from both the Primary and Secondary PGCE courses were selected. Using semi-structured interviews and questionnaires, the study investigated student's notions of their own and their pupils' learning and assessed whether they were deep learners, their levels of self efficacy and their motivational styles.

Longitudinal studies of teachers throughout an academic year are quite rare, and longitudinal studies of trainee teachers are rarer still. The sheer amount of work required of the student during this time, planning their lessons for delivery in the classroom as well as studying academically within the university means that PGCE students do not have much time to spend with external researchers. The research methods chosen reflect the problems associated with this shortage of time. It is within this short time however, that new teachers gain the skills and opportunities that they will use throughout the rest of their working lives. The PGCE course provides them with experiences of working as a real teacher in a real school under real conditions. Many find this a period a mix of intense confusion, delight, terror and very hard work, but most also find it intensely rewarding. Following a group of trainee teachers for a year allows the researchers to investigate whether the reality matches the hyperbole and to find out what trainee teachers think about schools, classrooms, learning and education.

Chapter 1 - Research Questions

INTRODUCTION

This chapter introduces the main research questions that are the focus of this thesis. As with all research questions they are situated in a particular framework, in this case, the experiences of PGCE students as they develop their teaching and reflective skills whilst learning their new profession. The chapter discusses why these particular questions are important and why they need investigating.

RESEARCH QUESTIONS

This thesis considers three research questions:

Question 1.

Does following a PGCE course encourage trainee teachers to develop a sense of metalearning?

It may be assumed that students who have completed a first degree would have developed a sense of how they learn and what methods of learning suit them best. Unless it has been specifically brought to their attention however, they may not have considered this reflection on their own learning approaches and conceptions in terms of metalearning. Many teacher training courses use the model of the reflective practitioner, so it would be expected that this area would be developed as the course progresses. In addition a deeper understanding of the importance of teaching and learning provides a basis for reflection and a solid foundation for the establishment of an individual teaching style. An effective understanding of their own metalearning enables the student not only to be aware of their own and others learning but also takes these skills to a higher level enabling them to make effective decisions about most advantageous ways of providing effective learning opportunities. This concept of regarding teachers as a special type of metalearners has not been considered in the literature before and it is important that all the comments using the terms 'metalearning' and 'metalearner' in this thesis will normally be referring to this wider conception of the teacher reflecting on both their own and other's learning.

What evidence is there that trainee teachers' perceptions of learning change as they progress through their PGCE course?

It may be expected that most PGCE students start their course with a positive attitude to teaching and learning. In most cases they will have done well at school and all of them will have completed an appropriate degree. Some will have higher qualifications as well, either post graduate (Masters or Doctoral degrees) or work related (NVQs, Professional Qualifications or similar). In all cases then, this group may be defined as successful students, indeed, it could be argued that by wishing to become teachers, this group is self-selecting for being positive about teaching and learning.

Conversely though, this also seems to be a problem. As successful students they would be in the top 20% of most school ability groups. Their experience of learning and teaching in school will most likely be that of an enjoyable experience where they were well able to cope with the work they were set and a clear idea of the rewards provided by society for those with a good education. This may preclude them from having the understanding or empathy required to relate to the other 80% of pupils who find school work boring, too hard, threatening or a waste of time.

This question relates to the recognition of the fact that students have differing ways of learning, so to develop an empathy for those who find learning difficult is just one part of the puzzle. The second part is to understand the many different learning preferences that their pupils may have and to actively build those into the teacher's lesson plan. This is more difficult, because depending on one's own preferred way of learning, it is difficult to see how another approach will work. Nevertheless, it is interesting to see these skills developing in the new teacher.

What other factors might indicate that people would be more reflective thinkers, and how may they be tested?

Both reflective thinkers and successful teachers tend to be intrinsically motivated deep learners with a strong sense of self-efficacy (Pintrich and De Groot, 1990; Jackson, 2004). In each case there are tests available that are easy to administer and analyse that provide information about a student's predisposition to that particular factor. Setting these tests during a PGCE course could provide valuable information about those students who possess these attributes of successful teachers and of those who tend towards metacognitive thought.

Spotting likely successful teachers is valuable as retention of teachers is an important issue. A large number of trainee teachers drop out before completing their course and many fail to take up teaching posts having graduated. If there are simple tests available which are shown to correlate with traits of successful teachers, these might prove useful if administered during the selection process and may go some way towards reducing teacher dropout. Some simple tests are used within this research that may prove valuable in selecting those candidates who have traits appropriate for a career in teaching. These are trialled and the results discussed in terms of their efficacy at highlighting future successful teachers.

BACKGROUND

In order to seek answers to these questions, it is important to find out more about what studying to be a teacher is like, what teachers find exciting about their chosen profession, what motivates them to train for a teaching career and what they understand about their own and other's metalearning. Teaching as a profession is constantly changing, particularly due to the interventionist policies of recent governments. The emphasis on spending more time in the classroom may affect the time available for university staff to develop reflective skills in their students and concomitantly lower their ability to develop their own

metalearning. Similarly it is useful to know if there are any simple "markers" that can define those who are more likely to become successful teachers

One report, (Gardner, 2002, pp118) carried out at the turn of the millennium put the number of trained teachers actually teaching at 423,520 but the number of trained teachers not currently teaching at 382,000. With such large numbers of teachers deciding to leave or never take up the profession after training there must be some major reasons why the profession does not retain its workforce as once it did. Perhaps one of the main concerns has been the pressure on teachers to achieve results whilst at the same time providing for an increasingly wider range of abilities, coping both with special needs and gifted and talented children all within one setting. Other areas are also an issue and have been for some time. A seminal work by Veenman (1984) "Perceived problems of beginning teachers", highlights the main problems associated with new teachers which include handling classroom discipline, motivating pupils, dealing with differences between pupils, assessing learning results, communicating with parents, organising classroom work, working with the materials at hand and coping with the problems of pupils. More recently though, the greatest change has been the extent to which successive governments have involved themselves with education provision.

Once content with leaving teachers to get on with the job, the political pressure on governments to intervene in the process has massively changed the nature of teaching. There are increasing pressures on teachers, both societal and academic and over the last 20 years or so, teaching has been the subject of a great deal of legislation by successive governments in response to the employers' and the public's view that the education children were receiving did not provide them with sufficient or appropriate key life and work skills. Successive governments have sought to rein in the power and independence of the teachers with the purpose of making them more accountable to the public at large. The greatest change being the 1988 Education Reform Act. This Act required all State funded schools to deliver a National Curriculum and sanctioned the testing of pupils at ages 7, 11, 14 and 16. These results were to be published and used as the basis for comparisons of schools based on a

market model.   In 1992, the Education (Schools) Act created a new inspectorate within the Office for Standards in Education (Ofsted) with new powers to inspect schools and publish their findings (Richards, 1997).

These changes made the profession of teaching very different from that which it had been. There was pressure on teachers not only to deliver the National Curriculum, but also to prove that they had done so to the satisfaction of external inspectors. This pressure on teachers caused many to leave the profession and those still within it to be constrained in many ways that they had not previously experienced. In effect they were becoming technicians rather than true professionals, having little control over what they did or how they did it and unable to negotiate their own pay.

Little changed when the Labour government came into power in 1997. In 1998 the National Numeracy and Literacy strategies were launched. These strategies, aimed at raising standards in Primary education were very prescriptive in terms of content and delivery, defining how long each part of the lesson should take and the exact method by which it should be delivered. The strategies were designed to increase the number of pupils achieving Level 4 in Key Stage 2 tests in 2002 to 80% in English and 75% in maths. However, they failed to do so, falling short by a small margin in each case[1].

Secondary education too, was the focus of the new Labour government's attention. In September 2002 the Key Stage 3 National Strategy was launched, targeting attainment across the Key Stage. In 2003 the government published "14 to 19: Opportunity and Excellence" aimed at addressing the disaffection with school displayed by children within this age group. More recently, Mike Tomlinson, ex chief inspector for schools has been asked to examine the whole system of certification with a view to replacing the current system of GCSE and A level with a new diploma (Greany and Jones, 2005).

Many of the innovations detailed above are validated by the use of testing which has been another growth area within the profession over the last 20

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[1] Actual figures in 2002 were 75% in English and 73% in maths.

years. Unfortunately, the results of testing lend themselves very easily to the creation of league tables comparing schools with each other simply on the basis of their test results rather than the more difficult to assess areas like happiness, motivation or community involvement. Within the current market model of education, schools that have pupils that achieve high marks in national tests are considered better then schools that achieve lower marks. Since parents can opt to send their children to high achieving schools, and schools where pupils do not achieve well can be sanctioned by 'special measures' or even changes of management, another pressure is on teachers to achieve good results regardless of the quality of students they have to work with. Again, teachers who value quality of education over quantity of results have found themselves under pressure to conform or to leave the profession.

The result of major government intervention over the last 20 years has resulted in teaching appearing to be a lot less inviting for new applicants particularly as less teaching vacancies become available and there are jobs available in industry and commerce that have greater prospects

Since the teaching profession has major rivals within industry and commerce for its potential workforce among today's university students, it is important to know what makes a good teacher who will be effective in the classroom, complete the course and add to the profession in the future. Not only should teachers be effective practitioners, but they must be willing to work within the current milieu of testing and external judgements within a market model of education. This study attempts to highlight some of the ways in which potential teachers could be evaluated in order to select the ones who will become the successful teachers of the future.

SUMMARY

This chapter explained the research questions that are central to this thesis. It argued that an effective understanding of metalearning enables students to improve their own learning, but that for teachers it was especially important as they have a responsibility not only for their own learning but that of their pupils. In addition it posed the question about how PGCE students' concepts of

learning change as they study their course. Finally it highlighted the problems associated with teacher recruitment and retention and asked whether a series of tests could be used to screen future PGCE applicants in order to select those who were more likely to complete the course and go to become reflective professional teachers. These questions were placed into the societal context which gave some background to some of the problems encountered by the teaching profession in the late 20th and early 21st centuries. In the following chapters some of the particular areas mentioned here will be explored further. The next chapter discusses what teachers need to learn and do on their PGCE course in order to obtain Qualified Teacher Status (QTS).

Chapter 2 - Becoming a Teacher

INTRODUCTION

Most teacher training students will have a picture in their own minds of what teachers do and how they practice (Burn, Hagger, Mutton and Everton, 2000, pp 261). However, this may not compare well with the reality and teaching may not be anything like they expected it to be. Similarly, studying on a course which is in itself a profession may be very different from the kinds of academic study in which they have previously been involved. These extra pressures may be new to the student and may cause them to re-evaluate their desire to pursue a teaching career. This chapter explains what is in store for student teachers by outlining the legal framework associated with the PGCE course, along with some of the philosophical ideas behind the concept of a reflective practitioner – the current model on which education courses tend to be based, and an important starting point for developing a sense of metalearning.

BECOMING A TEACHER

Training to be a teacher is a transitional process. During this time, students have to deal with the conflicting demands of still being students themselves and of being a teacher and motivator to others. Intellectually they have to deal with these notions of themselves as learners and teachers every day and develop for themselves some sort of student/teacher identity. Indeed the student/teacher milieu is a unique position it its own right. Practising as a student teacher is very different from practising as a fully-qualified teacher (Burn *et al*, 2000). Student teachers do not always have the time or the scope, to establish their own routine for behaviour, discipline or teaching style within the classroom. In classes where the previous teacher has established particular disciplinary and behavioural standards and where much of the teaching is prescribed by a particular scheme (common in maths and science) there is sometimes little scope for originality. Indeed, under such circumstances change is often unwelcome. This can result in student teachers feeling that they are teaching with "one hand tied behind their back" and this may result in an unpleasant and stressful classroom experience (Head, Hill and Maguire, 1996,

pp 76). Many teacher training students liken their course to an apprenticeship because they find themselves practising a profession before they have acquired a great deal of competence and having to learn through their own mistakes.

This dual identity may be the first time that the student has seen themselves in any other way than as successful. By definition, PGCE students are already successful academics, having achieved a Bachelor's degree (and sometimes more) in their specialised subject. They may assume that the approaches they used to nurture and encourage interest in their specialist subject would work equally well with the pupils they teach and that the approaches to study that they used as students would be just as appropriate to the study of the subject at school level. Often they have a deep love of their subject and it is this that makes them want to teach it to others. Indeed, in the sample used for this study, the majority of students studying to be secondary teachers cited their interest in their specialist subject and their desire to pass this on to others as one of their main reasons for wanting to teach.

THE PGCE COURSE – WHAT THE LAW REQUIRES

PGCE courses typically combine a series of lectures and tutorials covering specialist subjects and techniques with general transferable information about discipline, teaching and learning styles and use of resources. The majority of the time however will be spent in school as the current legislation is based on an apprenticeship model of Initial Teacher Training.

As one would expect, the process of teacher training is very strictly controlled under the auspices of the Teacher Training Agency, which is part of the Department for Education and Skills (DfES). The DfES produces a document entitled "Qualifying to Teach: Professional Standards for Qualified Teacher Status and Requirements for Initial Teacher Training" (July, 2003) that defines what teachers should know and how teacher training establishments must deliver their courses. The standards are divided into 3 sections. These are:

- S1 - Professional values and practice
- S2 - Knowledge and understanding
- S3 – Teaching

S1 – Professional values and practice requires that students have high expectations of their pupils, that they promote respect and positive values in their teaching and that they communicate well with other professionals in school as well as parents and carers. They are also expected to show motivation and be able to evaluate their own learning .

S2 – Knowledge and understanding requires that the trainee teacher has sufficient knowledge and understanding of their specialist subject to enable them to teach it effectively. It does however, recognise the problems inherent in Primary teaching where trainee teachers are required to teach subjects they may be unfamiliar with and for them, apart from requiring thorough knowledge of the core subjects they provide this caveat:

> They have sufficient understanding of a range of work across the following subjects:
>
> – history or geography
>   physical education
>   ICT
>   art and design or design and technology
>   performing arts, and
>   religious education
>
> to be able to teach them in the age range for which they are trained, with advice from an experienced colleague where necessary.
> (TTA, 2003, pp8)

This particular section also makes the specific requirement that the student teacher knows how to use IT effectively as well as requiring that the trainee knows of strategies that promote good behaviour and understands about providing a suitable learning environment.

S3 – Teaching. This last section is broken down into 3 sub sections:

S3.1 Planning, expectations and targets which requires effective lesson planning and the use of appropriate resources in order to set challenging teaching and learning objectives both in the classroom and during school visits and other out-of-school contexts.

S3.2 Monitoring and assessment concerns the requirements to monitor and record pupil progress accurately against National curriculum guidelines and to monitor one's own teaching in order to plan more effectively. This section also requires the trainee teacher to be able to spot able children as well as those who are failing to achieve their potential. Finally, they are required to understand some of the problems inherent in those pupils who are learning English as a second language.

S3.3 Teaching and class management concerns the creation of a purposeful working environment and a demonstration of sufficient teaching ability to teach the specialist subject (Secondary) or the core subjects (Primary) effectively in the classroom. It also details some of the items given before under knowledge and understanding but this time in the practical sense of using them in the classroom. To this end, students are expected to demonstrate differentiation, organise time effectively and use resources, particularly ICT, efficiently over a sustained time period.

The document also lists four requirements for providers of Initial Teacher Training (ITT). These are: R1 -Trainee entry requirements, R2 – Assessment, R3 – Management of the ITT partnership, R4 – Quality assurance.

THE PGCE COURSE – IN PRACTICE

The Primary Course was divided into:
A school experience prior to starting the course. Two weeks in a Primary school environment in a school near home.

Diagnostic school placement

Seven one-day school visits plus two weeks in school

Two preparation days in school followed by four weeks teaching practice in the same school

Final school placement

Four one-day school visits plus one school-based week

One week in school at Key Stage 3

Three preparation days followed by eight weeks teaching practice in the same school (PGCE Primary Course Handbook)

The Secondary course was similar, being made up of:

A school experience prior to starting the course. Two weeks in a Key stage 2 environment in a school near home.

Diagnostic school placement

Three days per week in school for four weeks, followed by five days preparation and then four weeks, two days teaching practice in the same school

Final school placement

Three days per week for four weeks, one week preparation, and then eleven weeks practice in Terms 2 and 3.

(PGCE Secondary Course Handbook)

When not in school, time was spent in lectures and tutorials. Of particular note was the Teaching and Learning Conference in November which had a special emphasis on Learning Styles.

MODELS OF TEACHING

There are many models describing what skills and experience teachers should have, related to what teachers actually do in the classroom. Among these models the teacher is represented in many roles of manager, co-learner and enthusiastic leader. Some common models include the teacher as mentor, the teacher as learner, the charismatic teacher and the teacher as facilitator.

However, two models that stand out as particularly important (in terms of the amount written about them) within the milieu are those of the competent craftsperson and of the reflective practitioner. At the University studied, the PGCE courses were based on the Training to Teach framework, largely based on the competent craftsperson model, but also designed around the model of the reflective practitioner, with actions based on sound pedagogical and educational principles.

THE COMPETENT CRAFTSPERSON

As we have seen in the previous paragraphs, the law is very clear about how teachers should be trained. The Training to Teach framework is based on a series of statements that describe a minimum standard of achievement for a newly qualified teacher. This model, based on the attainment of a combination of knowledge, skills and underlying theory, both in the theoretical environment of the university and in the reality of the teaching practice, breaks the task of becoming a teacher into a series of goals. In this sense it could be defined as a quantitative approach to learning, measured by how many goals have been achieved and how many are still to be achieved. If the new teacher can demonstrate each of these skills to the required standard then they are deemed competent to teach. This model is in diametric opposition to another popular model of teaching, that of the charismatic teacher who is born rather than made and likely to buck the trend of traditional teaching with innovative but effective methods (Moore, 1999, pp137). Expressing a model of teaching in terms of standards alone means that it leaves itself open to the criticism that in theory at least, a student could achieve each goal separately, but may not be able to combine them in a way that provides them with sufficient presence in the classroom to effectively carry out the job of teacher. After all, assessing presence is much more difficult than assessing particular knowledge or skills. However these criticisms may be unjustified. It is quite unlikely that the number of new teachers required in each year could be provided simply from those who had charismatic personalities and even those who go on to display these traits need a firm grounding in the skills and knowledge required by the job. At least, demonstrating ability to a particular standard provides a 'safe pair of hands' and a basis on which to build during the NQT and subsequent teaching years. Once

the teacher is in post, they may then start to reflect on their practice even more, taking a more qualitative approach, and this is where the model of the Reflective Practitioner and ultimately, the metalearner, emerges.

THE REFLECTIVE PRACTITIONER

In the early part of the last century, John Dewey (1910) argued that one of the defining traits of professionals was that they based their actions not on impulses, but on observation and reasoning arising from mature reflection. Indeed, Dewey was one of the first philosophers to equate the importance of reflection to the teaching profession. These ideas struck a chord with many academics and a large number of teacher training courses have been devised around the reflective practitioner paradigm.

Much later, Schön (1983) coined the term reflection-in-action as an extension of the ideas that Dewey had put forward for 70 years earlier. Schön argued that professionals have to deal with problems throughout their working day and cannot necessarily spare the time there and then for reflective thought. He emphasised the instant nature of some decision making which, contrary to popular belief does not rely on fixed answers, but experience. As Donald Schön himself explained at the 1987 meeting of the American Educational Research Association:

> This reflection-in-action is tacit and spontaneous and often delivered without taking thought, and is not a particularly intellectual activity. And yet it involves making new sense of surprises, turning thought back on itself to think in new ways about phenomena and about how we think about those phenomena. (Schön, 1987)

Schön's explanation was that what professionals do instead, is to combine their subject knowledge and background theory with any similar situations they have dealt with before and create an new, unique solution that has many similarities with other solutions that have worked well in the past. This has the result of creating for the professional, a series of solutions to common problems that may be modified and combined to provide a resolution to a new task.

This model of the reflective practitioner sits well with the everyday work of the teacher, particularly because teaching often requires the immediate evaluation of questions and answers as well as the progress of lessons against learning objectives. Practising teachers are constantly feeding back to themselves as a lesson proceeds, evaluating their success or failure and any subsequent modifications to the lesson to make sure that teaching time is used effectively. They are also assessing the learning of their pupils, aware that an approach that worked with one group will not necessarily work well with another whilst simultaneously reflecting on their own understanding of the subject as they teach. This reflection-in-action is a skill that has to be learnt however, and it is acknowledged that few PGCE students have that skill at a sufficiently developed stage before they embark on their first teaching practice, even though they may have taught before.

Because of its appropriateness to teaching, the model of the reflective practitioner has been adopted almost universally as an appropriate model on which to base a teacher training course. Indeed, Barrett, Whitty, Furlong, Galvin, and Barton, (1992) claimed that in 1991, over 70% of all initial teacher training courses used the reflective practitioner model.

Of course, teachers develop their knowledge and ideas about teaching as they practise, and there are many models of teacher development, two of which are detailed here. The first, is that of Fuller (1970), who carried out a longitudinal study of new teachers at the University of Texas. Fuller's model comprised three main stages:
- Stage one was characterized by an emphasis on the self.
- Stage two by issues of the classroom milieu and pupil interactions.
- Stage three followed by trainee teachers concerning themselves with pupil learning and achievement.

The second model is that of Furlong and Maynard (1995), who observed five main stages of teacher development:

- In the first stage teachers were motivated by their ideas of what teaching would or could be like and their desire to work with children in a happy environment.
- In stage two these views changed to a survival approach, having to deal with discipline and the minutiae of being in the right place at the right time with the appropriate lesson planned.
- Stage three was characterised by the trainee teacher overcoming the majority of classroom management problems to the extent that they were able to establish themselves in the classroom and take stock of the teaching styles currently in use.
- By stage four the use of appropriate learning styles and planning for optimum learning became the main focus.
- Once they had reached stage five, the teacher had started to develop a wider and deeper understanding of the teaching and learning process.

In each of the stages of both Fuller's and Furlong and Maynard's models, it may be seen that the position of the teacher is becoming increasingly more reflective. In the first stages the emphasis is on surviving in the classroom and providing a suitable learning environment, but once this is established it becomes possible for the teacher to use reflection and other deep thinking skills in order to make sense of their current position and to decide what the next appropriate step would be. It also serves to create a broad base of experience from which to draw new creative solutions to current problems. It is important to note though, that since this process is essentially a feedback loop, newer experiences providing the basis for further reflection, it is not likely to be complete before the student has finished their training. Indeed, it is more likely that the first five years of teaching professionally will have a greater effect on the educational philosophy of a practising teacher and in consequence, their metalearning capacity. Korthagen (1993) for instance, has suggested that longitudinal studies of newly qualified teachers rather than student teachers will bring richer insights into the stages of teacher development, particularly in the development of their own teaching philosophy.

Reflection can also be encouraged in the student teacher by the writing of biographies, either in a general form of "how did I get here" or more usually in the form of a "learning log". Many courses require the student to keep a learning log in the form of a diary where current problems and likely solutions may be detailed as a source for later problem solving and reflection. This enables the course staff to get some ideas of the problems faced by their students and also provides an opportunity for students to voice their concerns, whilst providing a basis for reflection. Autobiographies provide a valuable method for students to place their practice into the complexity of their lives and make links between what they are, what they do and what they should do next. One of the principle advocates of this method is Pierre Dominicé at the University of Geneva. In his book "Learning from our Lives" (2000), Dominicé shows that he believes that writing an educational biography empowers individuals. He goes on to say that to reflect on how they have learned from their life experiences allows adults to enhance their search for meaning and their critical thinking. This process is invaluable in the development of an overall philosophy of life, as well as that of a professional philosophy of education.

SUMMARY

The document "Qualifying to teach" shows that TTA are very clear about what is required of new teachers entering the profession. It details all those skills and background knowledge that are features of good teachers. Some authors have criticised this and previous documents as being too mechanistic and that they have:

> [...] the makings of a very useful detailed training manual for would-be technicians.
> (Richards, *et al* 1997, pp 6)

In theory, all new teachers must reach these standards before they qualify. However, it could be argued that with the time constraints of an academic year's PGCE course, this may not be enough time to develop these skills to a professional standard.

As is common in a politically based document, "Qualifying to Teach" contains words and phrases that can be interpreted in a number of different ways but uses them in ways that assume that they are unambiguous. For instance, the document expects teachers to set "challenging" teaching and learning objectives – here "challenging" presumably means difficult to achieve and a challenging objective would be designed to stretch the learning of the pupil. Similarly though, it also requires that teachers respond to equal opportunities by "challenging" stereotyped views as if this is easy to achieve and should be done as a matter of course. There are many such "buzz words" in the document that are open to interpretation such as "effective", "creativity" and "appropriate". In addition, the document talks of teaching and learning, but it is by no means clear what these words actually mean and they are not defined. This is unusual given the practical nature of the rest of the document and means that a document that was designed as a template for an effective teacher training course is in effect a series of guidelines that require interpretation before they may be implemented.

As mentioned previously in this chapter, the concept of the reflective practitioner is central to many teacher training courses and is a starting point for understanding the main theme of this thesis, that of metalearning and its particular importance to trainee teachers. This is the subject of the next chapter.

Chapter 3 - Metacognition and Metalearning

> Meta- (of an academic discipline, esp. philosophy) concerned with the concepts and results of the named discipline
> (Collins English Dictionary, 2004)

INTRODUCTION

In the 1970's, John Flavell, the American professor of psychology, coined the term "metacognition". Flavell, known for bringing translations of the work of the Swiss psychologist, Jean Piaget, to a wider, English speaking audience, used the term to refer to learners' knowledge of their own cognition. He described it as 'one's knowledge concerning one's own cognitive processes and products or anything related to them'. He also asserted that metacognition included 'the active monitoring and consequent regulation and orchestration' of information processing activities (Flavell, 1976, pp 232). The meta- prefix in this context implies a higher order of thinking than just thinking itself. In this sense it links closely with the idea of self reflection and reflection in action as discussed in chapter 2. Since this time, the meta- prefix has been widely adopted in many different areas, (meta-ethics, metamathematics and meta-analysis for example), to indicate a state above and beyond the subject itself. In 1985, John Biggs utilised the prefix to introduce the term 'metalearning' to define the application of metacognition to student learning (Biggs, 1985).

METACOGNITION

As with most terms that are originally coined with a single meaning, the term metacognition has been redefined and revisited many times since its inception. Among the many meanings now assigned to the term are:

- Thinking about thinking
- Reflecting on one's own thinking
- Thinking about one's own learning

Of course, these short definitions do not do justice to the level of thought required by metacognition. Thinking about thinking involves a high level of reflection and is very complex. Schraw, (1998) for instance used the term to encompass two main areas: knowledge of cognition and regulation of cognition.

