

**SCHOOL OF EDUCATION
UNIVERSITY OF NOTTINGHAM**

**The Acquisition of Information and Learning
Technology Skills by FE Teachers.**

By

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Abstract

The core of this thesis is to investigate the perceptions of teachers in Further Education (FE) when dealing with the continuous change caused by the expansion of information and learning technology (ILT). This thesis also identifies the potential links between the increase in the range and availability of learning technology and the development of self-directed and student-centred learning. It explores the perceptions of practicing teachers with reference to their personal development and if such development indicates compliance with adult learning theory. It also analysis the external pressures placed on FE colleges and their teaching staff due to the development of ILT and the related governmental policy.

The thesis regards teachers in the FE sector as a unique group of adult learners with a wide range of experience, qualifications and entry routes into the profession. It investigates a sample of teachers using questionnaires and focus groups analysing their perceptions of ILT, preferred learning styles, identified needs and

self evaluation techniques and analysis any correlation between these factors and the biographical parameters obtained from the questionnaire responses. An aspect of the investigation was to analyse how teachers became proficient in the use of ILT, routes staff use to obtain the skills and knowledge required and if the aspects of adult learning theory are being applied.

A related aspect of this research is the investigation of whether the perceptions of teacher of their personal development experiences related to ILT indicate if an FE college is or can become a “learning organisation” and if such a concept is valid for the FE sector.

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Chapter One

Introduction

1.1 General Introduction.

The title of this thesis is *A Case Study Of The Processes Which FE Lecturers Adopt To Gain The Required ICT Skills Which They Use in ILT Development*. It is a study of how high level Information and Learning Technology (ILT) practitioners reach their level of competence and whether the apparently effective learning routes adopted are relevant to all teaching staff.

The core of this thesis is to investigate the perceptions of teachers in Further Education (FE) and their preferred learning routes with the *assumption* that they are a unique group of adult learners who need to be able to deal with a climate of continuous change.

This thesis identifies that change exists at an accelerating rate and that it is well established in a broad social sense. It concentrates on the effects of new technology as a particular example of this continuous change. The effects on FE colleges are researched, specifically on the teaching staff, identifying the effects of the continuous introduction of new technology.

The expansion of information systems and the related technology is an established contemporary social characteristic; this has produced a global communication system which is expanding at a fast rate. The growth of information system technology is having a specific effect on the providers of education and training, and their students. The change taking place in this area of technology has generated a need for education to equip students, not only to learn how to use the current technology, but also to be able to handle continuous change in the future (LSC,2002; DfES,2002).

It is assumed that people need to have the ability to cope with change as a permanent aspect of living and this creates a link to

the concept of lifelong learning. Education has to support students in a constantly changing environment and recognise that these people need to handle change and adapt to any new technology, as it emerges, throughout their lifespan.

This thesis identifies a link between the effects of the expansion of new technology and the drive for self-directed learning; it explores whether, in the training of already practising FE teachers, adult learning theory is used (see footnote 1). Teachers need to develop the same ability to handle change and adapt to new technology as their students. They are effectively a group of mature learners experiencing the same pressure as their students, with a need for lifelong learning. The hypothesis that adult learning theory is not being adopted in the development of this group is posed.

Footnote 1; the question is whether the concept of andragogy and environment is relevant to the training of teachers as a specific group of adult learners

This investigation highlights the effects which new technology is having in moving towards a more student-centred environment and the processes that are affecting the relationship between learner and teacher. It analyses the effects of the change in this relationship as a result of the advancements of ILT, specifically in FE colleges. It also considers the circumstances of teaching staff and the pressures on them to maintain continuous professional development in ILT.

This study investigates the external pressures which are being placed on FE colleges due to ILT, and the changes being caused in terms of the implications for the skills needed by teaching staff. A study of governmental policy identifies that Colleges are being *pushed* in the direction of self-directed learning and a student-centred approach and identifies that there is a link between the advances in information and learning technology, lifelong

learning, and government policy which has set targets for FE colleges.

These targets detail the necessary provision and acquisition of new technology and the requirement to make technology accessible to students. The study identifies that external pressures have led to colleges introducing “individualised learning” and incorporating the use of differentiation and flexible delivery. The effects on individual learners and the range of “learning styles” which should be available to them are identified in the policy and establish a link to the use of individual learning plans.