Knowledge of cognition refers to what individuals know about their own cognition. It encompasses our knowledge about things, about how to do things and why things are as they are. On the other hand, regulation of cognition concerns the techniques and ideas behind how students can control their own learning. These techniques, involving reflection and a deep approach to learning have been the subject of many studies designed to help students make the most of their time at school or in higher education. A recent paper by Sperling, Howard, Staley and DuBois upholds Schraw's analysis.

> Knowledge of cognition refers to how much learners understand about their own memories and the way they learn. Regulation of cognition refers to how well learners can regulate their own memory and learning.
> (Sperling, Howard, Staley and DuBois, 2004, pp118)

Some authors prefer to use different terms to mean the same thing. Ertmer and Newby's (1996) concept of the "expert learner" can also be considered a type of metacognition. They state that expert learners:

> use the knowledge they have gained of themselves as learners, of task requirements, and of specific strategy use to deliberately select, control and monitor strategies needed to achieve desired learning goals.
> (Ertmer and Newby, 1996, pp 1)

Ertmer and Newby's contribution links to that of Schön's (1983) ideas of reflection in action as discussed earlier, but extends it to include reflection for action. They state that reflection for action is "employing reflective thinking skills to evaluate the results of one's own learning efforts" (Ertmer and Newby, 1996, pp18).

It seems then, that in spite of a number of other definitions of the term, one of the key areas of metacognition is the notion of learners controlling their own learning. Indeed, Flavell used the term in the sense of learners understanding their own learning, and suggested that schools should become "hotbeds of metacognitive development" (Flavell, 1987). It was within this milieu of

increasing confusion about the use of the term metacognition that John Biggs preferred to use the term "metalearning" (Biggs, 1985).

METALEARNING

As we have seen, metalearning can be considered to be a specific theme within the wider discipline of metacognition. Indeed, Biggs' definition of metalearning was as 'a subset of metacognition that has been applied to the work and research on student learning'. Other authors have defined it in similar ways. For instance, Meyer and Norton (2004) in their editorial to the special issue of Innovations in Education and Teaching International entitled "Metalearning and Higher Education", state that:

> Metalearning is used by the various authors contributing to this special edition to show that encouraging students to reflect upon their own learning approaches and conceptions within the context of subject demands can have important implications for curriculum design, student support and personal development planning.
> (Meyer and Norton, 2004, pp 388)

Using these examples we can define metalearning as involving the development of higher order thinking and reflection about one's own learning.

Of interest here is that although the focus of most research is currently in higher education, there is also a debate as to whether cognitive skills in younger pupils can also be developed by using metalearning. Flavell obviously expected metacognitive techniques to be used in schools and as a scholar of Piaget, could be expected to base his ideas on those of Piagetian development. According to Piaget, the formal operational stage which is characterised by abstract thought and theoretical reason is not reached until the age of 11 or 12 so this is an area where improvements could be made. Adey and Shayer's Cognitive Acceleration through Science Education (CASE) project in the early 1990's specifically targeted 11 year olds in an attempt to develop their metacognitive skills by asking pupils to talk about the difficulties and successes they have had solving problems. Once they had developed a strategy for solving a particular problem, recognising a new problem as a different form of

the one they had already solved made it easier for them to access it and solve the new problem. They summarised this as "the use of language as a mediator of learning. The language of reasoning mediates meta-learning" (Adey and Shayer, 1993).

However, metalearning approaches where Primary age children much younger than this are expected to be able to reflect on their own learning would be considered to be at odds with Piagetian ideas. Consider for instance, the work of Adey, Robertson and Venville (2004) who used metacognitive techniques with Year 1 pupils and claimed gains in metacognitive development with effect sizes between 0.43 and 0.47. Their work, based on the CASE project was based on the following hypothesis:

> Within a formal educational setting, the development of concrete operational thinking, as characterised by Piaget and Inhelder, can be accelerated in children aged five or six years with an intervention programme which provides well-managed cognitive conflict and structured opportunities for social construction, including the encouragement of metacognition.
> (Adey *et al*, 2004, pp 6)

This work, although interesting, is unusual because of the age of the students, and is thought provoking because of Piagetian ideas about development. If the pupils have not yet reached the stage of formal operations considered necessary to think abstractly, it is difficult to conceive how they can think metacognitively. However, metacognition and metalearning are usually researched in older students, particularly those at university, so the rest of this chapter deals with research carried out with students in higher education.

CURRENT RESEARCH

The most recent research into metalearning centres around the use of the Reflections on Learning Inventory (RoLI™) (Meyer, 2004) with students in higher education to encourage them to reflect upon their own learning. The RoLI™ is a questionnaire consisting of (currently) 16 subscales comprising 5 items and administered electronically. Originally designed to assess variation in student learning, it has been used more recently to provide information about a

student's specific learning profile and act as a basis for discussions between students and mentors with an aim to developing metalearning capacity.

> Although the RoLI has been employed as a research instrument in a number of published studies on the modelling of student learning in higher education, there has been an important thrust in the development of the RoLI in terms of an instrument that can be used as a basis for developing the critical first stage of *metalearning capacity* in students; making students *aware* of their learning via the process of representing responses to the RoLI as a graphic personal learning 'profile'.
> (Meyer, 2004, pp 491)

A special issue on metalearning in Innovations in Education and Teaching International edited by Erik Meyer and Lin Norton (Meyer and Norton, 2004) has recently provided readers with information about this intriguing area of study. The influence of Erik Meyer and the RoLI™ cannot be underestimated in this collection. Of the seven papers in the issue, three are wholly written or co-authored by Erik Meyer himself, as is the editorial. Interestingly, one of the papers, (Lindblom-Ylänne, 2004) although firmly situated within the metalearning milieu, does not mention the term metalearning at all. Generally the papers in this issue follow the same idea, that asking students to assess their own learning using the RoLI™, followed by a discussion about the results with a supervisor has shown an improvement in their thinking about their own learning. It is unclear in these papers though, whether any other measure of learning would be as effective, or indeed whether it is the discussion with the supervisor or the action of carrying out the assessment that is most beneficial. Perhaps the most interesting paper in the collection is that of Norman Jackson (Jackson, 2004) who details his journey through an understanding of what metalearning is, or could be, by asking others in the field about their conceptions and then trying to build a consensus. The notions of the ideas behind metalearning are many and varied and Jackson lists 31 different perceptions of the term. This gives us some notion of the problem of defining such a concept and amongst the papers within the Meyer and Norton collection the definitions of the term are similar, but not exactly the same.

Norton, Owens and Clark (2004) use a definition that specifically excludes subject knowledge "[...] metalearning as an awareness and understanding of the phenomenon of learning itself as opposed to subject knowledge."

Jackson on the other hand, defines it as "the state of 'being aware of and taking control of one's own learning'. This definition seems to be more of a mechanistic approach and does not exclude subject knowledge. Wisker, Robinson, Trafford, Lilly and Warnes (2004) refer to the phenomenon as "...reflective and active awareness of learning practices and achievements, or metalearning,"

Using these various ideas about what metalearning is, it seems that the simplest definition would be that of metacognition applied to a specific area, that of learning. What is more interesting however is not only the student's awareness of themselves as learners but in the case of trainee teachers it is important not only that they reflect on their own learning, but perhaps more importantly, that they reflect on the learning of their pupils. Interestingly, a number of the papers in this collection mention lecturers aiming to develop metalearning capacity in their students, but then do not report whether this has had any effect on themselves as teachers.

It is important to realise that all the comments using the terms 'metalearning' and 'metalearner' in this thesis will normally be referring to this wider conception of the teacher reflecting on both their own and other's learning.

OTHER FORMS OF METALEARNING

The notion of metalearning has considerable provenance. Although it is not mentioned widely, the general ideas behind the term as used in higher education have not changed much. In 1987, a presentation to the SCUTREA conference included a paper that acknowledged the difficulty in developing metalearning capacity in students

> Several people have said before, it is back and forth relationship,
> and it is not all that easy in almost any situation to help learners -
> adult or otherwise - to deal with that meta-learning - to be not
> only engaged in learning but to be reflective on that learning
> process, in the relationship between theory and practice.
> (Armstrong, 1987, pp33)

A search through other sources finds that the term is also used in other
contexts, particularly in the development of "learning machines" within the
information technology genre (Vilalta, Giraud-Carrier, Brazdil and Soares, 2004)
and the modelling of neurological function in biological studies (Doya, 2002)

Much more research though, focuses on metalearning in education but does not
use that term, preferring to use the wider term metacognition. Some of these
seem to be at variance with the findings of the Meyer and Norton group. Fuller
(1999) for instance, used the RoLI™ , Pintrich, Smith, Garcia and McKeachie's
Motivated Strategies for Learning Questionnaire (Pintrich *et al*, 1991) and Biggs'
(1987) Study Process Questionnaire to investigate students' conceptions of
learning, approaches to learning and use of learning strategies. His main focus
was whether university students' conceptions of learning actually affect their
own learning. He concluded that:

> This study does not provide evidence of there being a consistent
> relationship between conceptions of learning and student
> approaches to learning, use of learning strategies, or academic
> results in different learning contexts at university.
> (Fuller, 1999, pp 14)

Another area of work by Lin, Schwartz, and Hatano (2005) is more aligned with
the focus of this thesis. In their paper "Toward Teachers' Adaptive
Metacognition", Lin *et al* explore the notion of metacognition from the point of
view of the teacher, arguing that whereas most ideas about metacognition are
based around students understanding their own learning, teachers have to
adapt their ideas to suit the students they teach. Lin uses the terms "reflective
adaptation" and "adaptive metacognition" to refer to the metacognitive
processes that teachers have to go through in order to adapt to the needs of
their students. They posit a solution where teachers attempt to select a suitable

approach given the evidence they are faced with and similar situations they have met with successfully before. This conclusion seems to ally closely with Schön's ideas about the Reflective Practitioner although significantly, the paper does not include any references to Schön but seems to include the same ideas.

This thesis contends that within the current metalearning milieu arises a further definition that concerns itself solely with the role of teachers. In this particular definition, metalearning occurs in the conventional sense but is also mediated by the need to understand and optimise the learning of others. In this definition metalearning is not just arrived at by reflection alone but by concrete occurrences in the classroom that serve as signs pointing the way to more effective practice. In this way metalearning is likely to be heightened in those involved in the education of others as it occurs on two levels simultaneously. It could also be conjectured that a number of those authors currently writing on the subject of metalearning have been able to develop their own sense precisely because they are at the same time able to reflect on their own and their students' learning.

SUMMARY

The concepts of metacognition and metalearning have been visited and revisited over the years by a number of authors. Most indicate that the concept is an important one and that it should be promulgated among students in order to improve their higher level thinking, but are not necessarily clear on the best way to do this. It is also clear that the importance of reflective thinking should also be encouraged in teachers, but that reflecting on other people's learning involves different thought processes than those of reflecting on one's own learning. In addition, the term metalearning is not universally used, many authors preferring more general terms such as metacognition or reflection.

Learning in itself is such an important concept that it deserves greater investigation and discussion. The next chapter looks at learning in all its facets.

Chapter 4 - What is Learning?

INTRODUCTION

Since the concept of learning is central to any thesis with education as its main core, it is important to make it clear at the outset what is meant by this term, for it is only by understanding what learning is, that we may improve our ways of learning and enhance our own personal metalearning. Learning can occur in many different ways, indeed it is almost impossible not to learn new things every day, but in this context, learning is taken to mean the formal processes carried out in school, colleges and universities. Trainee teachers especially need to have a very clear idea of what learning is and how they can encourage, manage and measure it in the pupils they teach. This will also enable them to become more self reflective and consequently, to reflect on their own learning. Trainee teachers must also be aware that not everyone learns in the same way and that this is often predicated upon previous experience and understanding.

WHAT IS LEARNING?

Definitions of learning abound. For instance, Chambers English Dictionary defines learning as:

> **Learning:** what is learned; knowledge; scholarship; skill in languages or science
> (Chambers English Dictionary, 1989)

A well-established definition in the field of teaching and learning is based on the work of Säljö (1979). His research, based on a survey of Swedish people aged 17 – 70 asked the question "What is learning?". He reasoned that selecting such a wide range of ages would ensure that he had responses from people with different levels of understanding and that more mature learners may have had more time to reflect on the nature of learning than those who had just left school. The results allowed him to define learning as a series of five conceptions, each of increasing complexity. These were:

1. Increasing one's knowledge
2. Memorising and reproducing
3. Applying knowledge

4. Understanding

5. Seeing something in a different way

In this example the numbering system is significant because it represents the degree of interaction with the information. The first three items see learning mainly as a matter of memorising and reproducing knowledge in ways appropriate to the testing method in use. Generally, the first three conceptions represent the types of learning that occur in schools and the last two require students to seek personal meaning by transforming information and ideas in terms of their own previous knowledge and understanding in a way that is more characteristic of higher education. In 1993, Marton's work with colleagues Dall'Alba and Beaty as part of an initiative called the Study Methods Group extended these conceptions to include a sixth, Changing as a person. In this conception the learner sees themselves as a different person as a direct result of the learning process (Marton, Dall'Alba and Beaty,1993).

An alternative approach is to view learning in terms of how the learner is affected by the process. This approach involves three dimensions of learning: Cognitive, Affectual and Dispositional.

The cognitive dimension requires the learner to think about what has been learnt. This is partly to understand it, but more importantly to link it to the things the learner already knows, making new connections and consolidating existing ideas.

In the affective dimension, learning has an effect on how the learner sees the world. For instance, learning a second language could change the learner's view of the world so that they see it as a linguist, maybe changing their attitude to foreign countries – perhaps learning more languages is easier once the first has been learnt. In this dimension there is the involvement of feelings, emotions and self awareness.

In the dispositional dimension, learning involves new skills and actions. It involves craft and skills and physically being able to do something new, or in a different way from before.

Finally, it is important to think of learning as situated (Lave and Wenger, 1991). It takes place within certain specific situations and may be associated with places, times or things, and possibly all three. Because learning is situated, a lot of it cannot be done outside of the situation to which it relates. In the classroom we can learn about the nature of things, but it is only when we are in the situation itself that we can experience them.

LEARNING STYLES AND COGNITIVE STYLES

Much of the current debate about teaching and learning revolves about the concept of learning and cognitive styles. The concept is based on the idea that different people think, and therefore learn, in different ways. Often these terms are used interchangeably but usually cognitive style is defined as the main way that a person thinks and learning style as the way that a person learns best. There are however, obvious links between the two and researchers have made many attempts to clarify these differences (Sadler-Smith, 2000; Desmedt and Valcke, 2004). The idea behind this concept is that if a teacher knows something about the way a particular person thinks, appropriate learning opportunities may be devised that use media appropriate to that type of thought. In theory at least, the learner should find it much easier to learn from materials that are designed for his or her method of thinking than from generic materials. Many teacher training courses provide information about learning and cognitive styles and expect their students to take these into account when developing lesson plans. Although the concept of learning styles has been generally accepted for a number of years, it has always had its detractors. For instance, recent work by Frank Coffield and his colleagues (Coffield, Moseley, Hall and Ecclestone, 2004) has created more controversy by questioning the effectiveness and validity of many commonly used learning styles assessments.

COGNITIVE STYLES

Cognitive styles, based as they are on the genetic and biological make up of the person, are considered to be relatively fixed. One commonly used dimension of cognitive style is that of field independence versus field dependence, measured by the Group Embedded Figures Test originally developed by Witkin, Oltman, Raskin and Karp (1971) and used extensively since. In this dimension, field independents are able to analyse information regardless of the background it is set in, whereas field dependents relate their ideas to the whole picture, including the background. Consider a situation where a subject was presented with a list of items of common furniture and asked to group them. Field independents would tend to group items such as this on their component parts (wood or metal for instance) or because they look similar. Field dependents would tend to group items that would be found in the same situations (easy chairs and sofas grouped for instance) or fulfil the same role.

Further researchers have extended the work of Witkin *et al* into other dimensions and one well-regarded measure of cognitive style is that of Riding and Read (1996) defined in terms of two dimensions, one that goes from wholist (field dependent) to analytic (field independent) and another that goes from verbal to imagery. These dimensions can be thought of as number lines with the extremes at each end. Carrying out a series of tests allows the researcher to allocate a person a place somewhere along the verbal-imagery line and somewhere along the wholist-analytic line.

- Verbal – prefer words to pictures
- Imagery – prefer pictures to words
- Wholists – take a global view of a task
- Analytics – break a task down into components

Creating a second dimension means that individuals may be categorised more precisely which may allow teachers to develop learning materials suitable for that type of thinker. This leads neatly into the concept of the Learning Style.

LEARNING STYLES

Previous research, (Marton and Säljö, 1976a; Marton and Säljö, 1976b; Entwistle and Ramsden, 1982; Biggs,1987) has shown that students display a number of distinct approaches to learning. Key here is the work carried out by Ference Marton and his colleagues at Gothenburg in the mid 1970s. In a seminal piece of research, Marton and Säljö asked two groups of 20 students to read three sections of a text book. After they had read the first two sections, the groups were asked questions on what they had read but each group was asked a different type of question. One group were asked questions that required a thorough understanding of the meaning of the text, whereas the other group were asked questions only about the facts within the text. After the students had all read the final section, the same questions were asked of both groups. The group who had been asked about meaning had concentrated more on the meaning of the text and those asked facts concentrated on the factual content. Marton and Säljö concluded that this showed that students tended to adapt their learning to a conception of what they were learning for (Marton and Säljö, 1976b). This work, and previous work with students on reading for meaning enabled them subsequently to define two levels of processing, calling them deep-level and surface-level (Marton and Säljö, 1976a). These "Deep" and "Surface" approaches indicate how the student goes about internalising appropriate information within a particular learning environment. This distinction between the two types of learning has been the source of a great deal of further research and has been widely accepted as a particularly valid way of categorising learning. In 1979, Entwistle investigated this phenomenon more fully (Entwistle, 1979). His team asked students to read an article and then answer questions on what they had learned and how they had learnt it. They concluded that although students tended to use a deep approach to this task, some students concentrated more on facts and details, whereas others were more concerned with personal meaning.

Surface Learning
Surface learning is characterised by an atomistic (as opposed to a holistic) approach. It comprises the accumulation of disparate facts and figures, quotes and definitions, usually for the purposes of writing a short essay or sitting an

examination. It is displayed by those learners who have little or no interest in a subject, or who would gain no benefit from a more in-depth understanding of it. Surface learning is appropriate for subjects where the testing regime does not require or allow students to present evidence of their full understanding of a subject and where a deeper knowledge of the subject is not of great importance to the learner. Many testing regimes, such as multiple choice or short answer questions, require the student only to be cognisant of a few easily discernible facts and figures and do not have a structure which allows the student to indicate anything more than this superficial information. Similarly, there are professional situations where a surface approach is appropriate. An example of this type of learning could be a newspaper reporter who has to write a short article for the next day's news. There would be little time, or indeed requirement, to spend a lot of time pondering over the nature of the information before writing the report as the reader would only be interested in the immediate facts and their immediate effects.

Deep Learning

Deep learning is characterised by a holistic approach. With this type of learning, students will actively try to make links between the various items of importance and link them into their larger model of the world. Deep learning is associated with an expert understanding of a subject and is particularly relevant to university students. It is particularly important in areas such as engineering or strategic planning where information from a variety of sources and in a number of differing forms must be incorporated into a larger picture. Deep learning requires a full understanding of the different parts of the picture and the effect of changing an individual part. Because of the need to make these unique links between sometimes diametrically opposed factors, reflection and metacognition play a vital role.

It is important to note that students themselves are not divided into "Deep" or "Surface" learners, but may switch between the two approaches depending on the subject and its relative importance to them. Whether to adopt a deep or surface approach to learning is a strategic decision dependant on the learning requirements of the task. In addition, there is no underlying pejorative meaning

in the terms "Deep" and "Surface", they are simply used to indicate the different natures of the approach.

Features of Deep and Surface Learning

Deep	Surface
Relates previous knowledge to new knowledge	Focus on unrelated parts of the task
Relates knowledge form different courses	Information for assessment is simply memorised
Relates theoretical ideas to everyday experience	Facts and concepts are associated unreflectively
Relates and distinguishes evidence and argument	Principles are not distinguished from examples
Organises and structures content into coherent whole	Task is treated as an external imposition
Emphasis is internal, from within the student	Emphasis is external, from demands of assessment

Figure 4.1 - Features of Deep and Surface Learning

Once the concepts of deep and surface learning had become accepted, other authors refined them further, devising instruments to allow them to be classified and measured. Entwistle and Ramsden (1982) devised a learning inventory that identified four orientations: Meaning, Reproducing, Achieving, and Non-academic. Biggs (1987) re-examined Marton and Säljö's original work and defined another level alongside deep and surface, which he called achieving. In this approach, a form of directed surface learning, the learner focuses most of their energy on memorising disparate facts and figures, the aim of which is to get good marks. In some situations this is the most appropriate method and is probably a well used approach amongst school children revising for their GCSE examinations.

VARK

Of course, other criteria may be used for defining learning styles and one of the most well known is the VARK system originated by Fleming and Mills (1992)

VARK is an acronym for the main learning preferences within Fleming and Mills' system, standing for Visual (seeing), Aural (hearing), Read/Write (the written word) and Kinesthetic (doing) respectively. It is sometimes known also as VAK, since the written word (R) is so pervasive that very little formal learning could occur without it. It is administered by using a short questionnaire and provides feedback in the form of scores which indicate a person's relative preference for methods of receiving and providing information within the range of the VARK system.

Being short, easy to administer and score, it is used extensively. However, it is important to realise that most people are multi-modal with regard to preferred style to a greater or lesser extent and that this can also change with life experience. Importantly, Fleming and Mills maintain that VARK does not indicate learning styles, which as they say, are complicated by other factors that may not be under the control of the teacher or indeed, the learner.

> A learning style has 18+ dimensions (preferences for temperature, light, food intake, biorhythms, working with others, deep and surface approaches...). VARK is about one preference - our preference for taking in and putting out information in a learning context. Although it is a part of learning style, we consider it an important part because people can do something about it. Some other dimensions are not open to self-modification.
> (Fleming and Mills, http://www.vark-learn.com [accessed 5 May 2004])

Despite this caveat , VARK is often quoted as defining learning styles. To add to the confusion, "learning styles" in this context are often referred to as if they were mutually exclusive. VARK is a useful introduction to the wide range of modes within which pupils can learn effectively, but needs interpretation before it can be used practically in the classroom.

The Honey and Mumford Learning Styles Questionnaire

Another approach to categorising learning styles is that of Honey and Mumford (1986). They categorise learners depending on the way they react to, and

internalise information. There are four categories in the Honey and Mumford system:

- Activist (learns by new experiences, works well with others)
- Reflector (likes to collect data and take a measured approach)
- Pragmatist (keen to try things out and find out what works)
- Theorist (integrates information to form logical theories, analytical)

The system does not assign learners to one area to the complete absence of another, but the questionnaire is designed to indicate preferred learning styles which may be a combination of all four. It works by asking a series of questions which allow the user to rate a particular style of approaching ideas. Each question is assigned a score and is associated with a particular learning style. The scores for each style are added up and then plotted on a radar graph, each axis representing a particular style. Learners who have an equal combination of all styles will see a diamond shape with equal sides. If however, the learner has a predilection for a particular style, the shape will be an unequally sided rhomboid pointing towards the preferred style.

The Reflections on Learning Inventory (ROLI™)
As detailed in chapter 3, the ROLI™ is central to much of the current work on metalearning. In some ways it is similar to some of the other instruments discussed here, but, unlike them, it does not attempt to assign a particular learning style to a learner. The inventory, which is carried out on a computer over the internet returns a result as a score on a series of 16 "conceptions of learning" (Meyer, 2004). These scores are indicated graphically by a series of colour coded bars to give an indication of the student's current learning, but more importantly, show areas that could be improved. The colour coding shows green for areas that are supporting learning and red for areas that are inhibited while amber shows areas that could be delayed. The example that follows shows a typical result taken from the ROLISPS™ web site (www.rolisps.com).
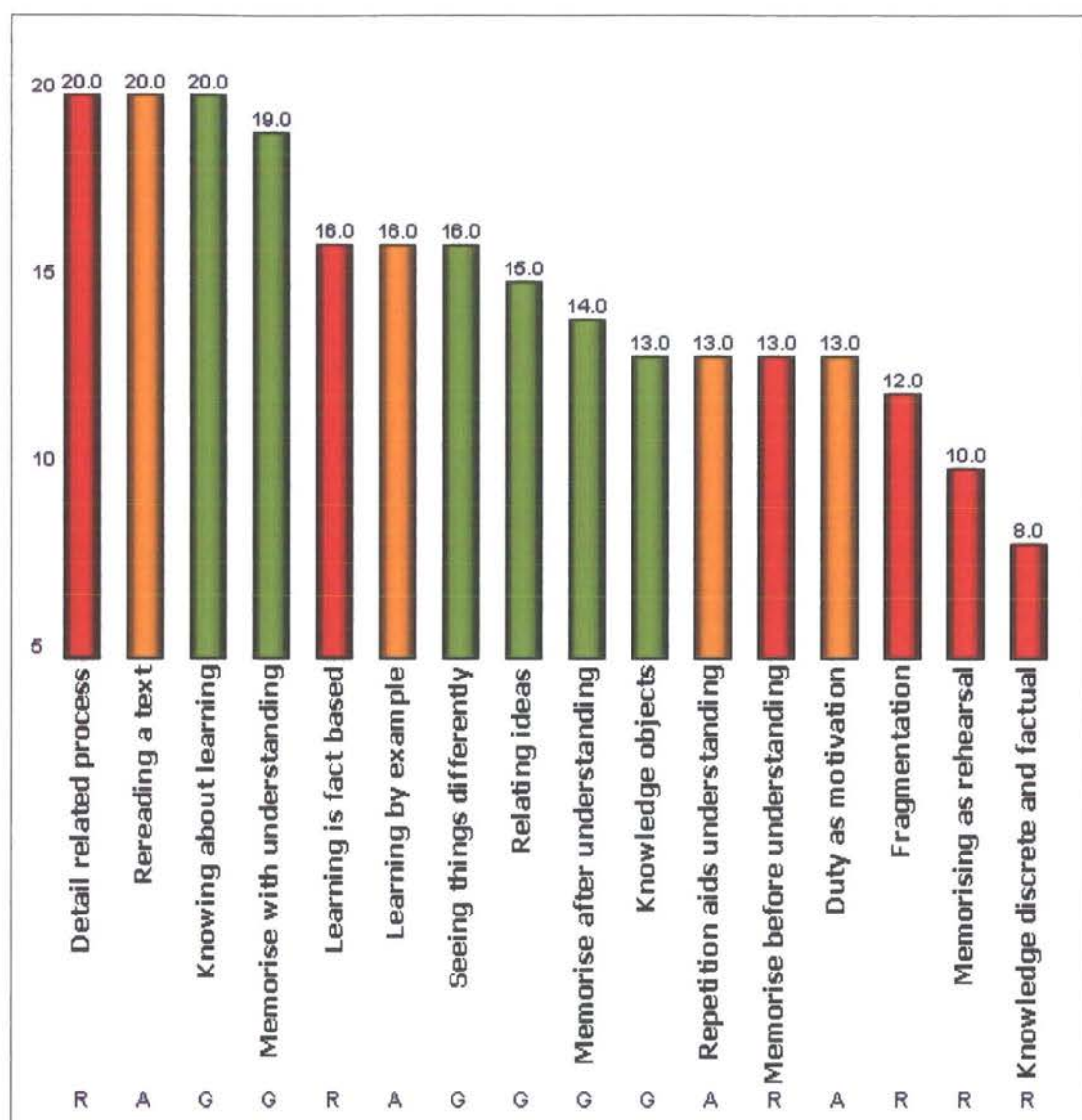
Figure 4.2 - Reflections on Learning Inventory Results

The colour coding on these feedback graphs is important because it provides an indication to the student not only about the current state of their learning, but also the areas that might be improved. For this reason the ROLI™ differs markedly from other instruments that just provide information about the learner's preferences, but also forms an excellent basis for the development of the learner's metalearning. By reflecting on the results and talking through them with a skilled practitioner, learners may be encouraged to adopt new approaches to learning. Further assessment using the ROLI™ will then confirm whether or not any of the inhibiting areas (red) have turned amber or green, or indeed whether any of the bars have increased in size, both being indicative of an improvement in the learning process.