The policy of the government to increase the importance of differentiation and individual learning plans, and the growth in new technology, has enabled a wider range of learning styles to be introduced, moving the sector towards a student-centred, individualised learning structure. While this is a need for learners the teachers will need to adapt to the change in relationship and themselves engage in a learning process as individual adults.

Colleges provide education and training to the 14-19 cohorts as well as to adult learners, using *full-time*, *day release*, *block release*, and *short course* methods of delivery; they have also moved into distance and e-learning provision, and commercial training. They have changed, from what was regarded as the old '*technical college*' role, to the provision of what is now a wide spectrum of work, ranging from basic skills and specialist vocational training to higher education.

The rapid change in technology and the effects of this on the learning environment are examples of a permanent state of change in FE colleges, and these conditions appear to be having implications for and effects on the teaching staff. This research adopts the *assumption* that FE college teachers (also sometimes referred to as lecturers) are, as previously stated, a unique group of adult learners, who have a need for lifelong learning, have to develop their ILT skills, and have to be able to adapt to continuous change. They are a group of mature adults who have their own learning needs. This is highlighted by the example of the skills they need to attain in order to use ILT.

This group of adult learners is composed of people who have a variety of backgrounds and have different routes of entry into the sector. Some of them are primarily teachers within their subject areas, while others are vocational specialists by origin, at trade or graduate level, in areas such as catering, electrical installation, plumbing, business studies, and technology, for example; these have entered teaching as a career after a period of “professional” practice . This second group has commercial or trade skills in a specialist subject, and enter the sector from a range of academic backgrounds; they are then trained as teachers or instructors.

Teachers in a college are therefore a group of adults with a wide range of experience, qualifications and entry routes; they are also being employed either on a part-time or full-time basis. They support learners of all ages, meeting their needs for the attainment of pure vocational skills, basic skills, key and academic skills.

This research investigates whether adult learning theory is being used in the development of teachers and if they are behaving as self-directed learners. The study does not address the broad needs of students as a specific element of the research but instead concentrates on the demand for personal development caused by ILT on the part of teachers.

Teachers in an FE college are being expected to increase their use of ILT and to enhance the learning experience of students by using recently developed technology in order to equip such students for the environment of continuous change. This research seeks to illuminate the ways in which practising teachers negotiate the demands emerging from such academic goals

In the context of the current understanding of issues in this area, it has been acknowledged that much of the current information has been collected via electronic means, for example using on-line questionnaires(BECTAa, BECTAb, LSDA 2004) . Consequently this may not include responses from teachers with low levels of confidence in using technology or those who have restricted

access. This research is attempting to include the views of all teaching staff by using paper-based questionnaires and focus groups, thus exploring whether data collection methods are a significant issue.

As mentioned above, ILT is increasingly having an effect on teachers and the opportunities of learners, changing the relationship between learner and teacher. Teachers in the FE sector are being expected to increase their range of skills, which, in turn, are being influenced by the fast development of technology. This has added elements to the range of skills they are expected to have while not being a replacement for traditional teaching skills.

This study will also investigate the range of learning styles used by teachers while they are being trained to respond to the effects of ILT and to develop skills in the use of the technology in their teaching. The Further Education and Training Organisation (FENTO) has produced a set of standards for FE teachers on the application of ILT to teaching and learning in Further Education

(2002). This outlines what skills teachers are expected to have and these criteria are used as basic reference points in this study.

The staff training programmes used by colleges to develop IT/ICT skills have used the FENTO standards as a reference. This skill base, specified by FENTO, is in response to the original recommendations suggested in the *Report of the Learning Technology Committee (The Higginson Report, 1996)*, which is reinforced by the recommendations of the British Educational and Communication Agency (BECTA (c) , 2004).

Current technology is being used as an aid to lesson and course preparation, in the formation of interactive learning materials, and is being used in the classroom to aid accessibility for students. With increased accessibility to information and support, using developments such as distance learning, Virtual Learning Environments (VLE), e-learning, and general methods of communication(for example, text, web pages and chat rooms), it is also changing the experience outside the classroom.

This introduction of technology into education is also affecting the management of institutions with IT being used to improve the information systems and encourage the general use of e-mail to aid communication among staff and students. The Internet is also being used to communicate with outside bodies. For example, it allows communication with the funding and awarding bodies and also enables access to college websites. This research does not seek to analyse management and business support elements, or the experiences of students as specific items, but will study whether the concept of “learning organisation” is appropriate for FE colleges.

This is primarily a study of the effects on teachers of the fast-changing rate of technology, looking at their perceptions and preferred learning styles. It also investigates the well-established theories of what makes a learning organisation and postulates whether it is feasible for FE colleges to become learning organisations to deal with the climate of continuous change.

In light of the above circumstance it may be regarded as necessary for colleges to adjust their structures to have the ability to react to continuous change, and to provide the correct culture for the staff to cope.

This development of technology and its use in education is causing the formation of a number of terms and abbreviations, which are causing confusion. The different sectors in education have different interpretations of these terms. For example, ICT in schools is used as a general term covering the general use of computers and as a subject title in the curriculum. In Higher Education, however, ILT is a term used to refer to the Institute for Learning and Teaching.

In order to prevent misinterpretation, the definitions of terms used in this research are those used by FENTO (2002) which were originally used in the *Report of the Learning Technology Committee (The Higginson Report, 1996)*.

There are three basic terms, which are defined as follows:

Information Technology (IT): The computer infrastructure, hardware and software used to process data and deliver information.

Information and Communication Technology (ICT): The combination of computing and communication (including computer networks and telephone systems), which connects and enables some of today's most exciting systems, for example, the Internet.

Information and Learning Technology (ILT): This is used, in Further Education, to refer to the use of information and communication technologies to support the core business of colleges: the delivery and management of learning.

(Source: ILT, Standards for the application of ICT to teaching and supporting learning and management in Further Education, FENTO, published by LSDA, 2002).

1.2 Research Aims and Objectives

This research is investigating the perceptions of a sample of teachers in an FE college by researching two main core themes: how teaching staff who are already high level users of ILT achieved their level of use, and whether the routes they used, or which are made available are appropriate for all teachers; and, secondly, if such provision relates to adult education theory.

The focus of this research is the teaching staff in a typical Further Education college, analysing their perceptions regarding preferred learning styles, their needs, and their self-evaluation methods. Biographical data has also been collected to analyse if there is any correlation between biographical factors and the specialist curriculum areas of staff. Previous research has indicated that

gender and age may be an element affecting staff development (BECTA(c) , 2004).

The study also investigates the skills teachers need, due to the effects of technology, and whether there are any significant issues emerging concerning training methods. This includes the implications for formal staff development strategies and staff perceptions about this training. In this study, using questionnaires and focus groups, teachers are asked, as already stated, what their perceptions are of the ILT skills they need, the learning styles they adopt, and how they evaluate their training.

It was an objective to identify, by using a questionnaire, a group of teachers who use ILT on a regular basis. This group was then used as a population from which focus groups were created. The outcomes from the focus groups were used to identify the key factors for a second, major questionnaire. This second questionnaire was circulated to all teachers and was used to identify the elements of ILT being used to support learning.

The process adopted was:

- An initial questionnaire was sent to a sample of teachers.
This was a basic questionnaire to identify a population of regular ILT users.
- Focus groups were used to identify key factors and obtain the views of the regular ILT user population; the results were used to aid the formulation of the second questionnaire.
- A second questionnaire was sent to all teachers covering the three key factors identified from the focus groups.

All stages had a pilot and all stages were paper based.

Using the responses obtained from the questionnaires and focus groups, an attempt was made to identify any significant general trends or correlations within the constraints of the study. It was also decided to restrict the research to teachers already practising, as opposed to those undergoing teacher training. The study specifically looks at teaching staff development and perceptions related to change caused by ILT in a FE college. It does

not analyse student, management or business support issues related to the effect of technology.

The study also investigates whether adult learning theory is being considered in the development of teachers in the field of ILT, and if it is viable for FE colleges to be considered learning organisations in the context of how teachers develop their skills.