LEARNING STYLES AND METALEARNING

These particular methods of determining learning style were chosen in order to illustrate the complexity of the process we call "learning". Essentially, each model approaches the process in a different way, (although there are a number of overlaps), but none of them provides a total picture of what happens when we learn.

The VARK system is concerned with the way we access information, the Honey and Mumford method with the way we deal with the information once we have taken it on board and the Säljö and Marton model involves the degree to which it is combined with other information we already have. Somewhat differently, the ROLI™ indicates current conceptions of learning and indicates where improvements may be made.

In all cases, the system provides information about a person's learning that may be used as a basis of developing one's own metalearning. Without some external measure it is almost impossible to evaluate the current situation and plan for future improvement. However, some methods lend themselves to reflection better than others. Just knowing what type of learner your are does not really help with metalearning and could even be counterproductive if the learner does not realise that it is possible to develop a multimodal learning approach. Using these criteria, the ROLI™ would be the instrument of choice for developing one's own metalearning.

SUMMARY

Since the first stage of teaching is the provision of information in a format that is appropriate for the individual learner, it is not surprising that the VARK system (and systems like it) is favoured by teacher training courses (including the one that is the subject of this study) in order to get their students to think about pupil access to lesson content. It is important though, to retain the idea that learning happens at many levels depending on the learner's access to information at each of these levels. To summarise, the information must be made available in

an appropriate form for the learner to take it on board. It must then be internalised and linked to other information already held by the learner. Finally, multiple further links may be made to other areas, extending the understanding of the particular item and preparing the mind for the acquisition of further information.

This chapter has dealt with the important concepts of teaching and learning and how they may be applied in schools. In particular it introduced the ideas of deep and surface learning and related deep learning to expert understanding of a subject. It has also examined the basis to some learning or cognitive styles theories and their value to both students and pupils. These concepts are important because they must form the central core of any teacher training course. Prospective teachers need a high-quality understanding of these concepts if they are to develop their own individual teaching style and philosophy of education as required by a truly reflective practitioner.

Of equal importance though, is that teachers are motivated to teach (and continue to teach after their PGCE course) and understand the problems associated with motivating their pupils by relating their knowledge of learning styles with a model of pupil motivation. This is the subject of the next chapter.

Chapter 5 – Intelligence, Motivation and Self Efficacy

INTRODUCTION

For students to understand their own and other's learning they must understand their self-beliefs about the milieu associated with learning. Norman Jackson (2004) calls this "forethought" and claims that it involves thinking about the tasks, problems and concepts of learning. This is motivated by a strong personal agency, aided by sense of self-efficacy. Students need to understand what it is that enables them to learn, what motivates them to learn and what to do in the face of adversity. It is only when students have a clear view of these areas that they are able truly to regulate and improve their own metalearning.

> In general, the research suggests that students who believe they
> are capable engage in more metacognition, use more cognitive
> strategies, and are more likely to persist at a task than students
> who do not believe they can perform the task.
> (Pintrich and De Groot, 1990, pp 34)

In order for students (whether PGCE students or pupils in school) to study effectively, they must be motivated to do it. Much work has been carried out on student motivation styles and again, the various approaches depend on the ultimate goal or goals. Some of these goals may not necessarily be academic. A good understanding of motivation allows the trainee teacher to relate teaching styles to pupil experiences and perhaps develop an empathy with the pupil. For me personally, having an empathy with the person you are schooling is by far the most important aspect of effective teaching, combining as it does an understanding of the appropriate level and depth of content required by the individual learner. Teachers also need an understanding of what is meant by "intelligence" and a sense of their own self-efficacy. Some of the main theories associated with these topics are detailed below:

INTELLIGENCE AND ABILITY

One of the key aspects in understanding the basis of many theories of motivation is an understanding of ideas about intelligence and ability. One

theory, proposed by Carol Dweck, (1999) is based on the belief that the amount of intelligence a person has is fixed and cannot be changed. This is the Entity theory of intelligence. It is the theory that is the basis of IQ testing. It follows then that according to this theory, if you are not clever, no amount of learning will overcome this hurdle. People with an entity theory of intelligence will tend to worry that they may not be 'bright' enough to understand or keep up with the rest of the class. They may also worry about hitting the 'wall' of their intelligence and not being able to continue.

On the other hand, in the same paper, Dweck also proposed an alternate theory that intelligence is not fixed and can be improved through study and other academic work. This is the Incremental theory of intelligence. Incrementalists would feel that IQ testing is inappropriate and that academic performance at one point in time cannot necessarily be extrapolated forward to another point in time. They would also feel that achievement is due largely to the amount of work that is put into any particular task, indeed many might also argue that it is the work done to achieve the goal that is as important as achieving the goal itself.

In the words of Carol Dweck herself, writing of the work she carried out in 1981 with Mary Bandura:

> So we identified two different 'theories' that students can have about their intelligence - a fixed, entity, theory and a malleable, incremental, theory. In the entity theory, intelligence is a fixed, concrete, internal entity, whereas in the incremental theory intelligence is a more dynamic quality that can be increased.
> (Dweck, 1999, pp 20)

Another way of looking at the idea of intelligence is offered by Sternberg. He posits various different types of 'thinking skills' that play their part in determining overall intelligence.

> Critical (analytical) thinking skills include analysing, critiquing, judging, evaluating, comparing, contrasting and assessing.
> Creative thinking skills include creating, discovering, inventing, imagining, supposing and hypothesising. Practical thinking skills

include applying, using, utilising and practising.
(Sternberg, 1997, pp 363)

According to Sternberg, it is not just important to have intelligence (whether fixed or mutable) but also to have the right combination of 'thinking skills' to make the best use of such intelligence. This of course, is directly analogous to the concepts that have been previously referred to in this thesis as reflection, metacognition and metalearning. Whether one has an incremental or entity theory of intelligence it is important to realise that intelligence by itself is not enough. What is important is the application of that intelligence to the task in hand in order to achieve. The argument that follows is then about whether achievement is due to ability or hard work, or some combination of the two.

Work conducted by Nicholls (1989) shows that young children tend towards an incremental view of intelligence and believe that achievement is due solely to hard work and that anyone can achieve anything if they work hard enough. However, as children get older they take a more sceptical approach and start to believe that achievement is due mostly to ability or intelligence (an entity approach).

What would teachers think? Teachers encourage their pupils to work hard, which indicates an incrementalist approach to learning, but most would also acknowledge that ability or talent also play a role in achievement. Since the latter is an entity approach, it seems that the distinction between an incremental and an entity theory of motivation is not clear.

DOMAIN SPECIFICITY

Some tests of intelligence regard ability and intelligence as fixed regardless of the subject studied (IQ tests for instance). However, many people's experience belie that view. We all know of people who are very good at one thing and hopeless at others. This would be an argument for intelligence (or ability) to be specific to the domain in question and could explain why some people are better at working with their hands whilst others are better at abstract subjects like mathematics. Similarly, Galloway, Leo , Rogers and Armstrong (1996)

showed that motivational styles are also domain specific by comparing performances at English and Mathematics and finding that primary school children could exhibit different motivational styles depending on the subject studied.

Practical experience would tend to prove Galloway *et al* correct. Many people show a distinct aptitude for some subjects and a corresponding dislike for others. Many of these reactions will be due to the ease or otherwise with which the subject is understood by the student. Perhaps it is at this point that the true value of a skilled teacher has the most effect. Given the choice, many pupils would shy away from subjects they find difficult or intimidating and embrace those subjects they enjoy or find easy. However, an inspiring teacher, having reflected on why a particular pupil is not progressing, can motivate the pupil - make a subject 'come alive' and have a corresponding influence on the pupil's future interest and progression in that subject.

MOTIVATION

Mastery Orientation

Most of the research in the area of motivation concentrates on describing maladaptive motivational styles. This view, looking at situations where students are not motivated, tends to ignore the main motivational style that is positive and associated with positive performance. The mastery orientation style of motivation refers to the style exhibited by students who do not let failure stop them from attempting to achieve their goals. This style was characterised by Diener and Dweck (1980) and is now considered to be the motivational style that tends to be associated with success. In the words of Carol Dweck,

> "We used the term mastery-oriented to refer to the hardy response to failure because here students remained focused on achieving mastery in spite of their present difficulties"
> (Dweck, 1999, pp 6)

By the very nature of the profession for which they are training, it would not be surprising for trainee teachers to display a mastery orientated motivational style

It is likely that most teacher trainees have registered for the course because they feel that they can achieve and have a positive view of the process they have to follow in order to achieve their goals.

<u>Self Worth Theory</u>

This theory, promulgated by Covington, among others, concerns the way failure or fear of failure makes the learner feel. It relies on the premise that we live in a competitive society and as Covington (1998) states: "..*individuals are thought to be only as worthy as their achievements*". In this situation, people will tend to apply for courses that they think they have a good chance of completing. If they do complete them, they feel good about themselves, and others see them as successful. If they do not complete though, they themselves and others see them as failures. One corollary of this way of thinking is that students with an incremental view of intelligence may try less hard than they are able, or may not try at all. If they then fail, they could attribute their failure to not trying hard enough rather than their actual inability to achieve the task whether they had tried or not.

Many adult learners have very fixed ideas of what they are good at and what they are not good at. Indeed, they may even boast of their inability to wire a plug or programme a video recorder. They also have clear ideas of what may be achieved by hard work. Often they work very hard if they are interested and disregard things if they do not find them interesting.

<u>Attribution Theory</u>

Attribution theory is based on the work of Bernard Weiner (1992). Weiner's ideas are based on the notion that reasons for success or failure may be attributed to internal or external factors. Such factors could be: mood, luck, task difficulty, family background, ability or effort. If reasons for failure are attributed to one's own ability, then the student tends to try less hard if they experience failure. If however, the failure can be attributed to some factor outside the student's control such as they had a cold or missed part of their exam because

the bus was late, they feel differently about trying again. Weiner and others have used attribution theory as a positive reinforcer when children fail. They can then contextualise whether their failure was due to their own lack of ability, not working hard enough or simply because of external factors that were not under their control.

Many adults learn to become extremely skilful (far more than children) in attributing success or failure. Partly this will be due to their dealing with failure in many different spheres of life. Often they attribute failure to circumstances beyond their control. Many adults attribute their inability to do something to the way that it was taught at school, or lack of opportunity during their childhood. Adults often have very fixed ideas of their abilities and quite often profess their inability to carry out certain task to others. Sometimes this is even seen as a badge of not being seen to be too bright. Of course, attribution theory is related directly to self worth theory as detailed above. Attributions to external factors may provide excuses for failure to avoid compromising self worth. It may also provide excuses for not trying in the first place because of a fixed idea of ability.

Learned Helplessness

Some people who experience failure on many different occasions learn to accept failure and do not try, even though they are facing tasks they could easily achieve. For such people, the effect of failure is so traumatic that it becomes a major barrier to their ever trying to do anything. The term 'Learned Helplessness' (Dweck, 1975; Abramson, Seligman and Teasdale, 1978) was coined to describe this situation. In the literature however, the phrase has been used to refer to a number of maladaptive motivational styles that do not necessarily fit in with the original definition. Craske (1988) for instance, defines children in her study as displaying learned helplessness if they do less well than other students in the group in a series of tasks. Similarly, Au (1995) uses the term in a slightly different way by stating that:

> '...academic failure could be a sign of learned hopelessness (*sic*)'
> (Au, 1995, pp 94).

Although the term 'learned helplessness' appears a lot in the literature, and is undoubtedly a particular motivational style, it is used in a number of differing ways, sometimes in a contradictory manner. This means it is important to check what precise meaning the author is placing on the term.

Some adults really do continue through life in a state of learned helplessness. It is very rare for people who do show these signs to continue with learning in adulthood. However, many people do show a milder form of learned helplessness and shy away from certain tasks or areas where they feel that they might appear foolish or incapable.

TEACHER MOTIVATION

Of course teachers not only have to be motivated but be motivators in their own right, but as Zoltan Dörnyei states (Dörnyei, 2001, pp 158) relating the two, motivation to teach and motivation of students has not been studied widely. However, Dörnyei does list some motivational characteristics that do seem to be unique to teachers. These are:

1. An intrinsic component
2. Contextual factors
3. A temporal axis
4. Fragility

1. The intrinsic component concerns a particular motivational style concerning the intrinsic rewards of competence (efficacy and having a sense of accomplishment), relatedness (working closely with others) and autonomy (making one's own decisions). Intrinsic motivation is considered to be a major indicator of teaching success and retention. It is often also associated with successful metalearners and those with a deep approach to learning. Campbell, Smith, Boulton-Lewis, Brownlee, Burnett, Carrington and Purdie (2001) directly relate intrinsic motivation to deep learning and extrinsic motivation to surface learning. We would expect then, that effective teachers be both deep learners and intrinsically motivated. Volunteers were asked to

complete questionnaires as part of this study in order to investigate whether this was indeed the case.

2. Contextual factors refers in this situation to the institutional environment in which teachers work. This environment imposes certain constraints and obligations on the teacher that are not necessarily directly related to the job they do.

3. The temporal basis refers to the nature of the career structure of teachers. In the profession as a whole it is normal to move between schools as one's career progresses in the search for more experience or promotion.

4. In the context of the fragility of teachers' motivation lie areas like stress, burnout, low pay and other negative aspects that are associated with the profession.

Two separate studies, Kyriacou, Kunc, Stephens and Hultgren, (2003) drawing on the experiences of both British and Norwegian teacher trainees, and Moran, Kilpatrick, Abbot, Dallat and McClune (2001) in their study of undergraduate students in England, Scotland and Wales, listed three main reasons that potential teacher trainees gave for entering teaching. These were:

1. Extrinsic
2. Intrinsic
3. Altruistic

1.   In these studies, the extrinsic reasons were given as career prospects, salaries and benefits, plus the "Golden Hello" available to those training to teach shortage subjects. Of course, this "Golden Hello" may represent a considerable incentive to train to teach a priority subject, even though it may not be the trainee teacher's first subject choice. In many cases however, the amount of money provided by the "Golden Hello" could make a substantial difference to someone taking up an offer of a place on a PGCE course and of staying in the teaching profession long enough to earn the bursary.

If you teach one of the priority subjects in a maintained school or non-maintained special school in England after successfully completing their induction period, you may be eligible for a £4,000 taxable 'Golden Hello'. Trainees in mathematics and science may be eligible for a £5,000 'Golden Hello'. Current priority subjects are: English (including drama), mathematics, modern languages, design and technology, information and communications technology, science and, in Wales, Welsh. *(http://www.teach.gov.uk/php/read.php?sectionid=138&articleid= 902)* [accessed 5 May 2004]

Kyriacou *et al* posit the idea that extrinsic factors are more likely to influence male teachers than female teachers because of their emphasis on salaries, pensions and the like but raises the concern that if these factors are the main ones they may fail to have the same effect over time. This is particularly true if we consider that teaching salaries are quite low compared with that of other professions and the long holidays that teachers are supposed to enjoy are largely a myth.

2.   Intrinsic factors included those of allowing personal growth, fondness for children and working in a mentally stimulating environment. In these cases students on training courses for Secondary schools were far more likely to enter the profession because they wanted to continue to be involved in and share their specialist subject than those training to teach in Primary schools although Primary trainees were more likely to quote fondness for children as a motivating factor in their decision to train as a teacher.

3.   Finally, the altruistic reasons for becoming a teacher revolved around the ability to make a positive difference in the lives of children and the ability to express their creative abilities. Again, concern was shown that if these perceived advantages were not sustained in the long-term, newly qualified teachers might lose interest and drift away from the profession. Indeed, retention is seen as a vital part of recruitment which is why schemes such as the Fast Track system, which provides a faster route to the higher tiers of teaching are seen as so important.

Of course, motivation to enter the profession is very important in order to maintain or increase the number of teachers in schools, but as important is retaining those teachers currently working in schools. Currently teacher retention in this country is very poor. Barmby and Coe (2004), in a recent paper presented at the British Educational Research Association conference, quote the then schools minister Estelle Morris as putting the number of teachers leaving the profession within 3 years of qualifying running at around 23% in 2001 and Her Majesty's Chief Inspector of Schools, Mike Tomlinson putting the figure at 40% in 2002. These figures are quite staggering and are of even more concern if it is borne in mind that these figures do not include the large number of students that drop out before they qualify or fail to get a job in the first place. Barmby and Coe quote DfES sources as putting this figure at about 21% in 2002. in addition to this, large numbers of teachers are leaving the profession due to early retirement, stress or in order to realise other opportunities in the field such as lecturing or research. Barmby and Coe present the following table based on DfES data, showing the numbers of teachers entering and leaving the profession over the last 10 years.

Year	Total Entrants to full-time teaching[2]	Total Movement away from full-time teaching[3]	Balance (Entrants – Wastage)
1991-92	24,720	26,540	-1,820
1996-97	27,730	27,330	400
1997-98	29,080	29,470	-390
1998-99	27,550	24,260	3,290
1999-00	29,400	25,230	4,170
2000-01	31,010	25,850	5,160
2001-02	33,220	27,870	5,350

Figure 5.1 - Numbers of Teachers Entering and Leaving the Profession

In fact, there is a very good reason why newly qualified teachers may choose to drop out rather than fail their first year of teaching. An article in the Independent newspaper in May of 2004 makes this choice very clear (Blackburne, 2004).

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[2] These figures include Newly Qualified entrants, those new to the maintained sector and those returning to the maintained sector.
[3] This includes those who had retired, and also out of service teachers who were no longer in the maintained sector and who were not receiving a pension

Since the law was changed in 2002, if a newly qualified teacher (NQT) fails all three terms of their first year of teaching they will be deregulated from the General Teaching Council and will never be allowed to teach in the state sector. It makes sense then, that if an NQT feels that they are going to fail, it might be better for them to leave voluntarily and either find a different school to work in for the last term or take time out to reflect before returning to teaching.

Ultimately, for teachers to stay teaching in the classroom, there must be more to the job than just the initial thrill of teaching. There must be sufficient interest and motivation over a longer period for the teacher to consider the job worth-while. In the study "Who Would be a Teacher?" (2000) produced for the National Foundation for Educational Research, Spear, Gould and Lee cited poor career opportunities, poor salary and increased administration as the main reasons for qualified teachers to leave teaching. Factors that drew them away included better salaries, promotion prospects, work conditions and personal satisfaction.

So, what is it about teaching that makes others stay? Barmby and Coe make some suggestions. In order to encourage teachers to stay in the classroom, the following areas need to be addressed:

- Workload
- Government initiatives
- Stress
- Classroom management/pupil behaviour
- Job insecurity
- Promotion prospects
- Pay
- School Resources
- School Management/Leadership
  (Barmby and Coe, 2004, pp 11)

Moves are currently afoot to address some of the teacher workload problems as part of the School Workforce reform initiatives, particularly in stating that teachers should not be asked to:

> Teachers should have support so that they can focus on teaching
> and learning and expect that administrative and clerical
> processing will normally be done by support staff and / or
> through more effective use of ICT. These provisions will ensure
> that teachers cannot routinely be required to undertake
> administrative and clerical tasks.
> (School Teachers' Pay and Conditions Document, 2003, Section 4)

Unfortunately, the job insecurity element may be heightened because the initiatives also allow Head teachers to employ any person to take on teaching duties irrespective of their qualifications or absence of qualification. This extra factor means that classroom assistants may increasingly be used in future in place of fully qualified supply teachers or even teachers currently employed in schools. This may increase stress and concerns about job insecurity and promotion prospects. It may also have an effect on the teacher's sense of self efficacy.

SELF-EFFICACY

Self-efficacy theory, a term coined by Albert Bandura, (Bandura, 1977) is a derivation from social-cognitive theory. Social-cognitive theory defines five capabilities that define us as human beings. These are:

1. *Ability to symbolise*
   Humans are able to think symbolically and are therefore able to work through a situation cognitively, without needing to actually experience it.
2. *Forethought*
   Humans are able to imagine what the effect of their future actions will be. This means that they can assess many different scenarios before deciding on a final course of action.
3. *Vicarious learning*
   Humans are able to learn vicariously from others. This means that they are able to learn novel behaviours from others who have experienced the trial and error process of developing that behaviour, without themselves needing to go through the same process.

4. *Self regulation*

Humans are able to monitor themselves and regulate their actions and behaviour in response to external conditions. They do this particularly with reference to symbolism and forethought.

5. *Self reflection*

Self-reflection allows people to make sense of their experiences, explore their own ideas and self-beliefs, engage in self-evaluation, and alter their thinking and behaviour accordingly.

Bandura's self-efficacy theory draws particularly on this last capability and concerns the way individuals evaluate their experiences and thought processes through a process of self-reflection. It is based on the premise that rather than previous action being the best predictor for future achievement, what is more important is a person's assessment of their own ability to carry out a particular task successfully. This assessment can affect level of motivation, life decisions, resistance to adversity and vulnerability to emotional factors. It concerns a person's appreciation of the amount of control they have about the situation they find themselves in, and any future action they may take. Normal life contains many pitfalls, negative situations and frustrations. People with a high sense of self-efficacy are able to persevere against such situations. Those with high self-efficacy believe that they can influence future action, and this belief is not just based on a naïve faith in their own abilities, but on a reflective assessment of their own influence in any particular sphere. In trainee teacher terms it results in the belief in being able to "make a difference" in the classroom. Gordon and Debus (2002) argue that teachers with high self-efficacy are likely to engage in a wider range of teaching practices than teachers with low self-efficacy and that these practices affect their planning of learning opportunities. It also affects their responses to the outcomes of pupil learning tasks, their use of novel teaching practices; their responses to children who are difficult to teach; their inclusion of children with disabilities; their level of stress and their satisfaction with the teaching profession.

Although people may have a general sense of self-efficacy, it is both context and subject matter specific (Tschannen-Moran and Woolfolk Hoy, 2001) and

therefore self-efficacy should be measured with reference to a particular domain. We could expect then, that trainee teachers have a lower sense of self-efficacy in regard to teaching when they start on their course, but have a much higher level when they complete it. Measuring teacher efficacy however, has been the source of much discussion and confusion (Henson, 2001), particularly as the results are so interwoven with teacher learning strategies and motivational style. Recently though, measuring instruments that are considered reliable have become available within the academic community (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998).

Teacher Cognitive Style and Teaching Style

Literature concerning the relationship between a teacher's learning style and the styles they adopt when they teach is quite rare, although Pithers (2002) and Evans (2004) are recent examples. Carol Evans' paper "Exploring the Relationship between Cognitive Style and Teaching Style" (Evans, 2004) details some research she carried out on a group of PGCE students at the University of Durham. She assigned each PGCE student a teaching style by asking their individual mentors to rate them on a Likert scale. She then related this to their cognitive style as measured by the Cognitive Styles Analysis (Riding, 1991) a computer program that categorised the students on two scales, one a verbaliser-imager scale and the other a wholist-analytic scale. These scales posit a progressive change from verbaliser (prefers words, written material, discussion) to imager (prefers pictures, diagrams) and from wholist (prefers spontaneity, team player, uses open ended approaches) to analyst (prefers detail, imaginative, more directive approaches). Evans concluded that teaching style was statistically related to the age and sex of the teacher and that analytic-verbaliser females adopted the most analytical approach whilst wholist-imager males adopted the most wholist approach.

There are a few criticisms of Evans' work that stand out though, most of which are mentioned in her paper. She does not state whether her PGCE student volunteers were studying on a Primary or Secondary course or whether there was a mixture of the two. If there was a mixture, she does not attempt to analyse teaching style by Key Stage, although this could be just as important

between say Key Stages 3 and 4 as between Primary and Secondary. The analysis of teaching style was carried out by the student's mentors, using an instrument that included only one of the two scales, wholist-analytic, but this was very close to the beginning of the course. This raises two questions:

1. How likely is it that new PGCE students would have adopted a fixed teaching style in such a short time?
2. How likely is it that a mentor could make a firm decision on the particular teaching styles that they had seen, taking into account that PGCE students are encouraged to adopt a number of teaching styles throughout their course?