1.3 Research Questions

FENTO has created a set of standards for the application of ILT to teaching and learning in Further Education and a set of proposed elements for a suitable qualification. Colleges have adopted staff development policies to meet the increasing skills and knowledge needs related to ICT in general and these ILT standards. This research analyses to what extent it is reasonable to assume that ICT trained staff can, and do, integrate these skills into their teaching and use of ILT.

The main emphasis of this research is to investigate how teaching staff become proficient in the use of ILT, the routes the staff appeared to use to gain the skills and knowledge required, and their perceptions of ILT. It also explores whether adult learning theory is being applied in any development, and whether the concept of a college becoming a learning organisation is relevant.

The research questions are:

- How are FE teachers identifying and evaluating their ILT needs and do they perceive their ICT skills are adequate?
- How do FE teachers identify their preferred learning style or route when developing their ILT skills?
- Are the years of teaching experience, curriculum area, age , gender or qualifications relevant to the perceptions of FE teachers when reacting to the changes caused by continuous development of ILT ?
- Do the perceptions of teachers indicate that adult learning theory is being utilised as part of their learning experience?
- Is the concept of FE colleges becoming learning organisations viable or relevant?

1.4 Significance of the study

As previously stated, the need for teachers to develop their ILT skills is well established. What this research addresses is how teachers in FE colleges are developing their skills. A number of surveys have been undertaken regarding the ILT resources colleges possess and the ICT skill levels of teachers, with the majority using electronic communication methods (BECTA(a)2004, BECTA(b) 2004, LSDA 2004). This study is paper based and one aspect of the outcomes relates to whether there are any significant similarities to or differences from previous surveys.

This study investigates how teachers obtain the skills required; it considers their preferred learning style, biographical characteristics and whether emergent patterns show any correlation to previous research. The previous surveys indicate that the years of experience in teaching and gender have a significant correlation with the acceptance of ICT and ILT development (BECTA(a)2004, BECTA(b) 2004, LSDA 2004). This research attempts to see if such factors reappear or whether

there are any additional emerging factors, (for example, the particular curriculum area a teacher specialises in, the entry route into the career of teaching, the level of teaching qualification, or age).

Finally, this research explores the assumption that teachers are a group of adult learners and investigates if adult learning theory is being referred to in the staff development plans, strategies or options available. Related to this issue is also the assumption that FE colleges need to become true learning organisations, and so this study investigates whether such a concept can actually be transferred to education and be viable and/or relevant, specifically to the development of teachers in FE.

1.5 Structure of the thesis.

Chapter two is a review of the literature associated with teachers adopting the use of technology in FE, adult learning theory and the theory of learning organisations.

Chapter three summarises the growth of ILT in the FE sector over the last ten years, and is a study of why ILT has become an issue in the sector, and the effects, specifically for teachers, that have emerged.

Chapter four provides the research methodology and the related research instruments.

Chapter five contains the results and analysis of the data from the questionnaires and focus groups.

Chapter six discusses the research findings and comparisons with other research in this field.

Chapter seven presents the conclusions and recommendations.

CHAPTER TWO

Literature Review

The literature review has focused on the main areas relevant to the research. The initial section (2.1) reviews the previous research and publications on the development of ILT since the Higginson Report (1996). The second section (2.2) reviews the theories of Adult education in the context of the research analysing the development of teachers use of ILT in an FE college environment. The final section (2.3) reviews the concepts of learning organisations and if such concepts are relevant or transferable to the FE sector.

2.1 ILT Development Research

The growth of ILT in FE is adding pressure on Further Education (FE) teachers to develop skills using new technology , increasing the need to develop a range of learning styles with their learners, broaden delivery methods, and encompass the concepts of blended learning and e-learning. (LSC, 2002.) In addition to the

effects of technology and the demands from learners, there are the standards set by various external bodies, driven by governmental policy and expectations e.g. LSC, FENTO, and Ofsted. A recent survey conducted by Sheffield Hallam University (LSDA 2004) investigated the impact of ILT in FE, with specific reference to college staff development issues. This is considered in more detail later in this chapter and the study is a continuation of previous research and surveys carried out in this field, and similar research is going on in the compulsory school and Higher Education (HE) sectors. While these sectors will not be reviewed in depth, it is logical that some form of comparison is explored in relation to this research.