In addition, if it was quite early in the course, the students may not have been exposed to the range of teaching styles on offer as they may not yet have studied alternative teaching styles in depth. Similarly, particular subjects may be associated with particular teaching styles so, as Evans rightly asks:

> [...] whether it is the teacher's own learning style preference which influences decisions regarding the way they teach, or the nature of the subject itself which influences decisions over the curriculum.
> (Evans, 2004, pp 510)

Despite these criticisms, Evans' paper is one of the few that has attempted to categorise teaching styles and associate them with learning styles in the classroom. Of course, the paper highlights a major problem which is as true in this study as it is in Evans' work. The problem arises because it is quite unlikely that student teachers will adopt any particular concrete teaching style until they start teaching in their own right. So much of teaching as a student is a compromise between what one would like to do and the constraints imposed by the qualified teacher responsible for the class, the scheme of work and the general ethos of the school, all of which the student has little control over. I know from personal experience that my range of teaching styles comes from a pragmatic view of what has worked in the past in the classroom over a number of years, but even that is constantly being adjusted.

SUMMARY

PGCE student motivation is central in terms of their understanding of learning and pupil motivation, but also because of the relationship to recruitment and retention of PGCE students in the first place. It also relates to their learning styles, particularly where Intrinsic motivation is linked to the deep learning style. Also important is a strong sense of self efficacy which links into other ideas of self, such as that of the reflective practitioner model described in chapter 2. All of these ideas link together to form the basis for understanding one's own learning which forms the basis ultimately to understand one's metalearning. Some of these concepts need to be measured however, and the next chapter examines the instruments available and discusses those chosen in this thesis.

Chapter 6 - Measuring Instruments

INTRODUCTION

In order to provide a degree of triangulation with the results of face to face interviews with PGCE students it is important to provide some types of independent assessment of other areas of importance to the metalearner and reflective trainee teacher, in this case their preferred learning type (Deep or Surface), their Intrinsic Motivation and their sense of Self-Efficacy. There are many ways of doing this, and methods could involve following teachers and observing them teach or discussions with their mentors or supervisors at the university. Questionnaires were chosen because trainee teachers are very busy people who already have quite enough observation and assessment through the normal course of their studies. Since I too, had work commitments, other methods were more impractical. Questionnaires have the advantage of being fairly quick to answer and if administered in particular ways, in my case by email, can be answered when the subject has time to do it, rather than when is convenient for the researcher. This chapter details the questionnaires chosen, why they were chosen and how they were modified for use in this particular environment.

MEASURING INSTRUMENTS

A number of instruments are available that can indicate a student's likely approach to learning, for example the Strategic Flexibility Questionnaire (Cantwell and Moore, 1996) the Approaches to Studying Inventory (Entwistle and Ramsden, 1983) the Study Process Questionnaire (Biggs, 1987) and the Reflections on Learning Inventory (RoLI™) (Meyer, 2004). Similarly, there are a number of measures of cognition such as the Need for Cognition Scale (Cacioppo, Petty, and Kao, 1984).

In this study however, just three were selected:

1. A revised version of Biggs' Study Process Questionnaire
2. Deci and Ryan's Intrinsic Motivation Inventory
3. A modified version of Bandura's Self Efficacy Questionnaire

Measuring Deep and Surface Learning

The Study Process Questionnaire (SPQ), originally consisting of 42 questions, was recently revised by the author and reduced to 20 questions (Biggs, Kember and Leung, 2001), the outcome of which could be described by 4 subscales each of which described a learning type: Deep Motive, Deep Strategy, Surface Motive and Surface Strategy. The reasons for the subscales are clearer if one considers that for every motive, there must be a strategy to achieve it. These are summed up as follows:

- Deep Motive: Intrinsic interest
- Deep Strategy: Maximising meaning
- Surface motive: Fear of failure
- Surface strategy: Narrow target

Combining the Deep Motive and Deep Strategy scores gives an overall score for the deep approach and similarly, combining the Surface Motive and Surface Strategy scores gives an overall score for the surface approach. These may then be expressed as a ratio, or as a percentage in order to compare the extent to which each strategy is present in any one individual's studying style. Fox, McManus and Winder (2001, pp 526) recently carried out an assessment of the shortened version of the questionnaire and recommended its use in broad studies where the full questionnaire would take too much time. They also pointed out that as the shortened version tends to take less time, there is a resultant increase in return rates, allowing larger sample sizes to be achieved.

The assessment was important because a deep learning style is traditionally associated both with intrinsic motivation and with academic success, both of which are traits we would expect to find in the successful teacher. This assessment was to indicate to me how many of the teacher trainees in my sample were characterised as deep learners according to the test criteria.

Measuring Intrinsic Motivation

Currently, among the most prolific authors on the subject of intrinsic motivation are Deci and Ryan at Rochester University, New York. They provide a large amount of information on their web site[4] about self-determination theory and intrinsic motivation and examples of questionnaires that they allow teachers and academics to download and modify. They have compiled an Intrinsic Motivation Inventory (IMI) that measures the extent to which the subject is intrinsically motivated. It consists of 36 questions broken down into 6 categories. Both negative and positive questions are asked in an attempt to obtain an unbiased result. The categories measure interest and enjoyment, perceived competence, effort and importance, value and usefulness, pressure and tension and perceived choice.

Out of the six scales, the interest and enjoyment subscale is the main measure of intrinsic motivation. The perceived competence and choice scales are considered to be positive indicators of intrinsic motivation, and pressure/tension is theorised to be a negative indicator of intrinsic motivation. The value and usefulness scales are present to provide attitudinal factors, that may be used to situate the other results. Interestingly, Deci and Ryan have suggested that extrinsic rewards, such as monetary payments serve to decrease intrinsic motivation. This is notable within the current situation of British teacher recruitment as it relates directly to the "Golden Hello" as discussed in the previous chapter.

Measuring Self-Efficacy

A number of instruments for measuring self-efficacy have become available, many being modifications derived from Bandura's original work (Bandura, 1977). Indeed, Bandura encourages modification of self-efficacy scales to match the area of interest and several of them are published on his web site. Of these, a number, specifically aimed at teachers, have been produced (Guskey,1981; Rose and Medway, 1981; Ashton, Olejnik, Crocker and McAuliffe, 1982; Hoy and Woolfolk, 1993). Bona fide researchers emailing

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[4] http://www.psych.rochester.edu/SDT/ [accessed 6 June 2004]

from academic institutions are able to apply for a copy of the guide to constructing self-efficacy questionnaires. A copy of this document was obtained (Bandura, 2001) and used as a basis for creating a new questionnaire using Bandura's guidelines. Interestingly, among the scales available is the Dissertation Self-Efficacy scale designed to assess self-efficacy to complete a dissertation!

Why is all this important?

The ability to measure some aspects of teacher self-efficacy and learning styles combined with ideas about motivational style affords the researcher a very rich source of information about individual trainee teachers thus providing a context for interpreting face-to-face and electronic interviews.

In addition, establishing preferred learning and self-efficacy styles among trainee teachers is useful in searching for evidence that teachers use their own learning styles as a basis for their teaching in school, and that there is a link between the teacher's feelings of self-efficacy and their ability to teach well .

Each questionnaire adds to the picture of the individual student, looking as it does, from a slightly different point of view and will help to validate any statements made in interviews.

VALIDITY AND RELIABILITY

At the time of writing many authors have started to question the validity and reliability of long established tests. When the research was carried out, tests were chosen that were well accepted and commonly used in order to make sure that the results gained were both valid and reliable. All the authors of the tests used were well-respected in their field and their tests had been used and reported by many others with no problems. In each case a paper was found that carried out some independent assessment of the construct in question. The decision to use the Biggs Study Process questionnaire was influenced by a paper assessing the shortened version of the questionnaire (Fox *et al*, 2001) where they found it to be both valid and reliable. The decision to use Deci and Ryan's Intrinsic Motivation Inventory was similarly influenced by a paper by

McAuley, Duncan and Tammen (1987) confirming the validity of Deci and Ryan's test. Finally, the decision to use the Self Efficacy questionnaire was informed by an assessment of its validity and reliability in a paper directly addressed as assessing the construct. In this paper, Tschannen-Moran and Woolfolk Hoy (2001) state that the questionnaire "could be considered reasonably valid and reliable".

Obviously, as part of this study, figures could have been produced to assess the reliability and validity of each instrument, but it was considered that the small sample sizes would not provide sufficient data for such an analysis.

Although this thesis covers the concept of learning styles in great depth, it should not be considered as a concept that is without its detractors. Ever since the concept was promulgated authors have criticised it. The main criticisms usually concern areas where the test is more a measure of intelligence than ability or in the case of the Honey and Mumford test, that the dimensions described simply do not exist (Cassidy, 2004) or sometimes that a test developed for use in one area, for instance management team selection is used in another inappropriate area such as education. Other criticisms were aimed at users of the tests categorising learners too early and not paying sufficient credence to the motivating aspects of good teaching. Recently, Frank Coffield and colleagues published a detailed critique of a great many learning styles tests (Coffield et al, 2004) and other authors such as Rezaei and Katz (2004) have made similar criticisms of other well-known assessments (in their case, Riding's Cognitive Styles Analysis). This has caused a great deal of debate in the current literature concerning the validity and reliability of all similar tests. Many tests that have been used almost without question in the areas of Teaching and Learning and in Business were found by Coffield and his colleagues to be particularly deficient.

> The evaluation, which is reported at the end of Section 3,
> showed that some of the best known and widely used instruments
> have such serious weaknesses (eg low reliability, poor validity and
> negligible impact on pedagogy) that we recommend that their use
> in research and in practice should be discontinued.
> (Coffield et al, 2004)

In the light of these comments it becomes even more important for researchers to check very carefully that the tests they use are appropriate as well as being valid and reliable.

SUMMARY

This chapter is very important, for it is through these instruments, chosen as much for their ease of administration as for their coverage of vital areas of trainee teacher motivation, that some of the main research data will be provided. Of course, many more instruments could be used, but the more questionnaires sent to my volunteers, the less likely they would be to devote time and effort to filling them in. As it is, the range of questionnaires here provided valuable supporting evidence to any conclusions arising from the interviews which formed the main body of information within this study. The underlying methodologies that form the basis of this thesis are detailed in the next chapter.

Chapter 7 - Methodology

This chapter details the processes used to actually carry out the research. It explains the choice of subjects and the routes used to set about recruiting them. It also details some of the practical details of how some of the tasks were actually carried out, including any equipment or methods that would be valuable to researchers working in the same field. A qualitative software analysis package was used to analyse the interviews and this is explained here. A section of the chapter details the ways in which the data were anonymised. Finally, the chapter concludes with quite a lengthy critique of the use of email for carrying out interviews and questionnaires including some of the problems and pitfalls associated with the technique, particularly when used by the non-technical researcher.

Sample Selection

Volunteers were chosen from a PGCE course at a British University. A PGCE course was chosen because, lasting for one year, the entire teacher education process would be covered in a comparatively short time. Using the PGCE group allowed selection of sample students training for both Primary and Secondary teaching roles. The next question was "How many volunteers to choose?". Initially, the aim was to recruit a large number of volunteers to agree to take part in the study because it was likely that later on in the academic year many of them would drop out due to the time and pressure constraints of the PGCE course. The premise was that if more were recruited than necessary at the beginning of the year, natural wastage would ensure enough volunteers still participating at the end of the year.

To this end 80 research information packs were prepared (40 for each group, Primary and Secondary) consisting of an A4 envelope labelled with the name of the research project and containing:

1. A stamped C5 envelope addressed with the researcher's name and home address
2. A copy of the Ethics consent form (Appendix 1)
3. A sheet containing background details of the study (Appendix 2)
4. A short questionnaire (Appendix 3)

The Head of the Secondary PGCE course was contacted and permission obtained to ask for volunteers from that year's student cohort. I was invited to the lecture theatre in the School of Education and addressed the 200 odd students at the end of their lecture. I outlined the project, explained my position as a part time student and asked for their help. I explained that if any of them were interested, they could collect an information pack but that they were not committed in any way.

As the students filed out at the end of the lecture some of them took an information pack. All 40 were taken. Within the next two weeks, 14 replies were received.

The Head of Primary PGCE was also contacted and permission was then granted to speak to the Primary PGCE students. This time I was to speak to them before their lecture. I took along my 40 research packs containing the same information as before.

I stood up in front of 100 students and again explained about my research, the purposes and my position as a student. There were no questions, so I left my research packs and left. I received 12 replies from Primary PGCE students, most of whom had discussed the research with the Head of Primary PGCE.

The volunteers kept in contact by email throughout the academic year and the majority provided information throughout that time. The initial intention was to interview as many of them as possible, either conventionally, face-to-face, or by email and the majority were keen to help as much as they could.

Of course, with any exercise such as this where subjects are willing volunteers, the problem of self-selection arises. The research was conducted with an awareness that the small sample of volunteers may not be typical of the students as a whole and as such, the sample was likely to be biased. The only way to ameliorate this was to ask questions in such a way as to allow the participants to put forward not only their views but the views of their colleagues on the course. Having said that, all subsequent analysis has to be read in the light of the self-selective nature of the sample.

Data Collection

In response to the request for volunteers to take part in the research, 28 replies were received. Each volunteer filled in a short questionnaire detailing some basic facts about their sex, age, level of scholarship and some preliminary ideas about becoming a teacher.

In order to analyse the information more thoroughly, the data was entered into a qualitative analysis software package, Atlas.ti. This allowed the generation of some basic statistics describing the data sample.

Statistics of the sample

	Male	Female
21 - 25	3	15
26 - 30	1	1
31 - 35	2	2
36 - 40	0	3
41 - 45	0	1

Of the 28 volunteers, 22 were female and 6 were male. The majority were in the age range 21 -25. The oldest student was in the age range 41 – 45. All the age ranges in between were represented.

	Primary	Secondary
21 - 25	6	12
26 - 30	2	0
31 - 35	2	2
36 - 40	2	1
41 - 45	0	1

Slightly more volunteers chose the secondary option than the primary, 12 chose primary, 16 chose secondary.

	Bachelors degree	Masters degree	Doctorate
Primary	12	0	0
Secondary	10	4	2

Within the sample, 22 volunteers had a bachelor's degree, 4 had a master's degree and 2 had a doctorate. All those with a higher degree chose to train as secondary school teachers.

	Primary	Secondary
Male	2	4
Female	10	12

The sexes of the volunteers were spread evenly between primary and secondary specialisms. 2 males and 10 females chose to specialise at primary level whereas 4 males and 12 females chose secondary.

Although small, the original sample was remarkably well spread amongst the various categories.

The majority of the student volunteers were invited to take part in face-to-face interviews. An available office within the School of Education was made available to carry out these interviews so it was an appropriate place to do them.

Initially 4 interviews were carried out, 2 two-to-one interviews and 2 one-to-one interviews. One of the one-to-one interviews concerned a student who subsequently left the course quite quickly after the interview, so his interview was not used as part of the main thematic analysis. Some of his other responses (for instance, to questionnaires) were used when appropriate. The interviews were semi-structured, covering points about first impressions of the volunteers' placement schools and of teaching and learning generally. These were recorded onto micro cassette tape and then transcribed using a word processing package. The entire transcription was then emailed to the participants for editing and approval.

More interviews were set up towards the end of the course and 7 volunteers were interviewed at that time.

Interviews

Interviews were carried out in an office in the School of Education, either on a one-to-one basis or two-to-one. It was important that the interviews be as relaxed as possible, so chairs were arranged around a central table and tea, coffee and soft drinks were provided for the participants.

The interviews themselves were recorded onto micro cassette tape using a Sony M-100MC tape recorder.

This model of tape recorder proved to be superior to the other methods tried, such as a digital voice recorder, the Sony ICDB5 or an older Sony dictation machine. Neither of these two other models were able to pick up the speech very well in an interview situation, being designed more for personal note taking. This was particularly true when interviewing more than one participant.

The interviews were transcribed using a Sanyo transcription unit.

Transcribing tapes took much longer than one would assume. A half hour tape typically took about three hours to transcribe! This was partially due to inexperience at using the equipment and slow typing speed and partly due to having to decide as to the best way to record the information on an *ad hoc* basis as the transcription continued. Much research about interviews makes it clear that the correct form of transcription is vital if information is not to be lost. It was important then, not to lose information and have to transcribe the tapes again at a later stage. It was also discovered that in the early interviews, the interviewer spoke nearly as much as the interviewee. Transcribing one's own thoughts is not particularly useful, and with hindsight it is important when interviewing to keep as quiet as possible and let the interviewee speak more.

Transcription took the form of writing speech as a play script, ignoring as far as possible any mannerisms of speech that were not important. All school information such as school and teacher names were removed.

Once the tapes were transcribed, a copy of the transcription was sent to each interviewee asking that they check the transcription for accuracy and content. If they were unhappy with any aspect they were able to ask for that part to be deleted and not used in any further analysis.

(P=Primary, S=Secondary)

Male	P/S	Female	P/S
Ben	S	Anne	P
Dan	S	Beth	S
Ian	S	Caroline	P
Matthew	P	Dawn	S
Peter	P	Emma	S
Scott	S	Francesca	S
		Georgina	S
		Hayley	S
		Iona	P
		Jenny	P
		Kay	S
		Lauren	P
		Michaela	P
		Nicole	S
		Phoebe	S
		Rachel	S
		Sarah	P
		Tanya	S
		Victoria	P
		Wendy	P
		Yvette	S
		Zoe	P

Figure 7.1 - List of Anonymised Participant Names

Face-to-face interviews were carried out with 10 volunteers in total. Only 3 were interviewed both at the beginning and at the end. For those who could not easily attend face-to-face interviews, email interviews were carried out with the volunteers. Once approval was obtained from the volunteers to use their interviews they were anonymised by assigning a name to each student from a previously created alphabetical list. This list of names included those who had

contributed via email or in any other way. Female volunteers were randomly assigned typical female names beginning with different letters of the alphabet, males likewise (but with male names of course). Care was taken to ensure that the initial of the anonymous name did not correspond to that of the original name.

The Qualitative Analysis Software

The results of the initial questionnaire were entered into a qualitative data assessment program, Atlas.ti. This program was developed as a tool for researchers using Glazer and Strauss's grounded theory (Glaser and Strauss, 1967) as the basis of their research. Their methodology is based on the concept that as data is systematically gathered and analysed, theory that is grounded in the data emerges, further developing and evolving during the research process due to the interplay between the data collection and analysis phases. Grounded theory is quite rigorous and uses specific steps in the analysis to evolve underlying theories. Although the research in this thesis did not use the full grounded theory methodology, elements of it were used to establish themes within the data.

The software enabled the user to scan through each questionnaire, marking critical sections and key words within the text as codes. Atlas.ti allows these codes to be used repeatedly, so if similar ideas appear later on in the text they may be indicated by using the same code. Once all the questionnaires had been coded it was then possible to examine the codes for similarities. For instance, at one point a code may have been created with the name "bad pupil behaviour" and another with the name "pupil swearing". The system allowed these codes to be merged together under one heading, in this case "bad pupil behaviour", Once this merging of codes was complete it was then possible to list the number of times each code appeared in total. The most used codes represented the major themes arising from the questionnaire. Often these themes could be seen to be related and the software allowed these to be plotted as a diagram in order to determine some of the likely relationships between them. The analysis program also allowed the production of reports

showing all the answers to a particular question, enabling the user to ascertain similarities and differences between each volunteers' answers. This meant that It was possible to tell whether the answers fell into particular categories or whether individual answers were unique to a particular student. It also allowed the user to search through the text of each student's answers for overall themes and categories that would have been otherwise missed.

Although the software was very useful in categorising themes within large volumes of text it is important to note that it did not directly analyse the data. The underlying theories and links between ideas were still generated by the researcher independently of the software used and it this theory that appears in the final report. In this respect, the software is rather different from similar software packages used for quantitative analysis such as SPSS where the figures produced from a particular statistical analysis may be used directly in a report with very little further analysis. For researchers wishing to analyse qualitative data, David Silverman's book "Doing Qualitative Research" (Silverman, 2005) contains a great deal of useful information about the use of different software tools and introductions to several research methods, including grounded theory. It also contains invaluable tips on writing a thesis!

WHY EMAIL?

One of the problems associated with a longitudinal study is finding a method of maintaining regular contact with the participants. In the case of this particular study, it was known that for a lot of the time on the course the volunteers would be in schools based in a wide area around the university. This would make it very difficult to arrange regular meetings with them as the PGCE course is an arduous one and there is not much free time available. Some PGCE students involved themselves with after-school clubs and there was, of course, a great deal of marking and planning involved.

There is however, one major benefit from dealing with PGCE students. When they register as a student at the university, every student is given access to the university's networked computer system. This access includes a unique email account. That meant the researcher could be sure that all the volunteers

recruited would have at least one email account that could be used to contact them. In addition, the researcher could be just as sure that the majority would already be familiar with email and be regular users of this technology. When volunteers were recruited it was made clear that email would be the primary method of communication and some of the participants were encouraged by the use of this method. It meant for instance, that they could help by participating, but were able to choose when and where to do this.

When recruiting volunteers the researcher was also careful to offer them the alternative of using a different email account than that which the university had given them. Some enthusiastic users of email may have three or more accounts, using each one for a particular purpose. It was important to be sure that the account being used would be one that was checked regularly by the student in the course of their working week.

Advantages

There are many advantages to using email for ensuring regular contact with volunteers. Use of other methods would involve considerable expense for stamps and telephone calls and would also put the researcher under the obligation of paying for stamps or telephone calls used by the group of volunteers. Email groups were used so that one email can be written and sent out to a large number of participants very quickly, reliably and cheaply (especially compared with using telephone calls or sending letters). Email groups mean that a list of email accounts is given a name. This name then becomes shorthand for the entire list. When sending an email to a group, the name of the group is entered and the software takes care of the individual addressing. The researcher used two email groups, one each for Primary and Secondary PGCE specialisms. Further groups were created based on these for particular purposes such as groups of volunteers who had not yet sent back replies, groups of volunteers who had been interviewed (to thank them) and groups of volunteers with the names of known leavers removed. Anonymity was also maintained by using the Bcc (blind copy) option of addressing. This method allows the email to be sent to a large number of recipients, but each

recipient only receives an email addressed to them, all other names being hidden. This meant that wording for some emails had to be carefully checked because the email was sent to a group of people, but each recipient would read it as if it had been sent to them only.

Response times were also very good. Most participants were obviously reading their email at least once a day, and some were checking it at lunch time as well. This meant that information came back very quickly and this proved very valuable, for instance when arranging face to face interviews. Indeed, once a response had come back a conscious effort was made to acknowledge it as soon as possible, individually to the volunteer concerned. This meant that email could be used to talk widely to the group and also individually to specific participants.

The major benefit of email was realised when questionnaires were sent out. If the questionnaire was not too long the response time was very quick. Since codes or Likert scales were used for answers, all the participants were required to do was to press the Reply button on their email program and type their one letter or one digit answer after each question. They then clicked Send and the email came straight back. Because the answers were typed there was no need for transcription and accuracy was improved because there was no need to interpret someone else's writing.

Although this was very useful for quick, Likert scale questionnaires, it was even more useful for full answer questions. Typically the questions from the face-to-face interviews were emailed to those volunteers who were not able to meet for face-to-face interviews. These required longer answers and the volunteers were required to spend more time thinking about the questions and then answering them. Again the majority of the participants showed a great deal of diligence in answering the questions the best they could and sending back their replies promptly.

<u>Disadvantages</u>

A number of disadvantages of using email as the primary method of communication arose during the course of the study. The first one was that some people had provided email addresses that either did not exist anymore or were spelt slightly differently than as they appeared on their (handwritten) consent forms. This may have been because these volunteers were not as familiar with email. In addition, some of these email addresses were not checked as often as others, so replies from these email addresses were received much later than the majority of the group were able to respond. This proved to be a minor problem however, and was solved early on in the study by mutually negotiating a different email address that was more regularly used.

The second problem was that some people were able to effectively drop out of the study or only opt in to those questionnaires in which they wished to take part. This was a worry as although enough volunteers had been recruited at the beginning to allow for natural wastage, it was not clear at any particular time just how many of the original volunteers were still current.

The major disadvantage of this method came out of the distribution of long answer questions. Firstly, it is almost impossible to maintain an email conversation over a number of days with someone who is not very interested in providing information, or does not have the spare time required to engage fully with the questions. Secondly, the immediate nature of email becomes problematic as answers to questions get longer. People normally expect to answer an email quite quickly and are unlikely to save their reply for additional input at a later date before sending back the reply. This meant that in some cases the first two questions were answered in considerable detail and the remaining ones much less so. Sometimes participants were unsure about an interpretation of an answer and were quite perfunctory in their replies, some even giving one or two word answers (of course this might also have been because they did not have the time there and then to think more deeply about the question). Finally, a few volunteers were very unsure about whether they had provided enough information and ended their emails with questions like "Is

this all right?" or "I hope this is what you wanted?". It was a concern then that they were providing the answers they thought were required rather than what they themselves really thought.

The process of e-interviewing (interviewing using email) is not very well documented thus far. A literature search found two academic articles (Chen and Hinton, 1999; Bampton and Cowton, 2002) detailing e-interviewing, the majority of the rest being advice for interviewers particularly when interviewing technical staff. This is important as there are some pitfalls that can cause real trouble if the medium is not properly understood. Of interest here are two articles (Mann and Stewart, 2000), a handbook for using the internet for online research and Chapter 4 of David Crystal's book "Language and the Internet" (2001) detailing some of the distilled knowledge about what is appropriate and inappropriate when using email.

One particular area of concern is the technical aspect of using this system of communication. Although many people initially find email very easy to use, it is also easy to make assumptions about the way email is used on other people's systems which may turn out to cause major communication problems. Detailed below are some of the most common problems that users may face when using email as a major method of communication within a research study.

Formatting
Most email clients (the software that deals with email on the computer, usually Microsoft Outlook or Outlook Express) have the ability to decode formatted information including different fonts, colours, text sizes and spacing. Some however, do not. If this is the case, carefully formatted tables and diagrams will display as a series of nonsensical codes. Similarly, some emails can be created using HTML codes as used on web sites. These can include graphics and links to external web sites, but again don't work with email clients that do not support them. They may also appear to be incomplete if there is no active internet connection available, commonly missing out graphics and some text, particularly titles.

Attachments

It is easy for the unwitting person to email an attached document or other file to a recipient without thinking too much about what assumptions they are making about the receiving computer. The first assumption is that the attachment will actually reach the recipient. In the current climate of rampant computer viruses it is very common for attached documents to be removed by intervening systems prior to the delivery of the email if they have a particular filename extension, are password protected or contain inappropriate text or graphics.

The second assumption is that the attached document can actually be read by the recipient on the receiving computer. If the document does get through, then depending on the file type, the recipient may not have the appropriate software to open and read the document. Among the most popular formats for attached documents are Adobe Acrobat (requires a special reader), Microsoft Word or Excel (both require either the full Microsoft Office Suite, or appropriate readers) and WinZip (requires a file compression program). Often these programs are not available on a PC when it is bought and must be downloaded from the appropriate websites before it can be used. If these readers or utilities are not installed on the recipient's computer a number of confusing messages may be generated by the computer system, including in Windows XP, the option of searching the internet for an appropriate reader. This process is not normally successful and usually leads to further confusion.

In some cases, where the recipient's system is not Windows based, such as an Apple Macintosh or Linux based system, such software may not be available at all.

Another problem arises if the recipient is required to send a file as an attachment back to the researcher. Many people have problems with this, particularly if they are required to make changes to the document before they return it. This is because attachments are normally opened in a temporary area on the computer and not stored. Any changes made to the document are also temporary and not stored unless the user explicitly chooses to do so.

Furthermore, the saved attachment then has to be reattached to the email and then sent.

Content

As previously mentioned, many email systems now include a scanning facility that reads the text of the email and decides on the appropriateness of the content before it is delivered. Emails that contain certain key words, particularly those that could be, or are used in a pornographic context, even though they may be harmless in the context of the actual email, can be consigned to quarantine areas or marked as junk mail. These emails are often not delivered to the recipient and are deleted by the email service provider as a service to their clients. Cases have occurred where learned documents of a medical nature, or reports by sociologists containing graphic quotes, have disappeared when being emailed from one person to another.

Similarly, the text of an email can in some cases result in that email being quarantined or deleted because it is suspected of carrying a virus. Some virus checkers use word lists to check for virus content and block on that basis, again resulting in the recipient possibly being sent a system generated email telling them that they may have been sent a virus.

Backups and archiving

It may be assumed that emails are stored on the computer in a similar way to that of other computer files, and as such, are as vulnerable to loss if the computer system crashes or has physical problems. It is important then, to make sure that they are regularly backed up onto a separate physical medium that allows them to be restored at a later date. This is usually to a floppy disk, tape or even to a secure area on a server. Most people do not do this however and so older emails are easily lost.

Another problem that is unique to emails is the fact that individual mailboxes cannot be made to be unlimited in size. This means that old emails may have to be deleted or archived to allow new messages to be received. On many systems this is taken care of by a process known as "auto archiving" where old

messages are copied to a separate file or even deleted to make room for the new ones. It is imperative then that the investigator knows what is going to happen to his old emails – if they are permanently deleted by the system they will not be available when the time comes for analysis! The investigator therefore needs to investigate the policy currently in place for maintaining the mailbox and acquaint him/herself with the commands required to store the archives in a appropriate place and also make sure that the archive may be restored when necessary.

CONCLUSIONS

Although the preceding tale of woe may put anyone off using email as a method of communication for research purposes, the experience of it from this research has been very positive. It allowed recipients to be grouped in many different ways and emails to be sent to a large number of volunteers with the minimum of fuss.

The subjects in the investigation also liked it because it gave them a great deal of control over where and when they answered their emails. It also proved useful when setting up last minute interviews.

One of the major benefits is that there was no transcription involved. With questionnaires using Likert scales it was easy to use the Windows Cut and Paste facility to take the scores provided and paste them directly into Excel for further analysis. Similarly, with the longer questions it was possible to cut and paste those so that all the answers to a particular question were kept together. This meant that identification of particular themes or types of answers for each question could be made much simpler.

One of the ways that problems such as the ones detailed previously were avoided was to create the email and then send it to oneself using a normal email account and to a Hotmail account. Hotmail, not being Windows based but using an internet browser sometimes makes emails appear different and using this system allowed emails to be checked before sending them to a large group of people.

Using email then, is in some ways very different from the more traditional methods of collecting qualitative and quantitative data, but has proved to be invaluable in the maintenance of contact with the cohort of volunteers who would otherwise be very difficult to access.

SUMMARY

This chapter was designed to be much more practical in nature than the largely academic content of previous chapters. It was designed to clearly explain how the research was set up, in such a way that anyone reading it could carry out a similar investigation aware of some of the problems and pitfalls associated with some of the methods used. It was felt that it was important to make the information as "down-to-earth" as possible in order to make it accessible to many people. Many summaries of how research was actually carried out are deficient in exactly the details that further researchers would find useful, so this chapter was designed to highlight some of the pitfalls and problems that were discovered when carrying out my research. The next chapter looks at the questionnaires sent out by email and the results they provided.

Chapter 8 – Questionnaire Results

This chapter summarises some of the reasons for choosing particular questionnaires and then details the results from each one, including details of any calculations carried out. Copies of each questionnaire are provided as an appendix to this thesis.

A major advantage of having email contact with all the volunteers for the entire academic year was the ability to get them to respond to a number of questionnaires throughout the year.

These questionnaires were chosen in order to develop more background information about each student and also to obtain an overall view of the cohort as a whole. Email questionnaires worked very well and were easy to administer and more importantly, easy for the volunteers to respond. All that was required for them to do was click the 'Reply' button on their email software and select the appropriate response from a Likert scale for each question. They then just typed that letter or numeric response at the end of the appropriate question and clicked 'Send' when they had finished. Using this method the response was very good. Most volunteers replied in the same day, or the day after. It was unusual for volunteers to reply after two days without prompting.

A number of questionnaires were used throughout the year. These were related to:

1. Intrinsic Motivation
2. Study processes
3. Self Efficacy

Intrinsic Motivation Questionnaire

A questionnaire was selected in order to obtain some idea of the volunteers' intrinsic motivation. If people are intrinsically motivated they tend to find their

work interesting and rewarding and feel that they have a large amount of choice in how it is carried out

> Intrinsically motivated behaviours were defined as those that are not energised by physiological drives or their derivatives and for which the reward is the spontaneous satisfaction associated with the activity itself rather than with the operationally separable consequences. Intrinsic motivation is the motivational instantiation of the proactive, growth-oriented nature of human beings. Indeed, it is the intrinsically motivated activity that is the basis for people's learning and development.
> (Deci and Vansteenkiste, 2004, pp 26)

Rochester University Psychology Department publish a pro forma questionnaire created by Deci and Ryan, who are cited by Dornyei and others as being leaders in this particular field. Their particular questionnaire model, unlike others, allowed a particular set of questions to be created that were appropriate for student teachers.

The actual process required decisions as to which areas were of particular interest. Eventually six different scales were chosen and a 36 question questionnaire created by modifying the standard questions to suit the area of study (Appendix 6).

The scales covered:
- Interest/enjoyment in teaching
- Perceived competence at teaching
- Effort/importance of teaching
- Value/Usefulness of teaching
- Pressure/tension of teaching
- Perceived choice of subjects to teach

The questions were answered by use of a Likert scale using the following values:

1	2	3	4	5
not at all true		somewhat true		very true

Typical questions were:

While I was teaching, I was thinking about how much I enjoyed it.
Or

> *(i) I felt like it was not my own choice to do this lesson*

The questionnaire was then tested that it would work by email, making modifications to the layout as necessary. The questionnaire was then emailed to all participants.

The analysis consisted of assigning a score from 1 to 5 to each reply (1 = not at all true, 5 = very true). For some of the questions the result needed reversing to provide the appropriate value. The scores for each factor were then put together and a mean average score for each factor obtained. At this stage the competence and choice factors were amalgamated because they are used together in the final analysis as a positive indicator of intrinsic motivation.

Scores were calculated for:
Interest/enjoyment (the main self report figure for intrinsic motivation)
Competence/choice (positive predictors of intrinsic motivation)
Pressure/tension (negative predictors of intrinsic motivation)

To calculate a final score the following formula was used:
IMI score = Interest/enjoyment + Competence/choice – Pressure/tension

Results

Nine replies were returned to the Intrinsic motivation questionnaire, with the following scores:

Student	Interest/ Enjoyment	Competence / Choice	Pressure/ Tension	IMI Score
Dan	3.83	4.08	2.83	5.08
Nicole	4.50	3.50	3.17	4.83
Emma	4.33	3.67	3.67	4.33
Francesca	4.00	3.50	3.17	4.33
Hayley	3.67	3.33	3.00	4.00
Beth	3.50	3.67	3.33	3.83
Phoebe	3.67	3.67	3.67	3.67
Tanya	4.50	2.92	4.17	3.25
Scott	3.67	1.25	3.33	1.58

Figure 8.1 - Intrinsic Motivation Questionnaire Results

As can be clearly seen, every student (except one) scored more than 3 (somewhat true), the main scores being between 3 and 4. The exception was the score of a student (Scott) who shortly afterwards dropped out of the course. In his case, his low score may be contributed to his very low competence/choice score.

It would be interesting to examine scores from the questionnaire later on where possibly the overall scores would be much higher, unfortunately, time pressures precluded the setting of a second questionnaire as students were extremely busy at the end of course. At this early stage in the teacher training course the pressure/tension scores were very high, but time in the classroom may have gone some way to reduce these, resulting in a higher overall score.

Study Process Questionnaire

This questionnaire was selected because a lot of student understanding hinges around development of their metalearning capacity and whether they are deep or surface learners. It seemed appropriate therefore to try to measure the favoured learning styles of the volunteers in the sample.

The standard instrument for this is the Study Process Questionnaire, but in its original form this seemed too unwieldy. However, the original author, Biggs, had produced a simpler version which fitted well with the email format used, so a copy was obtained and used as the basis of the second round of questions (Appendix 7).

The questionnaire consisted of 20 questions and used a Likert scale with the following answers:
A - this item is never or only rarely true of me
B - this item is sometimes true of me
C - this item is true of me about half the time
D - this item is frequently true of me
E - this item is always or almost always true of me

Typical questions included:

I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.

and:

I work hard at my studies because I find the material interesting.

The answers to these questions provided information divided into four scales:

- Deep Motive: Intrinsic interest
- Deep Strategy: Maximising meaning
- Surface motive: Fear of failure
- Surface strategy: Narrow target

In order to score this questionnaire the following scores were assigned:

A=1, B=2, C=3, D=4, E=5

As each question tested one of the four scales, simply adding the scores for each scale gave a total score for each scale. It was then possible to combine the two Deep learning scores and similarly the two Surface learning scores. The ratios between Deep and Surface learning were represented as a percentage.

Results

Student	Deep	Surface
Victoria	48.4	51.6
Tanya	50.0	50.0
Wendy	52.3	47.7
Dan	52.9	47.1
Phoebe	54.7	45.3
Lauren	55.3	44.7
Jenny	59.0	41.0
Ian	59.2	40.8
Beth	62.0	38.0
Matthew	62.5	37.5
Rachel	63.2	36.8
Caroline	63.4	36.6
Peter	70.8	29.2

Figure 8.2 - Study Process Questionnaire Results

Results were obtained from 13 volunteers, 7 Primary students and 6 Secondary students. When the scores were displayed as a ratio of Deep to Surface styles

student answers ranged from one student (Victoria) with a slight predominance for Surface learning (48.4% Deep to 51.6% Surface) to a student (Peter) who was predominantly a Deep learner by a considerable margin (70.8% Deep to 29.2% Surface).

Self Efficacy Questionnaire

Both metalearners and successful teachers share the trait of having a strong sense of self-efficacy. They feel that they are in control in the classroom and are able to call upon a combination of experience, skill and professional judgement to take control of their and others' learning in order to provide the best education for their pupils. It was important then, to carry out a test on the volunteers to see how high their self efficacy scores were towards the end of the teacher training course.

The instrument selected was the Teacher Self Efficacy scale. This scale was developed by Albert Bandura who coined the term "self-efficacy". His research at Stanford University paved the way for the development of this large area within Social Cognitive theory. This scale consists of 30 questions covering teacher self efficacy in areas such as:

- Efficacy to influence decision making
- Instructional self-efficacy
- Efficacy to enlist community involvement

Of concern was the fact that the volunteers on teaching practice did not have the autonomy that a fully qualified employee would have. Any questions from the questionnaire that related directly to areas out of the control of a visiting student were therefore removed. These included areas such as influencing long-term policy within the school, counteracting absenteeism and ensuring community involvement. The resulting questionnaire consisted of 21 items covering discipline, classroom management and motivating pupils (Appendix 8).

Again, a Likert scale was used, this time with the following scores:

1 = Not at all
2 = Very Little
3 = Some influence
4 = Quite a bit
5 = A great deal

Scoring

With 21 questions, the lowest score someone could get (assuming they answered 1 for every question and did not pass) was 21. Similarly, the highest possible score was 105. Given this range of scores a decision needed to be made where to put the cut-off points. It was assumed that because a Likert scale was being used, participants wouldn't tend towards the extreme positions, so it was less likely for them to score very high or low. Arbitrarily, it was decided that since the middle score would be 63 ((105-21)/2+21) 5 points either side would be taken to indicate a middle score. This provided a scale whereby a score of less than 58 indicated low self-efficacy, a score between 58 and 68 indicated medium self-efficacy and a score above 68 indicated high self-efficacy, all with respect to the particular questions and situations within the test.

Low Self Efficacy	Medium Self Efficacy	High Self Efficacy
< 58	58 - 68	> 68

Figure 8.3 - Self Efficacy Scoring Ranges

Results

Results were received from just 7 volunteers for this questionnaire, but all their scores showed a medium or high degree of self efficacy with relationship to teaching. The actual scores were:

Name	Score	Self Efficacy Rating
Dan	62	Medium
Matthew	66	Medium
Beth	72	High
Ian	76	High
Victoria	77	High
Jenny	78	High
Iona	81	High

Figure 8.4 - Self Efficacy Scores Table

SUMMARY

Although the response to individual questionnaires was quite good, only in very few cases was a full set of data received from any one volunteer. It seemed that different people from the sample chose to do different questionnaires even though they all had the same opportunity to complete each one as it was sent out. Nevertheless, the responses enabled the creation of a final table that linked together all the responses that were made and gave an overall picture for the whole sample.

As may be clearly seen in the following table, the majority of volunteers were deep learners, with the exception of Scott, who dropped out of the course early. They all showed medium to high levels of intrinsic motivation and medium to high levels of self efficacy. This is useful information about the volunteers, but needs to be combined with other information obtained from interviews and open ended questionnaires, in order to gain a greater understanding of the volunteers and their views on teaching. Analysis of questionnaires and interviews is the subject of the next chapter.

Student	Deep Learning (%)	Surface Learning (%)	Intrinsic Motivation	Self-Efficacy
Peter	70.8	29.2	-	-
Caroline	63.4	36.6	-	-
Rachel	63.2	36.8	-	-
Matthew	62.5	37.5	-	Medium
Beth	62.0	38.0	3.83	High
Ian	59.2	40.8	-	High
Jenny	59.0	41.0	-	High
Lauren	55.3	44.7	-	-
Phoebe	54.7	45.3	3.67	-
Dan	52.9	47.1	5.08	Medium
Wendy	52.3	47.7	-	-
Tanya	50.0	50.0	3.25	-
Victoria	48.4	51.6	-	High
Emma	-	-	4.33	-
Francesca	-	-	4.33	-
Hayley	-	-	4.00	-
Iona	-	-	-	High
Nicole	-	-	4.83	-
Scott	-	-	1.58	-

Figure 8.5 - Self Efficacy Questionnaire Results

Chapter 9 – The Initial Questionnaire

INTRODUCTION

Students who volunteered to participate in the research project were asked to fill in a short initial questionnaire. The main reason for this was in order to obtain an overall view of what the volunteers thought about the profession they were hoping to enter before they had been introduced to the main topics and terminology of their field of study. Of particular interest was whether they had any concepts about styles of thinking, learning and teaching, other than those that could be found in the media generally. A specialised computer based qualitative data analysis system, Atlas.ti, was chosen to analyse the data in order to maintain a global view of the emerging themes and also to simplify access to the resulting quotes and key points for inclusion within this thesis. This software, its operation and outputs were explained in more detail in chapter 7.

ANALYSING THE DATA

Each question from the original volunteer forms was analysed using Atlas.ti and the results of analysing each question are shown below, along with an overall analysis of themes arising from all the questions together.

Why did you decide to study for a PGCE?

The answers to this question fell into three groups, experienced (6 volunteers) - those who had taught before, vocational (16 volunteers) - those who had always wanted to teach and others (4 volunteers) – those who had drifted into it.

By far the most common were the vocational students. The comments from this group were rather clichéd (and some of the group acknowledged this).

> I have wanted to teach for the past 7+ years and therefore the PGCE was a natural progression for me after my degree (Nicole, Secondary)

I have wanted to be a teacher since I was about 13 years old. It was always the next step for me. (Rachel, Secondary)

Because I enjoy working with children and decided I wanted a job that really meant something. Education is important to me. (Lauren, Primary)

A number of volunteers had taught before, usually overseas, some had taught English as a foreign language (TEFL) or had been involved with children in some other way. Typical comments from this group were:

To broaden my teaching experience. I already have a TEFL and have been teaching for the last 5 years in Greece. (Zoe, Primary)

I have been teaching for many years but only have a TEFL qualification. (Georgina, Secondary)

Some of the others didn't seem to have a good idea of why they had chosen teaching and some of their comments were confusing.

I couldn't afford to do counselling psychology and I couldn't think of anything else.(Dawn, Secondary)

I did an arts degree, what else was I supposed to do? (Wendy, Primary)

Why did you choose Primary or Secondary?

This question was very easily answered and divided clearly between primary and secondary. All of those who chose secondary (16 volunteers) particularly wanted either to teach their own subject or to teach A level or both. Some of them spoke of getting on better with teenagers. Most primary specialists (10 volunteers) on the other hand mentioned that they preferred younger children and liked the idea of engaging with the whole curriculum.

I feel that I relate better to young children. (Iona, Primary)

> I prefer to teach younger children - more varied curriculum (Zoe, Primary)

> Secondary will suit my natural tendency to be more subject specialist and my feelings that I will be able to relate to older students better (Ian, Secondary)

> I wanted more interaction, discussion, questioning with pupils - higher level. Also wanted to do science. (Phoebe, Secondary)

A small group (2 volunteers) both primary specialists, didn't seem to have a clear reason for choosing primary over secondary.

> I would have like to do Secondary but didn't think I was up to it (Caroline, Primary)

> Secondary kids are moody/defensive/unapproachable. Primary kids are ..... less so. (Wendy, Primary)

<u>What are you most looking forward to?</u>

The answers to this question could be broadly divided into two main categories which could themselves be further sub-divided. The first and largest (15 volunteers) emphasised the contribution to personal growth and future citizenship and the second (7 volunteers) tended to pay more attention to encouraging an interest in their chosen subject.

> Watching young minds develop and grow through education. (Wendy, Primary)

> Helping others to appreciate literature and the fact that no two days will be the same. Opportunities to be creative. (Francesca, Secondary)

A small group of 3 volunteers mentioned what one of them called "the eureka moment" when a child realises that they can do something new.

> Seeing positive outcomes from my teaching. Witnessing the eureka moment in class as a result of my work (Caroline, Primary)

One mature student who had spent a long time working towards her goal just felt she would be happy when she could call herself a teacher.

> After 7 years of night school, degree, gap year, PGCE and qualifying period, at last I can say "I'm a teacher" (Anne, Primary)

What are you least looking forward to?

The answers were nearly unanimous with the same things appearing in almost every case. 23 volunteers mentioned paperwork, planning, discipline and bureaucracy as the things they were least looking forward to.

> Having to cope with discipline problems in schools. Thee excessive administrative tasks (Ben, Secondary)

> Long working hours at home, marking and planning, bad behaviour in class and not especially good pay (Victoria, Primary)

3 volunteers came up with very different answers though, that didn't fall into the main category.

> The possibility that I let a pupil slip rather than progress them (Peter, Primary)

> Having to teach children who cannot see the importance of putting effort into their education and who have potentially already given up on the education system. (Ian, Secondary)

> Being an effective marker. I want to be able to use assessment for the learning of pupils, but know how difficult this can be. (Rachel, Secondary)

<u>What are the most important things that teachers do?</u>

Most answers in this section were bullet lists covering a number of different areas that the participants felt were important. The majority of the answers in this section mentioned learning (13 volunteers) and teaching (21 volunteers). Other themes included acting as a role model (4 volunteers) and providing a supportive environment (6 volunteers).

Of particular interest was an emphasis on a didactic approach to teaching. 7 volunteers wrote of imparting knowledge, sharing knowledge, and passing on knowledge, but there was no mention in any of the volunteers' answers of shared feelings, experiences or other approaches to teaching. On the surface this may seem strange but may of course be unduly harsh. At this point the volunteers may not be aware of the various ways in which learning can occur and certainly as students themselves much of their teaching will have been in lectures or similar situations.

Another area of interest is that there was only one mention of creativity and one mention of higher level thinking, the latter from a student who was keen to teach science through interaction, discussion and questioning

> Build self-confidence and self esteem
> Help kids be ready for the world around them
> Prepare and equip them
> Teach kids how to learn, give them enthusiasm for learning
> Teach higher level thinking (Phoebe, Secondary)

<u>Overall impressions</u>

The overall impression was of a group of students who had a good idea of what they were letting themselves in for (as regards long hours, planning, discipline and so on). Similarly, they were highly motivated, the main themes centring around nurturing, imparting knowledge and being a positive role model for their students. However, there were one or two who did seem more naïve about

what teachers did and what they would be expected to do. One student seemed more interested in the bursary than the qualification.

> Since there was a bursary and free tuition fees I decided to do the PGCE (Anne, Primary)

SUMMARY

The information provided in the first questionnaire tended to show a great deal more mature thought than was initially expected. Initially is was envisaged that volunteers would give answers that depended heavily on the media view of teaching and although there was mention of stereotypical notions of the teaching profession, such as paperwork and long holidays, for the most part the volunteers had a clear idea of why they were entering the profession and what it would be like. These initial ideas made an interesting starting point for measuring the future development of these volunteers' ideas about what it is really like to be a teacher. The next chapter details the volunteers' responses to their experiences of actually visiting and working in schools for the first time.

Chapter 10 - First Impressions

INTRODUCTION

First impressions are very important and for a student teacher their first few experiences in a new school can make a large difference to their long-term attitudes to their new career (Eldar, Nabel, Schecter, Talmor, and Mazin, 2003). This chapter describes what the research volunteers really thought about their first school experiences. It was their first opportunity to describe what their first impressions were of teaching from the point of view of the teacher rather than as a pupil. This is a very exciting time for trainee teachers, but can also be one of the most difficult. For some of them it is the first time that they have been in a work environment, and the idea that they have to shoulder a great deal of responsibility right from the start can be very daunting. In addition, the students who have gone to do a PGCE straight after their degree may find that their position as a teacher, on equal footing as people who are much older than they are and representing the kind of people who taught them in school only five years before is a difficult thing to overcome. Much has been written (Adey, 1997; Capel, 1998; Harrison, 2002) about the experiences of student teachers when they enter a classroom for the first time and it is known that skilful mentoring by school staff can ease the process of integration of student teachers into school life.

FIRST IMPRESSIONS

Everyone has to start somewhere. For trainee teachers there comes a day very early on in their training when they have to take a class for the first time. A number of questions were asked, either by email or in an interview, either two-to one or one-to-one to find out their first impressions and to capture the reactions of the group of participants to that starting point (Appendix 4).

THE EMAIL INTERVIEWS

These interviews were carried out by emailing the interview questions to the volunteers who found that either by difficulties of distance or time they were not able to attend a face-to-face interview. The number of volunteers responding in this way was 8 (Anne, Caroline, Jenny, Lauren, Peter, Sarah, Victoria and

Wendy, all training as Primary teachers). The interviews were very variable in their content, some volunteers gave very perfunctory replies whereas others were extremely detailed. The interviews were analysed using the software package Atlas.ti as detailed at the start of chapter 9. The analysis produced a number of key themes based on the number of volunteers mentioning them in interview. These were overwhelmingly positive, and although there were a small number of negative themes, these were not nearly so representative, often affecting just one person. The themes were: Helpful teachers, Well disciplined pupils, Good working environment and Student motivation. The following diagram shows a way in which theoretically they could be linked.
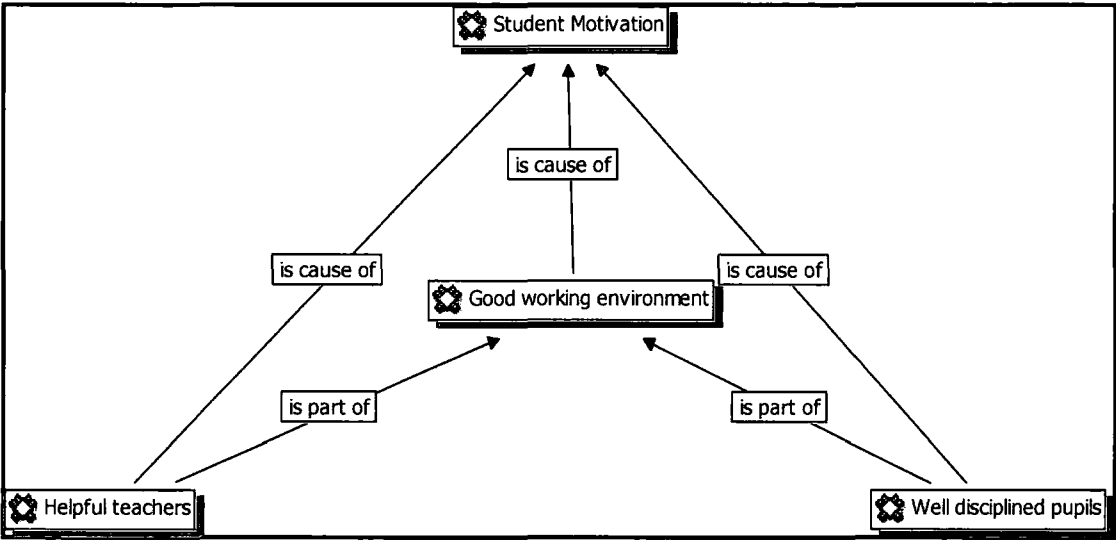
Figure 10.1 - Themes arising from email interviews

One of the main themes to emerge from the interview data with this group of participants was that of helpful teachers. 7 out of the 8 volunteers thought that the teachers involved with student mentoring were extremely approachable and helpful. Volunteers were very appreciative of the support they were offered, both by their mentors and by other staff within the school.

> The teachers seem really lovely. They are extremely helpful with all the tasks we have to do as part of our course. They answer all questions, share resources and experiences and go out of their way to assist you wherever necessary.
> (Jenny, Primary)

All of the teachers in my school have been very helpful to me. They seem genuinely concerned about us and have offered us a lot more of their time and resources than I expected. So far I have been able to borrow everything that I have needed for lessons.
(Victoria, Primary)

All 8 volunteers were as impressed with the pupil behaviour as with the support they received. At this point in their studies volunteers will have been observing lessons rather than teaching themselves and the behaviour they observed was motivating.