The FE sector has become increasingly aware of the need to respond to the developments in new technology and it was suggested by Donovan (2001) that these needs should be combined with identifying the needs of staff with respect to staff development. Similar discussions have taken place in the HE sector and, as Giddens (1999) noted, these have included the effects of globalisation which are probably more relevant for HE

institutions since their international work is an important part of their portfolio. Harvey and Oliver (2001) also mentioned that learning technologies need to be part of the learning experience for both staff and students, but Anstey (2000) argued that while technological demands have had an impact on Higher Education, it is on a 'piecemeal and ad hoc basis' (Anstey, 2000, p7). Various studies, specific to Higher Education institutions, have taken place looking at IT literacy levels. For example, Pavey and Watson (2001) explored the coordination and development of learning technologies; Beethan and Jones (2000), Littlejohn et al. (2001) considered the large scale implementation of ICT development. However, none seem to have studied the effects of technology on the methods of delivery, or the range of learning styles and the related teaching skills. It is as if the sector is lagging behind in this area and, rather than exploring the effect on teaching and learning, is still concentrating on the provision of physical resources and specific ICT skills.

A Joint Information Systems Committee (JISC) funded project examining staff ICT skills in both the FE and HE sectors

(JISC,2002), researched the views of staff in both sectors, analysing their ICT skills and qualifications, and reviewing training provision. It is interesting to note that the word “ICT” was used rather than ILT, as ICT tends to be used as a broad term in both schools and in HE to cover skills and the use of technology in delivery. The research used electronic mail and web-based surveys with a number of questionnaires aimed at staff development officers. It achieved a limited response level (100 in total) of which 82 were from FE (a 20% response rate) and 18 from HE(a 11% response rate) ; follow-up data was obtained by telephone communication, especially in the HE sector.

On analysing the data, the researchers’ found that 92% of FE colleges had an IT training strategy but were steering plans to meet the FENTO standards rather than specific ICT qualifications. About half the training was carried out through a central department and nearly all internally, expressing a fit-for-purpose approach. The study also identified that most formal qualifications were considered to be broad-based and very time consuming. The

use of ILT champions or similar, with a focus more on teaching and learning related to the FENTO standards, was being adopted.

The difference in the HE response rate was identified as possibly due to the way the sector organises its ICT training and the project concluded that any meaningful comparison between the two sectors was virtually impossible. However, it was noted that 80% of the training in HE, from the responses and telephone follow-ups, was organised centrally, with 87% internally delivered using an instructor-led style; this was followed by workshops and flexible learning (JISC 2002). An inability to make a comparison is not surprising if the skills base of staff is considered, as a typical FE college uses staff from a wide range of backgrounds and routes into the organisation. There is a high percentage of part-time staff, not all of whom have experienced undergraduate studies and the related organisational structures. In HE, staff was less likely to have gone through formal teacher education to the same depth as in FE but most had a high level of academic experience in their specialist field.

The research identified that teachers in FE are faced with a range of responsibilities apart from teaching. This is by no means unique to FE but it is more likely to be the case. The research also identified that FE teachers have extra roles, such as management, curriculum planning, staff development and even ICT planning, was commonplace. Beethan and Jones (2000) noted that with such a range of roles it was often difficult to ascertain the actual division of labour and therefore time viability was difficult actually to identify. However, it was suggested that the pressures of such multi-tasking would be reduced if individuals possessed a high ICT skills base.

Such multifaceted roles were recognised in the FENTO standards which related to the range of tasks being set teachers in FE. The summary of standards for teaching and supporting learning in an ILT context is as follows:

- Encourage learners to manage their own learning pathway.
- Plan the use of ILT as part of the learning programme.
- Facilitate learning on-site using ILT.

- Facilitate on-line learning.
- Develop and adapt ILT materials to support learning.
- Provide learners with support to use ILT.
- Track and assess learners using ILT.
- Champion the application of ILT to teaching and learning.

(LSDA, 2002, p.6)

This implied that teachers needed a range of ICT skills that were not only related to facilitating learning but also to other organisational duties.