The children are extremely well disciplined and the school has a very clear discipline procedure which is strictly enforced throughout the school. (Wendy, Primary)

Generally the discipline is good. There is an imaginary line that the children do not cross. So far so good in this school but time will tell! The atmosphere is friendly and caring. Some people would put this down to it being a Catholic School (that was certainly the reason when I was at school) but I put it down to the support and determination of the parents and teachers.
(Caroline, Primary)

Half of the volunteers reported the environment to be very positive as well. They commented on the "fantastic range of books and an amazing school Library (Caroline, Primary)", the "Nice friendly atmosphere, smart, clean and tidy (Sarah, Primary)", the "the school appears well resourced (Peter, Primary)" and the "good working environment (Jenny, Primary)"

The majority of the volunteers (7 of the 8) gave very positive answers when questioned about what motivated them to want to become a teacher.

I feel I have a lot to offer in terms of subject knowledge and general knowledge. I want to help people *understand.*
(Peter, Primary)

> To create positive moments in a child's school life. I had a
> pretty rough time in one of my primary schools (I left and joined
> a better one) and do not want another child to have the same
> devastating experience I had.
> (Caroline, Primary)

THE ONE TO ONE INTERVIEW

As mentioned previously in chapter 7, two one-to-one interviews were carried
out at the start of the research, however one student dropped out of the course
and the research, so only one interview is analysed here.

The interviewee, Emma, training as a Secondary science teacher, was rather
different from the others in that in her observations she had seen predominantly
bad behaviour in the school and she mentioned bad behaviour more than
anything else during the interview. Initial reactions to this might be that she was
more sensitive than some of the other volunteers, but that proved not to be so.

> I've seen some incredible things. I saw one boy - and I
> intervened, I was observing in class but I intervened because this
> teacher just didn't see it, or chose not to and he threw iron
> filings in another lad's face. I mean if they'd gone in his eyes.....
> And that's nastiness, that wasn't an accident it was deliberate,

This was not just a one-off event either, on another occasion, she had observed
another violent event in the classroom.

> I've seen - I saw a young man explode with anger and throw his
> chair across the room provoked by the classroom teacher and I
> saw it coming a mile off

So, in Emma's case, she was faced with some quite worrying situations very
early on but she didn't seem to be put off by these occurrences. In contrast
another major theme was good behaviour and it seemed that when she taught
her first few classes, things went very well.

> I had no idea I would enjoy it. It wasn't in the equation. I
> thought "That's going to be so hard to begin with. If I can just
> get through it, it'll be all right". I had no idea I would leave my
> first lesson so happy!

Emma had taught before, which must have helped, but her only experience was as a lecturer in Science in a foreign university, so it was unlikely that her previous experience would have equipped her with skills to deal with secondary school pupils. Her manner and approach in the classroom seemed to work however. In her interview she described several situations where things had worked very well and this seemed to provide here with a great deal of motivation. At this stage Emma was one of the few interviewees who brought any ideas of reflection, metacognition or metalearning into the discussion. Perhaps this was because she was educated to PhD level and therefore her personal ideas about learning were already some way ahead of the others, but there were others in the participant group who had similar qualifications and they didn't mention it. She described to me a period of reflection where she was thinking about what it was like for pupils to sit still for a long time and articulated her views very clearly.

> And that's another thing that's become very clear to me now
> that its extremely unnatural for teenage boys to sit still for five
> hours. I don't know why I never thought of that before -why
> was that never obvious to me before? But it is very clear to me
> now and I do bear it in mind.

From this example it is clear that Emma is already thinking what it is like for others to be in her lessons and the effects that might have on their learning. In another part of the interview she explained how she had been reflecting on some of the misconceptions pupils had with science and then relating that some of the misconceptions she herself had had. This is one of the clearest examples within the research that a volunteer was becoming involved in metalearning through reflection on misconceptions she had with her own learning. She also confided in me that she found it difficult to judge quality in terms of lesson content and that she had been thinking hard about that as well,

not only thinking about as a teacher herself, but also as other teachers would experience it.

> It's being able to judge when something new is good and of value and not just something new for the sake of having something new. And I think that must be quite difficult to deal with as a teacher, because you can see they've got enough on their plates.

The other major factor in the discussion with Emma was the building she was working in. She described it as dark and scary, "like something out of Lord of the Rings" with narrow corridors and very claustrophobic. Even under these circumstances she was able to contrast it with another school she had visited that was very different and realised that not all schools were like the one she was currently in. It may also have come from her decision to concentrate on classroom management at the beginning of the teaching practice, although even then she discovered novel techniques.

> You know what I've found works. I've lived in Italy for seven years and they're very physical people and body language works a lot. And you just have to get close to some people. You don't even need to touch them, some lads, you just need to lean over them, and they're like "Oops".

The overall impression arising from the interview was rather different from the other interviews in that Emma had increased her motivation in spite of unfavourable surroundings and challenging pupils. Her belief in herself and the support she got from her mentor and other teachers was enough for her to thrive in a tough environment. It may also be that her approach was more reflective than most and that her previous experiences as a learner and lecturer had prepared her better for the role of teacher than some of the other participants. As a metalearner, it was clear that Emma was thinking hard about her own learning and how she might improve it in the future in the light of misconceptions she highlighted during the teaching process.

Because of the complexity of the factors associated with Emma's experience it was difficult to map in diagrammatic form as clearly as some of the earlier

interviews but eventually a layout emerged that contrasted her negative impression of the school arising from the nature of the building and the behaviour of the pupils she had observed, with the good behaviour that Emma was subsequently able to obtain from her pupils through her reflection on the problems she faced, her professional approach and her recently discovered classroom management skills.
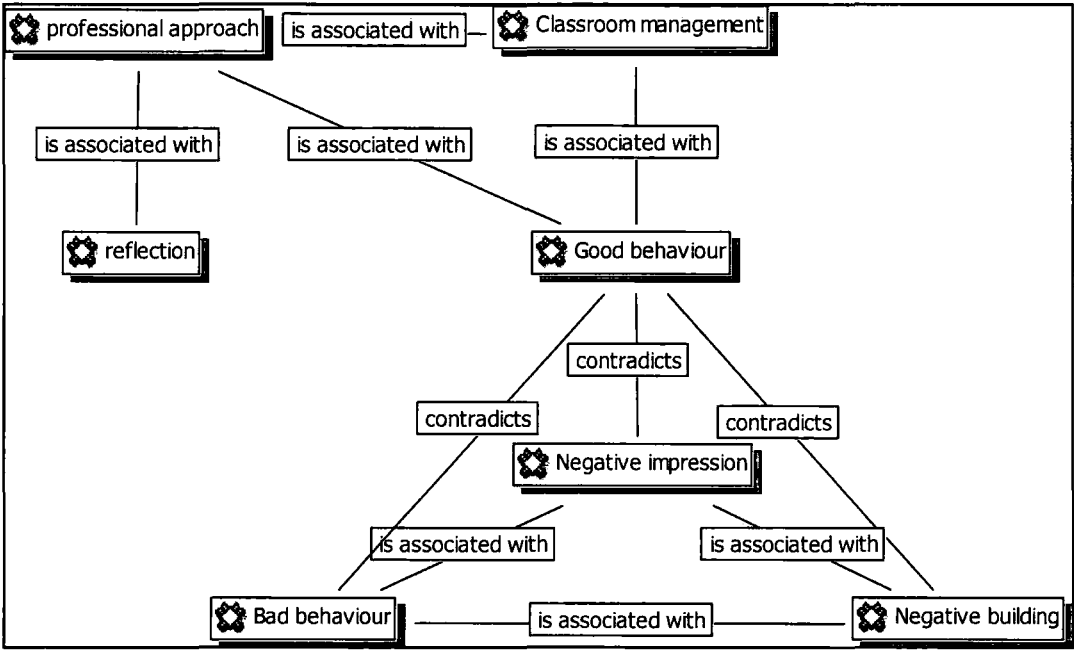
Figure 10.2 - Themes arising from Emma's interview

THE TWO TO ONE INTERVIEWS

Two pairs of volunteers were able to attend for interview. The volunteers did not necessarily know each other, but restrictions on when they could attend for interview meant that they could both attend on the same day. The volunteers attending these interviews were Beth, Ben, Dan and Francesca, all training as Secondary teachers. The two to one interviews were analysed separately from the one to one and email interviews and slightly different themes emerged, generally concerning the main problems associated with starting out as a teacher. In this case, the predominant themes were Motivation, Planning, Classroom management and their Positive attitude to teaching. The following diagram shows how these themes could possibly be related.
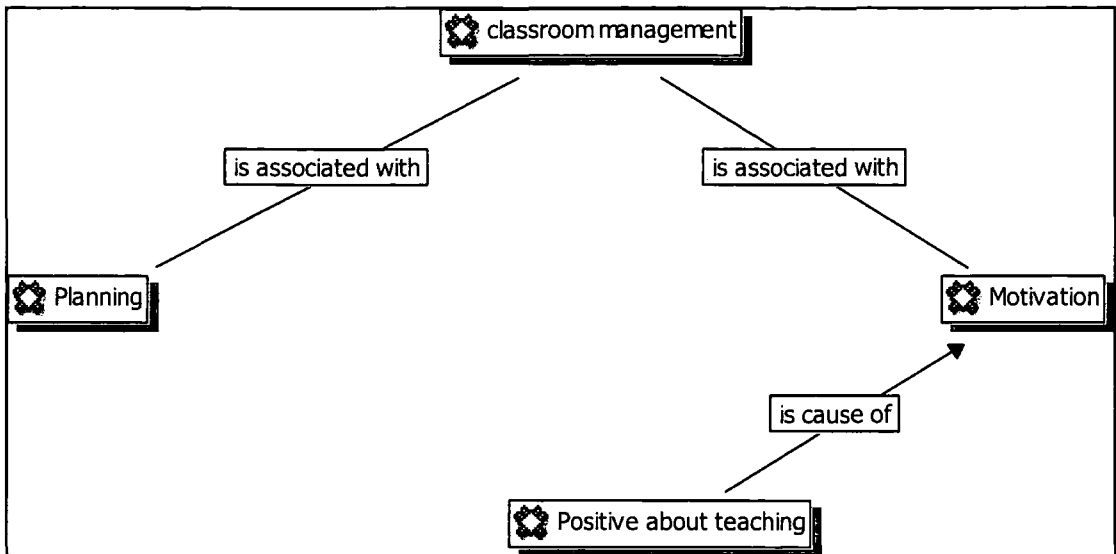
Figure 10.3 - Themes from 2-1 Interviews

In these interviews, lesson planning seemed to be the thing that occupied most of the time and thoughts of the volunteers. However, these experiences were not negative. It was obvious from the comment made that the volunteers had had a lot of support early on in the course and some practice in planning effective lessons. At this stage it seemed that they were being given practical advice that would be useful when they came to teach their first few lessons.

> Yes, we've been told to have lots of stand-by activities and things so that at the end of the day be prepared for to have to throw it out of the window, but as long as you have your evaluation you can say "well, this is where I went wrong with that and I tried to stick too rigidly to something that evidently wasn't working". (Ben, Secondary)

It seemed that a major problem the volunteers reported that they had with planning was that of time management and particularly how long it would take their students to carry out some of the tasks in the classroom.

> I think its very difficult for us as well to judge just how long things are going to take, you know we're thinking right, well, writing five sentences well how long is that going to take? (Beth, Secondary)

Despite the difficulties arising from having to spend a large proportion of their time planning lessons, the volunteers' comments showed that they had a very

positive attitude to teaching generally and that this helped their motivation in the face of adversity. All of them seemed to be very excited at the prospect of teaching their first few lessons and although they realised it would not be easy, were looking forward to it.

> I'm looking forward to being challenged by the kids as well, not necessarily in the behavioural sense but intellectually I've got a very, very bright Year 8 group who are just sparking and I've got a top GCSE set...
> (Dan, Secondary)

During these interviews none of the volunteers offered any evidence that they were involved in reflective thought either about their own or their pupils' learning. It seemed that for this group of interviewees, metalearning was something for the future.

OVERALL IMPRESSIONS

Of interest here was the differences between the Primary and Secondary students in terms of the concerns they had early on in the course. The Primary students seemed to be seeing well-disciplined pupils whereas the Secondary students all mentioned classroom management as a major concern for them. Similarly, planning seemed to be more of a concern for the Secondary students than for the Primary students. This might be because Secondary students have to plan for a number of different classes of varying abilities across Key Stages whereas Primary students would tend to be involved with a single class in one year group (although they have to plan for all the subjects they teach to that group). Both groups displayed high levels of motivation, even in the face of adversity and had a very positive approach to their chosen profession. Interestingly though, only one student, Emma, exhibited any sort of reflective thought, showing that she was thinking hard about the teaching and learning process and how she and her pupils would be affected by it.

Another apparent difference between the two groups is the amount of time available to the student during the first few weeks of the course. None of the Primary students were able to make appointments for interviews, only the

Secondary students could attend, even though both groups were offered a wide range of times from which to select.

All volunteers seemed to be very involved in their new experiences. Their comments show the volunteers becoming emotionally involved with the environment, the pupils or the work. According to Hargreaves (1999), this emotional aspect of the profession is widespread:

> ...teachers' emotional goals for, and bonds with, their students shaped and reshaped everything they did – how they taught, how they planned and what kinds of structures they preferred. (Hargreaves, 1999, pp17)

There were also differences in the support available to the student from the school staff. Primary students tended to report helpful and supportive staff, whereas in Secondary schools this was not so forthcoming. At this stage of the learning process for new teachers it is very important that sufficient support is available and that all those involved are briefed on their role with regard to the new student teacher. In a study of three novice teachers in Israel, Eldar *et al*, (2003) noted that support at this time can come from four main areas: support from the college, from the pupils themselves, the school principal and senior management colleagues and finally from the rest of the school staff. If these are all in place, then the experience is likely to be extremely positive. Even if one of these is missing there is still a good chance that a positive experience will arise, but if two or more are poor, then the student experience is likely to be compromised.

One of the questions asked was the reaction of the volunteers to being called Miss or Mister in the classroom and around school. The reason for this question was to ascertain how the volunteers were perceiving themselves in relation to the classroom environment, relating to Marton *et al*'s (1993) conception of learning, changing as a person (see chapter 4). For some student teachers, especially those who have started the PGCE directly after completing a bachelor's degree, it is confusing because being a teacher in a classroom is very different from being a pupil and it takes time for them to

redefine themselves in terms of their new role. For many, being in a classroom management situation can change their view of what being a teacher is all about. As Betoret and Artiga state:

> ...trainee teachers have more idealistic and altruistic values as regards education than qualified teachers. These values are, to a certain extent, upset after actually experiencing the classroom situation - a 'reality shock'.
> (Betoret and Artiga, 2004: pp 369)

Besides this, the student responses provide another message. They show that the volunteers are starting to develop coping strategies which will allow them to deal with the everyday work in the classroom and give them space to develop as teachers. Knowles (1999) discusses this issue, in relation to trainee teachers and states that the euphoric 'honeymoon' period of the first few days in school then develops into a situation of surviving and coping. The student teacher will attempt to negotiate a relationship with the staff, surrounding and pupils to enable them to work in the new environment. The first few days and weeks of teaching can be very exciting but also very challenging.

SUMMARY

From the data presented in this chapter it can, perhaps, be argued that most PGCE students are incredibly motivated to teach. They often have had very positive experiences themselves and wish to be part of making other children's learning experiences as positive as theirs were. They often have a fairly naïve idea of what is required to do the job but this is often tempered by a real willingness to do the job well. Their accounts of their first experiences in school make for really encouraging reading, combining as they do a true excitement for their new role, tinged with a certain amount of fear and trepidation that they will soon be in the situation where they have to stand up in front of a class and teach for the first time. Interestingly though, apart from Emma, none of the participants displayed a particularly reflective mode of learning, metalearning or indeed metacognition in the wider sense during the interviews. It may be conjectured that for many of them it was not an important consideration,

possibly as they had been able to complete their first degree without having to make any major metacognitive discoveries about their own learning.

Chapter 11 - At the End of the Course

INTRODUCTION

This chapter focuses on the attitudes and ideas that the trainee teachers had about their new skills and experiences when they were coming to the end of their course. Interviews were carried out with a small number of volunteers towards the end of their last teaching practice, focusing on the course they had followed and teaching in general (Appendix 5). By this time they had had a great deal of experience in the classroom, perhaps some disasters, but also many positive experiences and should have developed the makings of a unique teaching style. They should also have had a clear idea of what it is to be a teacher, what teachers do and what they expect from their pupils. Most of them will also have been applying for their first teaching posts and will have opinions about what and where they would like to teach. This is one of the most exciting times for the new teacher as they are eager to take control of their own class and put some of the ideas they have learnt on their PGCE course into practice in their own classroom. Participants (7) were interviewed face to face either individually or in pairs. The participants were very busy at this time of the year, so even though replies to email questionnaires was quick, answering email interview questions had been much slower. The decision was made therefore not to interview participants by email. As with the previous interviews, analysis was carried out with the help of the software package Atlas.ti and theoretical models of the themes arising were created in diagrammatical form.

THE INTERVIEWS

Five volunteers were interviewed individually, (Beth, Dan, Emma, Jenny and Wendy) and two volunteers in a two-to-one interview (Ian and Matthew). The predominant themes that arose from these interviews produced a more complex relationship than those from the first interviews. Major themes that arose were very much centred around teaching and the important factors that were involved in providing positive teaching experiences, both for the participants and for their pupils. Figure 11.1 shows a way in which these ideas could be related.
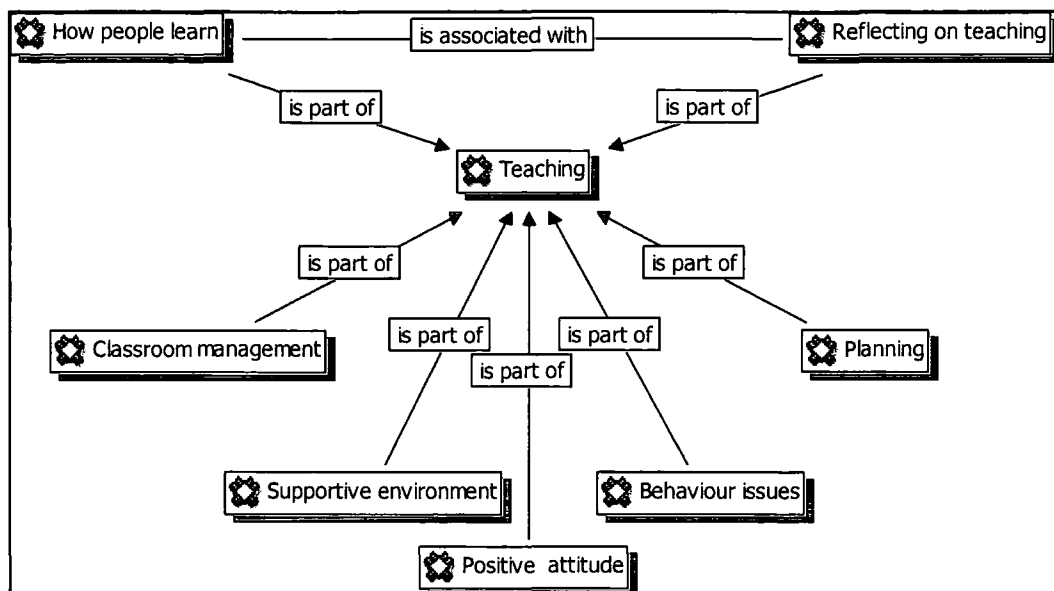
Figure 11.1 - Themes associated with effective teaching

As may be readily observed, the diagram divides the factors into two main areas, those factors that are associated with the skills of teaching (classroom management, a supportive environment, a positive attitude, a grasp of behaviour issues and planning) and those aspects that are associated with metalearning (how people learn and reflecting on teaching) showing that not only were the participants becoming better practitioners, but also that they were developing their metacognitive skills particularly with regard to understanding the learning of their pupils.

PRACTITIONER SKILLS

Participants showed in their comments that they were developing their own strategies for working successfully in the classroom environment. Originally a major concern, planning took on a different role with participants more able to evaluate their own lesson plans and planning with a more open approach than they adopted when they first started the course.

> Whereas for the foundation subjects I've still got the medium term planning but that's up to me, what I do. As long as I keep the objectives in mind and have an overall picture of what I want to get done but what work they do is entirely up to me.
> (Jenny, Primary)

Similarly their attitude to classroom management and dealing with behaviour issues had developed too. The participants showed in their comments that they were less likely to have management problems in the classroom because of the new understanding they had developed about classroom dynamics.

> It's becoming easier. I do think I'm a good teacher, I don't think I'm awful, but it takes a lot of time to get used to everything. I think I am starting to develop eyes in the back of my head and start to think ahead and I'm thinking about more than what's actually on my lesson plan. I think at first I was just thinking "This is my lesson plan, that's all I'm doing" and nothing else. Just general things like you've got 30 books to give out and get back, how are you going to do that? The logistics of it have become a lot easier as I've gone along.
> (Beth, Secondary)

Generally it seemed that the participants had settled down into their role as teachers and felt comfortable in that role. They were beginning to develop their own presence in the classroom, had more autonomy and were starting to think about more than just surviving through the lesson. They had developed a very positive attitude towards their chosen profession and appeared to be highly motivated. Most participants mentioned that they enjoyed their time in the classroom and appreciated the opportunity to take a part in children's' education.

REFLECTING ON LEARNING

By far the largest number of comments from the interviews involved participants' understanding of how pupils learn. For many, the teaching and learning conference encouraged them to think about creating lessons that incorporated different styles of teaching. A major issue arising from the conference was the use of different ways of accessing learning as advocated by the VARK system.

> I've listened to the academic stuff and realised I can't just teach in the way I would have learned because that's just not appropriate for a lot of kids and it's probably why a lot of people underachieve at mathematics. Having said that, it can be

difficult to put mathematics across in that way,
(Ian, Secondary)

Because some ways you could present it and they wouldn't get it
at all and other ways, obviously it would depend on the ability of
the child, but some children they would just really respond well
to having objects for example, so there might be lots of object
lessons. If I find a particular style that they like, I'll use it.
(Jenny, Primary)

Similarly, most of the interviewees showed that they were reflecting on their
own and their pupils' learning far more than they had been at the start of the
course. Some, like Emma had to come to terms with the fact that teaching was
going to be very different and that her views on teaching would have to change
in order to make her subject accessible to her pupils.

The contrast is just incredible going from year 8 to sixth form in
..... and it's really made me reflect on what it is I want to teach.
I did do a little bit of teaching with sixth form and I realised
that my science is at minimum undergraduate level, and way over
their heads.
(Emma, Secondary)

Generally this reflection showed that many participants were really becoming
involved in ideas of their own and their pupil's learning at a high level. Being
involved in providing learning opportunities for the pupils had caused them to
reflect on their own learning.

I've spent a long time thinking was I kept away from this or have
things changed in the twenty years since I was at school? So,
yes, it's made me realise that people don't learn in the same way
as me and are not prepared to learn in the same way as what I
was prepared to learn.
(Ian, Secondary)

I've had immense problems dealing with in my planning and my
preparation of resources and its caused me and my tutor quite
serious concern because links that I might make or the way that

I use language or strategies I use for deciphering words or deciphering meaning are just different and they'll come to a completely different conclusion to the one that would seem logical to me or to somebody else who shared a similar background or point of view.
(Matthew, Primary)

METALEARNING

Within the comments the volunteers made during the second round of interviews it was clear that their view of education was wider and more encompassing than it had been in the first round of interviews. In the first round, many looked on education as involving a simple transmission of facts, and the role of the teacher as being a mediator translating textbook information into understandable nuggets for consumption by their students. In the second round though, there was more reflection on learning itself, on the different ways in which their pupils learn and also on how they themselves learn. This echoes many of the concepts involved in metalearning as espoused by current authors in the metalearning milieu.

> For the purposes of this paper, the authors have drawn on this literature to define metalearning as an awareness and understanding of the phenomenon of learning itself as opposed to subject knowledge. Implicit in this definition is the learner's perception of the learning context which includes knowing what the expectations of the discipline are and, more narrowly, the demands of a given learning task.
> (Norton, Owens and Clarke, 2004, pp423-424)

Of course, in the case of the trainee teacher, metalearning occurs on two levels, that of the trainee teacher's own learning and also of the pupils the trainee teacher is teaching. This could be seen to cause confusion in that it is not always clear whether the teacher is reflecting on their own learning or that of their pupils or both. However, another approach would be to look on these two roles as synergistic and that trainee teachers are fortunate to be able to see their own learning reflected in that of their pupils. Some authors define metacognition in terms of having a metaphorical higher being overseeing one's actions and directing those actions in order to increase effectiveness. Perhaps

the clearest description of the phenomenon is detailed in John Cowan's "On Becoming an Innovative University Teacher".

> He pictures the student, or anyone else who is tackling a problem or challenge, as being like an animal in a maze, seeking the best way out. Somehow, from that animal, there emerges a thoughtful part – which climbs up a ladder near the maze, to an observation platform. Sitting on the platform, the thoughtful part of the problem-solving animal watches what is happening, sees where it is going wrong and how it might be improved, and offers advice about how to do better, and indeed about what to do. And sometimes, there can be another thoughtful part which emerges in turn from the observer on the platform. This one climbs up a further stage in the ladder to a higher platform, to offer advice to the observer on the first platform – about how to be a more purposeful and useful observer.
> (Cowan, 1998, pp69)

In the case of the teacher directing learning opportunities for their pupils the analogy is remarkably similar. Learning to teach may therefore be a very positive method of enhancing and improving one's own learning and ultimately one's own metalearning. Certainly it would be reasonable to make that claim for a number of the participants interviewed at this point. A good example could be Wendy reflecting on her pupils' access to learning and that she herself might have to rethink, put herself in the position of the learner and find a way to teach a particular idea. Significantly she also mentions the fact that because of the way some people learn, some ideas may not be accessible to some pupils at all.

> You know, it is about what way you're going to put it across, how do you make it basic for someone so someone can understand how to realise that "Oh they're not getting it this way, we'll have to rethink and maybe change my question around or maybe get them some bit of information so that it will all slot in place", and things like that, but some people have to work really hard on that, it's not entirely natural for some everybody and some people will never get it.
> (Wendy, Primary)

Summary

Comparing the comments volunteers give here with the observations they made when they started reveal how they have matured as teachers since they started the course. Many had applied for their first teaching jobs and a number were excited at the prospect of starting in their new posts in September as fully qualified teachers. In these excerpts it is clear that the volunteers have now developed techniques for dealing with behaviour issues in the classroom and have also evolved their own teaching style based on their much greater understanding of how pupils learn. It has also provided them with the opportunity to reflect on their practice and develop a much clearer idea of the role of the teacher in the modern classroom. The nature of their reflection shows them developing their metalearning capacity, particularly when they are able to compare their own learning with that of their pupils. These ideas are succinctly summarised in this quote from Anne Brocklebank and Ian McGill's book "Facilitating Reflective Learning in Higher Education".

> For example, by reflecting on my approaches to how I teach and
> to what purposes I teach, I can potentially learn more about the
> efficacy of my approaches, the underlying models of teaching and
> learning that I am using, and how my practice may contribute to
> student learning. Secondly, by engaging in reflective practice, I
> as a teacher can uncover, unravel and articulate my practice with
> a view to learning from that reflection.
> (Brocklebank and McGill, 1998, pp72)

The next chapter takes the findings so far and revisits the original research questions in order to answer them more fully in the light of this research.

Chapter 12 - Discussion

INTRODUCTION

In this chapter the evidence provided from the various sources during the investigation will be examined with a view to answering the three questions that started this thesis. They were:

Question 1
Does following a PGCE course encourage trainee teachers to develop a sense of metalearning?

Question 2
What evidence is there that trainee teachers' perceptions of learning change as they progress through their PGCE course?

Question 3
What other factors might indicate that people would be more reflective thinkers, and how may they be tested?

RESEARCH QUESTIONS

Question 1
Does following a PGCE course encourage trainee teachers to develop a sense of metalearning?

In the sense of the definition of metalearning defined by Meyer and Norton as discussed in chapter 3, it did not seem that the majority of the volunteers' own metalearning was developed or indeed encouraged to develop whilst on the PGCE course. Emma was the exception to this, displaying a reflective approach to both her own and her pupils' learning from an early stage. She was atypical in this regard being more metacognitively advanced, possibly because she had already obtained a doctorate and had lectured abroad for a number of years. However, the definition of metalearning selected for this thesis widens the scope considerably by putting metalearning in the context of learning about learning, both one's own learning and that of the pupils one teaches. Of course, it could be argued that since a teacher training course is designed to train students to teach, there must, by definition, be learning about learning taking place whilst students are studying on the course. This wider scope however, justified in the case of those training to be teachers, makes

learning about learning, in all its facets, the main focus, but also requires evidence of reflection on that learning to truly be called metalearning.

The course in question was based on the reflective practitioner model and as such, would be expected to develop in the student greater reflection on the nature of learning and a greater sense of what learning is about but it was not clear from the evidence provided that this was the case. Certainly there seemed to be little evidence to conclude that the volunteers' own learning had been enhanced by the process. The impression given was that on the part of the volunteers, there was a lot of learning to be done, and no real time or encouragement devoted to how this learning could be accomplished in a smarter or more effective way. In contrast however, there was great deal of evidence that volunteers were reflecting deeply on the nature of the learning of their pupils. At several times in the interviews for instance, volunteers commented on the learning that went on in the classroom and showed a real empathy for pupils who found learning difficult, or just approached it in a different way from the volunteers themselves. Although there was evidence that volunteers had compared their own learning to that of their pupils in the light of the new information they had about their pupils' learning there was no clear evidence that they had then applied it back to themselves.

> The course has opened my eyes up to the different ways in which people learn. School was little bit of a breeze for me when I look back. It just suited me I was pretty accepting of what I got presented, I learnt it like a good boy and I passed my exams. I was always in top sets and top streams where you didn't see half the things I've seen since I've gone back to school.
> (Ian, Secondary)

Generally the volunteers did appear to be reflecting on learning and it seemed that the most reflective volunteers were those who had already obtained higher degrees and were also older. Perhaps this combination of circumstances encouraged them to take time to reflect compared with those younger, less well qualified volunteers.

Question 2

What evidence is there that trainee teachers' perceptions of learning change as they progress through their PGCE course?

It is clear from the initial interviews with volunteers that their ideas about teaching and learning are for the most part dependent on their own experiences before they started on the course. This is not surprising, as most trainee teachers have a sense of love for their own subject and a desire to pass on their understanding to a new generation. There was also a great deal of evidence to show that they felt themselves to be important role models to the young people they would teach and sometimes that they could do a better job at teaching than they themselves had experienced.

As they moved through the course though, it was obvious too that they had been thinking hard about education and had been learning about various aspects of motivation, learning styles and ideas about expectations and intelligence so that their understanding about teaching and learning was very different when they finished the course from when they started it.

> I realised that people like that are very few and far between and most people need a lot of repetition, a lot of support, a lot of really breaking it down and then, once you've broken it down and you've repeated then you need to rehash it and do it a different way.
> (Beth, Secondary)

> Do they learn in the same way as me? No, because most of my school career was sitting down listening to the teacher, writing it down, doing a bit of work with it and I understand it and that's still the way I prefer to learn and kids don't learn like that. Maybe at A level, but even their A levels classes are not like mine were. Lots of shorter activities and I think the theory of education is that this is a good way to teach people.
> (Dan, Secondary)

Similar information was obtained when focusing on the volunteers' views on intelligence and its role in the classroom. Within the student sample there appeared to be those who appeared to consider intelligence as fixed (Entity theory) and those for whom intelligence was mutable and able to be increased by study (Incremental theory). Dan showed an obviously strong preference for an incrementalist model of intelligence, particularly in his mixed ability class. He mentioned trying to increase their grades by study – an incrementalist approach.

> Certainly, I spend more time with the lower end pupils, trying to get them up to a grade than I do trying to develop the high end, but that's the nature of the beast.
> (Dan, Secondary)

Jenny on the other hand seemed to display a mixture of the two approaches. She spoke of the ability of the child as if this were fixed and that however the content was presented they wouldn't understand it. She then said that there were ways of presenting the content that does make it accessible.

> Especially with the younger, I did year 2 so they weren't that much younger than my current class, when I found a way of teaching that they really responded to like Maths. Because some ways you could present it and they wouldn't get it at all and other ways, obviously it would depend on the ability of the child, but some children they would just really respond well to having objects for example, so there might be lots of object lessons.
> (Jenny, Primary)

Ian tended to display an strong entity approach when discussing one of his maths groups. He mentioned children reaching their "ceiling" and their "level" as if this was fixed and immutable.

I always thought I had a good understanding and that I could get that across but its not quite as easy as I thought it was. Some kids, I don't know if they've reached their ceiling at maths. I teach a remedial class and they've got lost somewhere along the way. Their level is somewhere in the middle of Primary school. They've got stuck there and they've obviously had various teachers and their teaching has worked for other kids but it hasn't worked for these kids. I don't feel that I'm taking them anywhere, even though I put effort into every lesson and spend a lot of time.
(Ian, Secondary)

There is evidence here then of both kinds of approach to intelligence and ability within the student teacher sample in terms of their views about the intelligence of their pupils. In all cases, without exception, the volunteers themselves displayed an incrementalist approach. They certainly didn't think anything was beyond them intellectually and that given time, they could learn anything required of them. Typically they would speak of having to spend more time on a particular problem until they had mastered it. Interestingly, this was just as true in Scott's case. Although he felt that he hadn't been given enough time to master the subtleties of teaching style, he did not seem to doubt that he would be able to reach an appropriate standard given enough time and support.

It is interesting to speculate how it could it be possible for some volunteers to hold these two opposing views at the same time. Perhaps the answer lays in the fact that in each case they were discussing individual subjects rather than the population as a whole. Their comments may also be indicative of the influence they themselves would be able to have on any one child in the time they have with that pupil. Perhaps they believed that given sufficient effort, their pupils could achieve much more (an incrementalist approach) but that other factors, possibly peer pressure or upbringing make this more likely in some pupils than others, or that the school environment was more conducive to some pupils' learning than others. It may also be that the individual volunteers do not see intelligence as a dichotomy between fixed and variable. They may have defined it

more in terms of the amount of work any pupil was prepared to make on any task regardless of their ability. Of course, the other alternative is that they have a totally different way of thinking about ability and intelligence, possibly based on a more complex model such as that of Sternberg and involving the right combination of 'thinking skills' to make the best use of such intelligence and ability they possess.

Student Motivation

The volunteers themselves, to a man (or woman) displayed the mastery orientation motivational style most of the time. Each time they had a failure in the classroom, they dealt with it and went back again to try harder next time. Indeed, one could argue that this approach is a fundamental requirement for anyone having to practice a skill in public before they have acquired complete mastery of that skill. As Emma put it.

> Well, there was another student there who almost dropped out. Luckily she didn't, she stuck with it, and it's all behaviour issues, but in a sense, you think, I'm getting such a huge amount of input now on behaviour issues and tackling it, although this period is extremely intense because not only are you having to think about the teaching and learning, but the juggling and the classroom management which is your absolute priority.
> (Emma, Secondary)

Beth too, described the same type of problems in her classroom.

> It's becoming easier. I do think I'm a good teacher, I don't think I'm awful, but it takes a lot of time to get used to everything. I think I am starting to develop eyes in the back of my head and start to think ahead and I'm thinking about more than what's actually on my lesson plan. I think at first I was just thinking "This is my lesson plan, that's all I'm doing" and nothing else.
> (Beth, Secondary)

Pupil Motivation

Among the motivational styles mentioned by the volunteers that they observed within the classroom, the main type was Self worth theory, where pupils can maintain their sense of self-worth by not trying too hard, enabling them to

attribute their failure to not trying rather than their inability, succinctly illustrated by this quote from Ian.

> So to try risky and different things is actually very hard work for them because the kids even in the top set cannot be bothered a lot of the time. They really don't value it that highly.
> (Ian, Secondary)

Domain specificity

Domain specificity, or differences in their motivation depending on the subject seemed to commonly observed by the volunteers. Beth was very clear that this was the case with strong evidence for domain specificity in her language classes.

> Some of my pupils have problems with basic literacy and they can't write, they can't read, so it's not that it's a French word, it's just that it's a word that is a problem for them, but then they might be excellent at art or music or DT or science or whatever, so I don't think it's necessarily across the board. I think all of them have got something that they're better at than others.
> (Beth, Secondary)

Emma obviously agreed when telling me about some of her science practical classes.

> Yes, because some people are more practically orientated aren't they? They can be finishing when other people can be still faffing about putting their equipment together.
> (Emma, Secondary)

Jenny seemed to agree strongly. In her class she had two children who had special educational needs but were her best artists.

> Other ones like Art, two of my best artists are in my SEN group and that's quite nice.
> (Jenny, Primary)

The consensus seemed to be that domain specificity played a large part in a child's enjoyment and aptitude for a specific subject. Again, as adults, most of the volunteers concurred that their motivation and ability was domain specific.

Question 3
What other factors might indicate that people would be more reflective thinkers, and how may they be tested?

The volunteers were asked to answer a series of questionnaires as they progressed through their PGCE course with a view to ascertaining their attitudes to three key factors that are considered important in trainee teachers and metalearners. The three factors were, that they should show high intrinsic motivation, they should be ideally deep learners and that they have a strong sense of self-efficacy.

Intrinsic Motivation
An important area is the concept of Intrinsic motivation, particularly as there is currently a lot of discussion about what motivates trainee teachers. This is partially as consequence of the drive to recruit more teachers in order to counteract the current shortfall.

Intrinsic motivation is traditionally characteristic of professionals, valuing as it does, Interest and Enjoyment, Competence and Choice over Pressure and Tension. The argument is that trainee teachers would display high intrinsic motivation because they are doing something they enjoy and find interesting, they have a lot of choice about how the job is done and are able to exhibit their competence at the task in hand. Although pressure and tension are also part of the job (ask any teacher) the theory considers these as less important.

From the investigation using a questionnaire asking specific questions related to teaching experiences, the following results emerged from their intrinsic motivation scores:
(5 or above is very high, 3 is average, 0 is lowest) n = 9.

Score	Number of students
Above 5	1
Between 4 and 5	4
Between 3 and 4	3
Between 2 and 3	0
Between 1 and 2	1
Between 0 and 1	0

Figure 12.1 - Intrinsic Motivation Scores

As can be clearly seen, all but one of the volunteers displayed an above average level of intrinsic motivation with relation to teaching, 4 of which were high and 1 very high. The low result was a useful one to have, acting as a partial control and was the score of a student who dropped out of the course shortly afterwards.

It seems then, that Intrinsic motivation valuing interest and enjoyment in the job over other areas such as monetary reward does seem to be a feature displayed by teachers. However, since the test involves answering questions about direct experiences of teaching, it is difficult to see how it could be used at the start of a course for screening purposes, or indeed used with any group of students except trainee teachers in order to provide a control group.

Deep and Surface Learning

A very common measure of learning is whether students learn in a deep or surface manner. A version of the Biggs study process questionnaire was used to investigate this and the results are displayed below:

Score for Deep Learning style	Number of students
Above 70%	1
Between 60% - 70%	4
Between 50% - 60%	6
Between 40%- 50%	1
Below 40%	0

Figure 12.2 - Deep Learning Scores

As may be readily seen, the majority of volunteers display a predominately deep style of learning, only one student having a neutral style. Perhaps this is would

- 130 -

have been expected due to the fact that all these volunteers have already successfully completed at least one degree, but it does show a marked preference for the Deep style over the Surface style.

Self Efficacy

As has been mentioned previously, it has been suggested that teachers that display a high level of self-efficacy are likely to engage in a wider range of teaching practices than teachers with low self-efficacy. For this reason, a self efficacy questionnaire was constructed. The results are summarised below: (n =7)

Self Efficacy score		Number of students
High	(>=68)	5
Medium	(>=58 and <68)	2
Low	(<58)	0

Figure 12.3 - Self Efficacy Scores

As may be readily seen, the majority of volunteers from the sample display high Self efficacy, a few show a medium level and none show a low level. If this result were to stay the same even with larger sample sizes, it could be expected that High to medium Self efficacy scores could be characteristic of a motivated teacher.

The main problem involved with the questionnaires was the relatively poor response rate. Although there was a large number of volunteers at the start of the project, participation in email questionnaires was not high and tended to be the same few volunteers each time. With these very low figures it was extremely difficult to make any claims that the results were any way representative of the sample as whole, but assuming they were, the results were very pleasing and agreed with the literature.

In general, trainee teachers do show high levels of Intrinsic motivation, they are deep learners and have high self efficacy as such, it could be predicted that they were also successful metalearners. Although these are characteristics of both metalearners and successful teachers there is no clear relationship

- 131 -

between the individual factors, so it is not possible to say that simply because individuals display one or more of these characteristics it makes them more likely to become successful teachers or metalearners. In addition, because these samples are so small, it would not be right to conclude that asking potential PGCE students to answer questionnaires of this type would necessarily provide information that would aid recruitment of students more likely to become reflective teachers or metalearners. It does show however, that further study in this area could prove useful and more conclusive.

SUMMARY

This chapter has brought together some of the theoretical frameworks and the research findings to see if there was any consensus between theory and practical experiences. In most cases they seemed to fit rather well, but that might be more to do with self-fulfilling prophesies. As mentioned in the next chapter, the main problem is that you have to believe what people tell you but they may be telling you what they think you want to hear or what they would have liked to have happened. Similarly, questionnaires were chosen that related specifically to teaching, so they couldn't easily be tested on non-teachers – most of the questions would be meaningless! Again the problem is, how can one avoid the problem of the self-fulfilling prophesy. Did I find out what I found out because that is what I was looking for?

Chapter 13 - The Research Process

> Not being certain is a competence, and it is not the easiest one.
> (Pierre Dominice, Keynote speech, ESREA conference,
> Canterbury, 2003)

INTRODUCTION

This chapter deals with some of the questions that arose when the research was being carried out. As the research proceeded I started to think quite hard about the nature of the research methods I was using and of my role within the research process. I tried to link my methods with those I had learnt about, and think particularly why I had chosen the methods I eventually was to use. I also considered the research I was doing now as compared to the limited research I used to do in the mid 1980's when I worked in the natural sciences on DNA sequencing (Cowan, Jellis, and Rickwood, 1986; Hughes, North, Jellis, Minor and Stanway, 1988).

Influences

In formulating this thesis I was guided by the major influences on me as I developed my understanding of social science research methods, particularly those used in education research. My first influences were in the ethnographic tradition as advocated by Martyn Hammersley, Sara Delamont, Paul Atkinson and others, during the research methods elements of my Master's degree with the Open University. Of course, other methods were introduced in the course, but ethnography particularly struck me as an interesting way of researching within the social sciences. The idea that research could be carried out by looking at very small groups of people, or even one person was appealing to me, acknowledging as it does the complexity of people's lives. Some of the varied methods of data collection used by ethnographers, and amusing accounts of researchers trying to take surreptitious notes of conversations they had heard in the staffroom on a newspaper, hoping that no-one would ask to borrow it (Hammersley, 1984) or whilst hidden in a children's Wendy house at the back of the classroom (King, 1984) seemed more like my experiences of research in schools.

Another method which I found particularly interesting was the life history or auto/biographic ideas put forward by Linden West, Liz Stanley and Pierre Dominice that I discovered when reading "Beyond Fragments" (West, 1996), "The Auto/Biographical I" (Stanley, 1992) and "Learning From Our Lives", (Dominice, 2000) and attending the 2003 ESREA conference on autobiographical methods in Canterbury. This method, drawing as it does on people's own accounts of their experiences and situating them within the frame of their previous experience and feelings seemed to me to be very valid in understanding people's relationships with education. The important point about the method being that people tend to describe themselves and their experiences in terms of the way they currently see the world around them and if this changes, due to new insights for instance, their descriptions will also change. This means that there can never be one universal version of events because everything we describe is couched in terms of our own experience and understanding. It is also valid in the case of the student teacher because their perceived view of their performance may be very different from views of others who were present. The mentor, student teacher and the pupil may give very different accounts of what happened in a particular lesson because of their individual experiences within the classroom at the time. The mentor may have seen a particularly good lesson because overall the planning and content was excellent, the student teacher may have felt that it was weak because one area of the delivery did not work as well as expected and the pupil may have experienced what was for them, just a normal lesson. The autobiographical model therefore implies that experiences should be described to others and shared with others for true reflection to take place. This, of course is the basis for the metalearning model as espoused by the Meyer and Norton group as detailed in chapter 3.

Since I had interests in both ethnographical and biographical methods, it would have been sensible to use one or both in my research. In fact though, when I came to plan it, it was just not possible. To carry out a truly ethnographic study would have required me to go into a school, speak to the staff and pupils and look at the situation as well as observing the trainee teachers teaching, making my own field notes as I went along. I was unable to do this, for a number of

reasons, the first being that I had no way of knowing which of my volunteers was likely to be happy about me trailing around behind them for the entire course. The second problem was one of access, it would have been extremely complex to negotiate access for myself at the two schools the trainee had been assigned to. The third and fourth are more pragmatic; I was working full-time whilst carrying out my research. I could not afford the time required for an in-depth ethnographic study. The last reason is that as a method it is much more inherently risky than other research methods, relying as it does on a large number of different sources of data, making the evaluation very complex.

On the other hand, I felt that a strictly biographic approach would also not be appropriate either. I did not want to give my volunteers any more work than I had to, because I was aware how time consuming and strenuous the PGCE course was. I was also worried that they might not be prepared to produce biographies of sufficient depth to be of much use. Both these problems caused me to reject the biographical method. In fact though, I managed to obtain quite a lot of information from the semi-structured interviews I carried out and was able to put my interviewees at their ease where they told me a lot about their ideas, plans, family situations and so on. The result was that although I was not able to base my investigations directly on either of these two traditions, I found it possible to draw on both sets of ideas when formulating my research.

For me the fascination of social science was its difference from the natural sciences and the associated problems that arose because of this. Due to its very nature, social science is situated within a very complex social framework and any attempts to control this framework or pretend that it has no effect on research seems to me naïve. Some have argued that this passivity, particularly as associated with ethnographic methods mean that nothing of value results. This has been staunchly refuted by many of the method's advocates, particularly Martyn Hammersley (Hammersley, 1994, Hammersley, 2000). Indeed, an alternate explanation of the methods' worth has recently been put forward emphasising the "fuzzy" nature of educational research (Bassey, 2001, Hammersley, 2001). These methods emphasise the passive nature of research which is remarkable by its being very different from the interventionist methods

of research as generally used in the natural sciences, although these too can make research difficult. Delamont and Atkinson, (2001) point out that although doctoral students in the natural sciences have a much clearer idea of what they need to do to carry out their experiments, they lack the physical skills required to make those experiments work.

I am more interested in how things are and capturing evidence about how people feel and what they do in specific situations than I am in what could be different or how things could be changed. For me, research in the social sciences is more to do with observation of what is happening and recording minutiae of social interaction than it is to do with interventionist research where trying to control for innumerable variables is very complex. With small samples such as I had access to, I feel it would be unwise and unscientific to generalise any small interventions I could make to a wider population. What I could do though, is to try to understand my subjects' experiences by getting to know them and their lives, for as Pierre Dominice put it at the 2003 ESREA conference "How can you understand the learning of a person if you ignore the complexity of their lives?".

One of the important things to do when evaluating any piece of research is not only to consider the instruments used carefully and decide whether they were useful or could be improved in the future, but also to evaluate some of the techniques and decide from a philosophical viewpoint, whether they too could stand improvement. A particular area of interest for me was the use of interviews, particularly in the ways that the interviewees decided to tell me their stories.

Use of Semi-Structured Interviews
All the methods that I used to carry out my research were based on self reporting by the volunteers I was studying, in this case within a semi-structured interview. Any type of self-reporting is a type of biography and in the case of all biographies, the author has to make decisions about what to mention and what to leave out. Too much information and the biography reads as a diary, too little and there is nothing of interest. What this means is that in any form of self-

reporting be it a biography or an interview, people are constantly deciding what to mention and what to leave out. We might tend to leave more out if we do not know the interviewer well, or if we do not wish to reveal a particular weakness. This means that the resulting dialogue does not necessary represent the entire truth of a situation, but a perceived truth. Commonly we report the results of these interviews or questionnaires without consideration as to whether they are true or not. Of course, we must assume to a certain extent that what our interviewees tell us is true for we often have no way of independently verifying their assertions. In this context however, I am not discussing truth in quite the same way but more the decisions people make all the time in the process of discourse in order to communicate effectively.

Put simply, in any discourse situation, we all decide what to put in and what to leave out, what to elaborate and what to state simply. By doing so we are putting our own spin on a particular narrative for the purposes of furthering the discourse. Let us be clear, this is not in any way a calculated ruse to deliberately mislead the interviewer, but more to make it easier for the conversation to continue whilst not being waylaid by unnecessary details.

As Liz Stanley so eloquently puts it, in this excerpt from her book "The Autobiographical I".

> "Auto/biography is not and cannot be referential of a life. Memory is selective: paradoxically a defining feature of remembering is that most things are forgotten or exist half-submerged to be occasionally and unpredictably propelled to the mind's surface - each of us is a Proust transfixed by a madeleine. Also constructing a life - piecing together various kinds and forms of remembrances of a self's past - is itself highly selective: selecting what fits a framework, selecting out what appears not centrally relevant."
> (Stanley, 1992, pp 128)

For the researcher though, the important thing to remember is that biographies (stories of people's lives) are being constantly invented and reinvented. There is no one universal truth because people's lives are always situated within a particular context.

What this means for interviewers is that although we can record what happened in an interview and the actual words used, we must always be aware that biographies are not produced under oath. If we asked slightly different questions or had a different relationship with the interviewee, then the answers they gave to our questions may well have been different. As recent ideas about chaos theory have determined, starting from the same point does not necessarily mean that the same situations come about, as the beat of a butterfly's wing can theoretically change the weather on the other side of the globe, asking one question in a particular way may well result in a particular set of answers and asking it in another may well result in a completely different set of answers. From the same starting point we could end up with a totally different interview.

The importance of situation is often ignored as well. My interviewees told me about how they saw things when they were interviewed. Of course this is an advantage as well because it is possible to compare their ideas at the start of the course from their ideas when they were near the end of the course. They might have different views now because their situation has once again changed. They will be working professionally as teachers now and will have a new world view. Their view now will be from inside the teaching profession and not from outside or on the fringes as they were when they were students.

Metalearning

I originally came across the term metalearning when reading papers on metacognition. At that time the term was unfamiliar to me, but it struck me as a very apt and concise expression to summarise the area in which I was working. This prompted me initially to read Norman Jackson's paper "Developing the concept of metalearning" (Jackson, 2004), from the metalearning edition of Innovations in Education and Teaching International, where he uses a narrative approach in an attempt to find a consensus on a meaning for the term. It seemed to me at the time and after reading other papers in the same volume, that the meaning of the term was still not clear and that although each of the contributors to the edition had a good idea of what they themselves felt about

the concept, it was still lacking a consensus. My initial thoughts of reasons for this may be:

- Metalearning is often referred to in other ways and using other words such as metacognition and reflection.
- Metalearning may well occur spontaneously for some people if their approach to learning is particularly reflective.
- Even with feedback, some students may not be analytical or reflective enough, or simply not concerned about improving their learning.

For myself, the term forms the basis of a higher level of reflection on learning and what that means in terms of encouraging my own and others' learning and that one of the key areas of the concept, that of teachers learning from their pupils and therefore informing their own learning, was missing from the analyses, but was nevertheless important enough to act as a focus for this thesis. My reasoning went along the lines that if metalearning concerns learning about learning, then the people who are most involved on a day to day basis are those for whom the understanding and reflection on learning are teachers, particularly as most teachers report that teaching a subject has meant that they themselves generate a greater understanding of it.

Using Qualitative Analysis Software

The choice to use a computer program to categorise themes within the data I had collected came quite late on in the research process. Having never used such software before I was quite sceptical as to its value, assuming that it would just act as a fairly simple database. Initially therefore, I chose to code my data by hand, reading through it and making notes as each new idea appeared. These notes were then collated to create theme groups for all the interviews. This worked reasonably well, but once I had used the software and was able to generate themes much more quickly and refer back to themes I had already created, combining them at a later stage, it became clear to me that using this method was infinitely more preferable as it allowed one to take a step back from the data and examine it as a whole. The software also allowed the creation of diagrams showing how themes might be related and this visual mode was

extremely helpful in examining links between the comments the volunteers had made. In the light of this, if I had to analyse similar data again, I would definitely use a computerised system to do it.

Assigning Learning/Cognitive Styles

Throughout this thesis I have made the point that learning/cognitive styles may well be domain specific and are not necessarily fixed. Learners may display a number of learning styles depending on the nature and content of the subject. However, it is almost impossible to draw conclusions from any piece of research that involves a measurement of learning style without making the assumption that it is fixed and immutable. Furthermore, this logic is extended to teaching style and the assumption is made that teachers use only one or two teaching styles. This again is a problem, because as has already been mentioned, teaching styles can be altered by all sorts of other factors including the subject being taught (can you teach drama or music just using reading and writing?) and the particular level of complexity of that subject. This is exacerbated by the situation in which the research took place because PGCE students would not necessarily have developed their own teaching style or may have been directed to use a style they would not normally use by their supervisor within the university or their mentor within the school.

The Effect on the Researcher

Carrying out my own research has made me think more carefully about the nature of research and the effects on the participants in that research. Researchers and those that are the subjects of research are two sides of the same system. As researchers we like to think of ourselves as impartial observers, but of course we are as involved in the process as those we research. By carrying out our research, especially if it is of a sociological nature, we are in the unique position to compare our own experiences to those of others, but crucially, although we are not revealing truths about ourselves, we are expecting our participants so to do. Ironically, the more they reveal about their drives and motivations the richer the final analysis can be. Are we not then intellectual voyeurs, asking others to lay bare their hopes and aspirations, their triumphs and misfortunes, whilst keeping our own feelings to ourselves?

I relate this to an experience that most teachers will have experienced whereby their understanding of a subject is enhanced every time they are required to teach it. Each new group they teach will contain members who have a different slant on the problem and will interpret it in myriad subtle ways. Some of these people will just be plain wrong but others may just have different ideas that are equally as valid. We teachers benefit from the discourse because each time we either refute the arguments put to us with reference to the 'truths' of the subject, or are able to add to our overall knowledge of the subject by adopting the new ideas into our notion of the scope of that subject.

Either way, the notion of the impartial observer is challenged, as Isaac Newton so clearly put it "Every action has an equal and opposite reaction" and this is as true in research as in any other area of life.

I contend also, that for fledgling researchers such as ourselves on doctoral research degree courses, the role of impartial observer is even less appropriate as a model for the process of research. We are learning our craft and therefore are likely to make mistakes, follow blind alleys and generally behave as learners do. In that case, our experiences can be nearly the same as those we are observing, particularly as in the case of this study where the subjects were learning to be teachers. Of course the stakes are higher for the doctoral student because not only are they learning their craft, but they often have a fixed time in which to complete their work. In this particular circumstance they are utterly dependant on the initial goodwill and continuing support of the subjects of their study. The research student is therefore particularly vulnerable and the experiences of carrying out the research may be as life changing (in terms of a positive experience or otherwise) as the motivations of the participants being observed.

One of the key elements of any study scheme is that it will lead to further opportunities. This means that one of the main motivations of studying such a course is the decisions about "possible selves". What is it that we want to be? It is as true for the doctoral research student as for the subject that he or she is also constructing a possible self, because he or she is now a researcher where

previously he or she was not. However, West (1996) points out that most of the literature about possible selves is couched in the terms of vocational achievement. So much so in fact that when people are asked in questionnaires "what will the qualification allow you to do?" they tend to answer in terms of vocational changes. Surely though, even greater changes and opportunities occur because of changes to our feelings of self than to merely vocational achievement. On reflection I believe that this too is reflected just as much in the researcher as in the participant. The researcher is just as likely to define themselves in terms of the research they have successfully carried out and the effects it had on them personally as to their chances of getting a job carrying out such research. The premise then, is that research does not occur in a vacuum, it affects the researcher as much as the researched. Both could be damaged by the experience, but if it handled carefully, both can gain a great deal from the process.

Sample size and content

As I expected, my sample of trainee teachers dwindled a great deal over the year that I carried out my research. Initially 25 volunteers contacted me but I was only able to interview about 8 of them face-to-face in the first few weeks of the course. Many more kept in touch by email and the responses were quite numerous but again, at the end of the course, I was able only to interview 6 volunteers. Although this number was small, it did enable me to get to know a few volunteers very well and I think that helped quite a bit at the interview stage.

The major criticism that is easily levelled at the sample I chose to work with is that it was self-selected in a number of key ways:
- Initially students volunteered to take part some for completely altruistic reasons and others because they felt that their contribution could make a difference to future students in their position.
- Volunteers also chose whether or not to take part in the email questionnaires. Only two students took part in all email questionnaires.
- Volunteers chose whether or not to take part in email interviews
- Volunteers chose whether or not to take part in face-to-face interviews

Some volunteers articulated their views why they were taking part. Some had carried out research themselves and wanted to show solidarity with other researchers, others were planning to do research in the future (the PGCE course was also an MA course) or had been convinced by their head of course to help out.

Either way, the self-selecting nature of the sample means that any findings are limited in terms of their being extrapolated to the population as a whole. Having said that, most people in my position have to rely on volunteers so it is not abnormal to end up in this situation. This brings me to a final conclusion, How much research is based on subjects who make good subjects and how representative are they of the population as whole?

SUMMARY

In this chapter I have tried to bring out some of the problems that have concerned me as I have carried out this particular study. Perhaps it is only when one is thinking hard about research and research methods that some of these ideas come to mind. For me it was problematical because like most doctoral students I had to decide fairly early on in the study on the methods to use and then live with that decision throughout the study. There were times when I began to wonder if any other research methods would be better, but rapidly came to the conclusion that they were equally as problematical. Indeed, the introduction of other research methodologies late on the research did mean that data had to be revisited and analysed from another point of view and this caused problems integrating the new data into the corpus of data already obtained. Conversely, the adoption of a new methodology also allows the researcher to examine the data from a new angle and perhaps make different and more valid connections than those previously made. These connections will obviously affect the ultimate conclusions arising from any piece of research, this being the subject of the next chapter.

Chapter 14 - Conclusions

This chapter summarises the conclusions made in the rest of the thesis and also looks at other conclusions arising from the study. It reiterates the research questions and my conclusions as well as raising some other questions about the research process as a whole.

RESEARCH QUESTIONS

Does following a PGCE course encourage trainee teachers to develop a sense of metalearning?

In the sense that following the PGCE course encourages reflection, for instance in learning logs, essays and in planning documents and also because learning about other people's learning is likely to promote reflection on one's own learning, then it could be said that the course does indeed encourage trainee teachers to develop a sense of metalearning. There were obvious examples where trainee teachers reflected on the differences between the way they learnt and the way their pupils learnt, and also evidence to show that they had considered very carefully what the consequences of those differences would mean in terms of what they did in the classroom. However, there was no clear evidence from the information I collected that the trainee teachers did indeed develop a greater sense of their own metalearning. It could be argued though, that developing a sense of metalearning in PGCE students, for instance by asking them to reflect on the results of the RoLI™ or a similar test, may well help them to understand their own learning more clearly, particularly as they are having to focus on new ways of learning anyway as a part of their course, and go a lot further towards fulfilling the aim of providing a teacher training course based on the reflective practitioner model.

What evidence is there that trainee teachers' perceptions of learning change as they progress through their PGCE course?

At the start of their course most trainee teachers had a very stylised view of what teaching was and how it was carried out. This view would have been made up of ideas from their experiences as pupils and students, television programs, observations of teachers or discussions with relatives who were teachers. At this time they may not have been aware of the concept of teaching or learning styles or the needs of the pupils they will have to teach. Their teaching styles would have been an amalgamation of all these influences.

Once they had been made aware of the existence of different learning and teaching styles on their PGCE course, particularly during the Learning Styles Conference, they were then able to re-examine their position in the light of this new knowledge, adopting the role of a reflective practitioner. Every one of the volunteers I interviewed felt that this was one of the most important experiences of their PGCE course and this was particularly marked amongst those who held postgraduate degrees. Contrary to my notion that these volunteers might have difficulties comprehending the problems associated with pupils who were not as academically gifted as themselves they were among the most accepting of these ideas. In general they felt that pupils in schools both Primary and Secondary did not think or learn in the way that they did, but felt that it just meant that they had to be more accommodating to individual styles of learning in the way they presented their lessons. It seemed though, that the learning styles information they were presented with was delivered in an uncritical fashion and there was no mention of the large amount of debate within this area.

What other factors might indicate that people would be more reflective thinkers, and how may they be tested?

From this research it seems obvious that more information obtained from the prospective PGCE student would be useful in deciding their ultimate suitability for the profession, particularly if the ability to think reflectively was considered an important aspect of becoming a successful teacher. The tests carried out

during this research indicated that the volunteers did show some of the features associated with successful teachers and metalearners, that of being deep learners who had medium to high levels of intrinsic motivation and self-efficacy. However, there were problems associated with using such tests concerning four main areas.

1. The first is that without a control group it is impossible to say if these features are true of trainee teachers, the volunteers that agreed to take part in my research or of the population generally. Testing a wider range of volunteers including those following other postgraduate qualifications might have resolved this issue.

2. The second problem area concerns the fact that some of the questionnaires used related directly to student experiences of teaching – they would have had no relevance if carried out before the volunteer had experienced working in a classroom. This means that the questionnaire would not be relevant to other students and that it could not be presented to would-be teachers as part of their selection process.

3. The third problem area concerns the poor responses obtained for most of the questionnaires. Only two volunteers actually completed all the questionnaires , so a complete panel of data is missing. It may also be that if the volunteers that did not complete the questionnaires had completed them, a totally different conclusion would have been reached.

4. There was no evidence of causality. Just because students displayed these traits did not mean that they would definitely be better metalearners or teachers. These were only associations, not essential factors.

The conclusion must therefore be that although other tests could be used as part of the selection process, they may not provide enough extra information to inform a decision and may indeed serve to confuse the issue.

Other Questions

As with any study, there are five main questions to ask in order to evaluate the significance and merit of any piece of research. These are:

- Was it interesting?
- Will anyone find it useful?
- Did you find out anything new?
- Do you have any suggestions for further research?
- What did you (the researcher) learn?

Was it interesting?

The answer to the first question is easy – of course it was interesting! One thing that you can be sure about is that people are interested in the experiences of other people, particularly if their experiences are in areas of public interest. We hear a lot from politicians about what it is teachers should do and sometimes even how they should do it, but real-life accounts of the trials and tribulations of real people – flawed people like ourselves, trying to make the best of new situations is bound to be interesting. Obviously, I was able to recollect the delight on people's faces when they recounted to me the experiences they had had in the classroom or the excitement when they had a particular breakthrough, but even though this cannot be experienced by the reader, the sheer exuberance of some of the participants was infectious.

One of the highlights was the excitement Emma experienced when she found out that her supposedly street-wise Year 9 class were enthralled by her toy rockets, closely followed by Matthew's impromptu in-depth analysis half-way through an interview of the problems children have with copying from the blackboard and Ian's sudden realisation that the "quick and dirty" methods he had invented for himself as an engineer to solve tricky maths problems were now presented as legitimate problem solving approaches within the curriculum.

Just as interesting were the experiences of Scott, who dropped out of the course. I admired his courage at coming to talk to a complete stranger, especially when the problems he had suffered were still very real to him.

For me personally, the study proved something of a catharsis. My own experience of the PGCE was not a pleasant one and although I qualified as a Secondary Biology teacher, I never taught in a state or any other school. It did however, have a massive effect on me in terms of my own understanding of teaching and learning that I used for many years teaching adults and unemployed school-leavers. Being able to re-live my PGCE experience vicariously through the trials and tribulations of others was very valuable to me personally and other readers may also experience this, or some other reaction that affects them as strongly. It would also be interesting for those who were thinking about becoming a teacher or wanted a different understanding of what metalearning is and how it relates to other ideas involving reflection.

Will anyone find it useful?

The answer to this second question is not so easy. It is well known that a thesis such as this will have a very limited audience. Very few people will ever read it, and those who do may well dismiss it as "just another thesis". I sincerely hope that some people do read it though. I think that it would be useful to anyone who was interested in enrolling on a PGCE course to find out what it is really like teaching in a school in the 21st century. It is only through the words of my interviewees that one can really get a feel for what is involved, the terror of facing a class for the first time, the elation when lessons go well and the sheer hard work that no-one ever sees that goes into making sure that a lesson is planned well enough to advance the learning of the class for which it is intended. As such, I have tried to make it as accessible to the lay person as possible, given the constraints of writing in the form of a thesis. This is the main reason why I chose to use so many direct quotes from the subjects I interviewed. They seem to supply a vibrancy to what could otherwise be quite a dull text.

I think it will also be useful to any provider of Initial teacher training, supplying as it does up-to-date information about the progress of a PGCE course from the viewpoint of the volunteers on the course. Because of the tutor-student relationship it may not normally be possible for volunteers to talk as frankly about their experiences of the course in general and their individual teaching

practices. It may be that someone reading this thesis might find the need to change their course delivery a little, or monitor volunteers on teaching practice more closely, in the light of the revelations presented here.

Finally, it might also go some way to providing a little more evidence for those people who are concerned with the recruitment and retention of teachers.

Did you find out anything new?

Any research project will find out something new, if one looks hard, even at the familiar, one can detect new patterns and ideas forming. In the case of this research it provided a longitudinal study that as far as I could ascertain, had not been carried out before. This provided valuable insights into the experience of teaching practice in the volunteers own words. It also allowed the observer a glimpse at the developing skills and ideas of trainee teachers.

In terms of methodology, I tested out some different methods of data collection (using email) in a particular environment where they hadn't been tested before. I applied some established techniques, such as interviewing and particular choices of questionnaires in combinations that possibly had not been used before. I also used a qualitative data processing package for the first time. More importantly, I used the combination of studies in Lifelong Learning, Educational Policy, Motivation, the use of Biographies and the study of particular sociological and educational research methods that I had been taught and read about on the doctoral and other academic courses and conferences I had attended and brought them to bear on a particular situation at a particular time. More importantly though, I was able to give a voice to PGCE volunteers as they followed the course. Their thoughts and feelings are as they experienced them at the time rather than how they feel now after reflection. This raw reporting makes the study come alive and provides a great deal of momentum. I have not been able to find another book or paper that provides insights in quite this way and to me, that makes it very exciting. Hopefully then, one of the participants in this study will read this thesis. If they recognise themselves amongst the anonymised quotes, maybe for them it will provide a new learning experience and allow them to understand their learning and the learning of others that much better.

<u>Do you have any suggestions for further research?</u>
There seems to be a large amount of scope for either large-scale or small-scale investigations into teacher training, particularly in the light of very high levels of teachers leaving the profession and newly qualified teachers not taking up a teaching post at the end of their training. This would allow researchers to find out more about the factors that cause newly trained teachers to reject teaching as a career and if possible, put measures in place to reduce this.

A number of study methods for small scale investigations would be useful. Among them could include and ethnographic approach or case study by mentors or facilitators within the school. Similarly, an extension of the learning log could result in an autobiographical approach to PGCE student study.

In terms of larger scale studies it would be interesting to carry out parallel studies on groups of students in the same year but in different geographical areas, either within one country or internationally. This would yield information about key themes and experiences within teaching practice and perhaps highlight areas where problems arise because of the area within which the teaching practice is performed. Possible interventions using the ROLI™ and discussions with tutors about learning might improve the metalearning capacity of the students which might have an effect on their ability to provide meaningful learning opportunities for their pupils.

A very large scale study could canvass opinions from students within a whole year as to the appropriateness of their training and their experiences whilst in college and on teaching practice. This type of study could yield information about how suitable current teacher training courses were in terms of actually training students to carry out the work of a teacher competently. If extended into the first or second year of teaching it could then examine teacher retention. Having data about previous teaching experiences would allow a search for any correlation between teacher training experiences and subsequent rejection of teaching as a career.

<u>What did you (the researcher) learn?</u>

Ultimately though, the greatest learning experience is likely to be my own. As with any course of research I have had to find out the current ideas within the subject and the main authors who are currently working in the field. I have had to develop, evaluate, trial and refine questionnaires, interview questions and other instruments. I have had to develop an interview technique and transcribe interviews efficiently. When interviewing I had to learn to put interviewees at their ease and pursue ideas that developed during the interview, whilst at the same time making sure that all the questions I wanted to ask were covered.

Once the data had been collected I needed to sift, sort and collate in order to make sense of what I had discovered. Once I decided to use a computer system to do the same job I had to revisit all my interviews and re-code them. I then needed to present the information in a formal, but comprehensible and accessible way. Fundamentally, my experience has been of the ultimate metalearner, someone learning about trainee teachers learning about their own and their pupils' learning. I believe that learning about the concept of metalearning has made me more reflective and focussed on learning, both my own and others'. Philosophically it has made me re-evaluate my thoughts on how people learn and on the ways that people behave generally. The process has led me on a journey through the process of a small research project with the consequent pitfalls and successes on the way to writing this thesis, the largest document I have, or am ever likely to, write. As with all studies of this type it will have the greatest effect on me because I will have learnt more than anyone else during the project. Those lessons I have learnt will affect the way I see things in the future. There is a great truth in the idea that education is a journey and it is while travelling rather than when we reach our destination that we learn the most.

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Appendix 1 – Consent Form

TITLE OF PROJECT:

(The participant should complete the whole of this sheet himself/herself)

Please cross out as necessary

Have you read the Participant Information Sheet?	YES / NO
Have you had an opportunity to ask questions and to discuss the study?	YES / NO
Have you received satisfactory answers to all of your questions?	YES / NO
Have you received enough information about the study?	YES / NO

Who have you spoken to? Dr/Mr/Mrs/Ms/Prof. ....

Do you consent to participate in the study?	YES/NO

Do you understand that you are free to withdraw from the study:

* at any time and
* without having to give a reason for withdrawing and
* without affecting your position in the University?   YES / NO

Do you understand that tape recordings may be made of any interviews carried out and that material from these recordings may be used for the purposes of the project?

YES / NO

Signed .... **Date** ....

(NAME IN BLOCK LETTERS) ....

Signature of witness .... **Date** ....

(NAME IN BLOCK LETTERS) ....

Appendix 2 – Notes For Guidance

Becoming a Teacher - What's it really like?

A study conducted by Christopher Jellis, part-time doctoral student at the University of Durham for the purpose of producing a doctoral thesis.

Notes for guidance for volunteers

1. This research project is concerned to find out students' experiences of PGCE courses with particular reference to their learning and the learning of their pupils. The study will include trainee teachers on both Primary and Secondary courses. The methodology involves questionnaires, the use of email and other face to face methods in order to build up a diary of experience over the course. Volunteers will be encouraged to express their views of their current progress, feelings about their school placement and their general life experiences whilst on the course. The aim is to understand students' experiences and understanding of learning, both in the context of their work as a teacher and in their life as a whole.

2. Given the potentially sensitive nature of the material, you have an absolute right to refuse to answer any questions as well as to withdraw from the research at any stage. I will be careful not to push you into directions you do not wish to go, or to assume the role of therapist.

3. You have the right to withdraw retrospectively any consent given and to require that your data be destroyed.

4. You have an absolute right to anonymity and can, if you choose, select a single first name by which you will be known throughout the study.

5. Thank you for your help and contribution to my research.

Appendix 3 – Preliminary Questionnaire

Article II.   Becoming a Teacher – What's it <u>really</u> like?

Lots of studies have been carried out on pupils in all areas of education but there is very little about the experiences of people learning to be teachers. I want to follow a group of students on a PGCE course for a year and find out what its really like to learn to teach in the 21st century. If you would like to take part, please fill in the following questionnaire and return it to me.

1. About you:

What is your name?   ....

Are you   female?   ☐
                               male?   ☐

What is your age group?   21 – 25   ☐
                               26 – 30   ☐
                               31 – 35   ☐
                               36 – 40   ☐
                               41 – 45   ☐
                               46 – 50   ☐
                               51 – 55   ☐
                               56 – 60   ☐
                               over 60   ☐

What is your current highest level of academic qualification?

		Subject
bachelors degree (or equivalent)	☐	....
masters degree	☐	....
doctorate	☐	....
other (please specify)	☐	....

What subject are you specialising in for your PGCE?

....

2. About training to be a teacher

Why did you decide to study for a PGCE?

....

....

Why did you choose Primary / Secondary? (delete whichever is inapplicable)

....

....

What are you most looking forward to about being a teacher?

....

....

....

....

What are you least looking forward to?

....

....

....

....

What are the most important things that teachers do?

....

....

....

....

....

....

Thank you for taking the time to complete this questionnaire.

Appendix 4 – First Interview Questions

What is teaching <u>really</u> like?

Interviews held on 23rd October 2003

Introductions

Names, specialist subjects schools

1. First impressions of school

What's it like...
- pupils?
- being called Miss/Mister?
- teachers?
- resources?
- discipline?
- environment?

2. What lesson planning have you done so far and what do you think about it?

3. What motivates you to want to teach?

4. What are you looking forward to/ not looking forward to when teaching on your own?

Appendix 5 – Final Interview Questions

Questions for Interview - 4 May 2004

1. Can you give some information about the school where you're doing your current practice? Classes, accommodation, staff, facilities, etc.

2. Primary teachers have to teach the entire curriculum, even though they may not know much about the subject. How well prepared do you think you are to teach the entire curriculum?

3. Has your understanding of how people learn changed since you started the course, and if so, how?

4. Do you think that your students learn in the same way that you learn? What is different about their learning compared to yours?

5. If someone you knew was planning to teach, what advice would you give them, and what would you tell them was the most important thing that they needed to know as a teacher?

Appendix 6 – Intrinsic Motivation Questionnaire

TEACHING YOUR FIRST FEW LESSONS

Intrinsic Motivation Inventory

For each of the following statements, please indicate how true it is for you, using the following scale:

1	2	3	4	5	6	7
not at all true		somewhat true		very true		

1. I think teaching my first few classes could help me to develop my skills.
2. I felt like it was not my own choice to do this lesson.
3. I think this is important to do because it can develop my skills.
4. Teaching on my own is a valuable activity.
5. Teaching was fun to do.
6. I didn't try very hard to do well.
7. It was important to me to do well.
8. I didn't put much energy into this.
9. I was anxious.
10. I would be willing to do this again because it has some value to me.
11. I think this is an important activity.
12. I didn't really have a choice about doing this lesson.
13. Teaching did not hold my attention at all.
14. I thought teaching my first lesson was quite enjoyable.
15. I think that teaching a class is useful for developing my skills.
16. I thought teaching was boring.
17. Teaching was an activity that I couldn't do very well.
18. I think I am a pretty good teacher.
19. I believe I had some choice about what I taught.
20. I did this lesson because I had to.
21. I enjoyed teaching my first lesson very much
22. I think I did pretty well at my teaching, compared to other students.
23. I am satisfied with my performance at this task.
24. I believe teaching on my own could be beneficial to me.
25. I did not feel nervous at all while teaching.
26. I felt pressured.
27. I did this lesson because I wanted to.
28. I tried very hard.
29. I did this lesson because I had no choice.
30. While I was teaching, I was thinking about how much I enjoyed it.
31. I was very relaxed when I was teaching.
32. Teaching is very important.
33. After teaching for a while, I felt pretty competent.
34. I was pretty skilled at teaching.
35. I put a lot of effort into this.
36. I felt very tense while teaching.

Appendix 7 - Study process Questionnaire

This questionnaire has a number of questions about your attitudes towards your studies / your usual way of studying.

There is no right way of studying. It depends on what suits your own style and the course you are studying. It is accordingly important that you answer each question as honestly as you can. (If you think your answer to a question would depend on the subject being studied, give the answer that would apply to the subject(s) most important to you.)

Please type the letter for one most appropriate response at the end of each question and email it back to me. Do not spend a long time on each item: your first reaction is probably the best one. Please answer each item.
Do not worry about projecting a good image. Your answers are CONFIDENTIAL.
Thank you for your cooperation.

There are 20 questions. You will need to answer each question with one of the following letters (A to E).

A - this item is never or only rarely true of me
B - this item is sometimes true of me
C - this item is true of me about half the time
D - this item is frequently true of me
E - this item is always or almost always true of me

1. I find that at times studying gives me a feeling of deep personal satisfaction.
2. I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.
3. My aim is to pass the course while doing as little work as possible.
4. I only study seriously what's given out in class or in the course outlines.
5. I feel that virtually any topic can be highly interesting once I get into it.
6. I find most new topics interesting and often spend extra time trying to obtain more information about them.
7. I do not find my course very interesting so I keep my work to the minimum.
8. I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.
9. I find that studying academic topics can at times be as exciting as a good novel or movie.
10. I test myself on important topics until I understand them completely.
11. I find I can get by in most assessments by memorising key sections rather than trying to understand them.
12. I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.
13. I work hard at my studies because I find the material interesting.
14. I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.

- 168 -

15. I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.
16. I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.
17. I come to most classes with questions in mind that I want answering.
18. I make a point of looking at most of the suggested readings that go with the lectures.
19. I see no point in learning material which is not likely to be in the examination.
20. I find the best way to pass examinations is to try to remember answers to likely questions

Appendix 8 – Teacher Self efficacy Scale

Teacher Self-Efficacy is to do with the amount that a teacher feels that they have influence over the environment in which they work.

Please use the scoring key below and indicate how much influence you have in the following situations.

1 = Not at all
2 = Very little
3 = Some influence
4 = Quite a bit
5= A great deal

1. How much can you influence the decisions that are made in the school?
2. How much can you express your views freely on important school matters?
3. How much can you do to get the instructional materials and equipment you need?
4. How much can you do to influence the class sizes in your school?
5. How much can you do to get through to the most difficult students?
6. How much can you do to promote learning when there is lack of support from the home?
7. How much can you do to keep students on task on difficult assignments?
8. How much can you do to increase students' memory of what they have been taught in previous lessons?
9. How much can you do to motivate students who show low interest in schoolwork?
10. How much can you do to get students to work together?
11. How much can you do to get children to do their homework?
12. How much can you do to get children to follow classroom rules?
13. How much can you do to control disruptive behaviour in the classroom?
14. How much can you do to prevent problem behaviour on the school grounds?
15. How much can you do to make the school a safe place?
16. How much can you do to make students enjoy coming to school?
17. How much can you do to get students to trust teachers?
18. How much can you help other teachers with their teaching skills?
19. How much can you do to reduce school dropout?
20. How much can you do to reduce school absenteeism?
21. How much can you do to get students to believe they can do well in schoolwork?