The Trisst survey data identified that it was considered by the sector that only simple word-processing skills were really required, with 43% of staff development personnel responding that teachers needed support to use the technology at this basic level; this did not include elements such as the use of graphics or drawing tools. A similarly unenthusiastic response was obtained about the use of email and Internet skills, with only 79% thinking it was relevant to be able to use search engines or favourites (JISC,2002,Trisst Project, 2002, p. 7-8).

Such results reinforced the views recorded in Pavey and Watson (2001) that recognised this unique characteristic , of staff in the FE sector, together with their diversity and the need for the institutions to become learning organisations. Work by Blair (1997), Zuboff (1988), and Toffler (1980) identified a link between the need to increase the ICT skills of the staff and the ability to become a learning organisation. (This link to learning organisation concepts is discussed in depth in section 2.3 of this chapter).

To make a comparison with HE, as already mentioned, was difficult, due to the low response rate in the survey but it showed that the FE sector seemed to have a higher level of recognition of the need for ICT skills, probably making it a sector better equipped to move in the direction of becoming learning organisations.

Making similar comparison to the school sector is also difficult with most of the studies in the school sector looking at the integration of ICT into the curriculum, identifying it as a specific subject and qualification. The age of the learner may be a effect

on the strategy and most research has been carried out on the ICT skills of teachers(BECTA ,2004b) , together with how such skills can be developed for the different key skill levels in the National Curriculum. Two reports were written on behalf of BECTA covering major literature reviews on the barriers to learning and the useful employment of ICT in schools (BECTA, 2004b.), together with what enables teachers to make such use of ICT (BECTA, 2004c.) . This identified some situations that could be compared with the FE sector. The review, carried out for BECTA by Andrew Jones, also included some website surveys using an on-line questionnaire. In the documents, the term ICT was again used and it should be noted that, in this sector, this is a more general term that also covers ILT.

This report, which included a literature review and a small survey, made some key findings. It identified that teachers' low use of technology was related to confidence and those with low confidence tried to avoid the technology (Dawes, 2000; Lerner and Timberlake, 1995; Russell and Bradley, 1997). This level of confidence was related to personal access to technology (Ross et

al., 1999; Cox et al., 1999; Guha, 2000) , the amount of technical support (Cuban, 1999; Bradley and Russell, 1997), and the quality of the training (Pina and Harris, 1991; Lee, 1997). The time available to prepare lessons using new technology was recognised as an additional aspect (Fabry and Higgs, 1997), coupled with the reliability of the equipment. Failures and poor technical support seemed to damage the motivation for teachers to risk the technology again in a classroom situation (Bradley and Russell, 1997; Preston et al., 2000; Cuban, 1999). The literature also identified that the resistance to change of teachers and the schools themselves were significant issues (Albaugh, 1997; Cuban et al., 2001), and staff with less knowledge of the technology were less likely to use it in their teaching without suitable training (Cox et al., 1999).

What may be a surprise to some is that there was little evidence that the age of staff was related to the use of new technology (Bradley and Russell, 1997) but there was evidence that gender had an effect. Males were more likely to take on board new technology and experience less anxiety about using it in their

work. An EC report (European Commission, 2003) found that 77% of male teachers used computers, compared to 66% of females. The comparison was even more significant when looking at the use of the Internet, with 56% of males and of 38% females reporting its use. This was comparable with the studies carried out by Bradley and Russell in 1997, when they identified a link between the level of anxiety and gender when trying to use new technology. Jones (2004) mentioned in the report that it was interesting to note that this was apparently a significant issue at primary school level; all these findings from the review were corroborated by the survey performed by BECTA in 2003.

The general and most significant effects were summarised by Jones for BECTA.

School/ External level	Teacher / Internal level
Lack of time	Lack of time
Lack of access to technology	Lack of confidence
Lack of training	Resistance to change
Technical problems	No perception of benefits'
	Lack of access to technology resources.

Table 1

(A Review of Research Literature on Barriers to the Uptake of ICT by Teachers, BECTA, 2004b, p.19)

The survey, as part of this extensive report, was based on 170 teachers replying to an on-line questionnaire. The results showed that lack of confidence, access to the technology, and lack of time were the highest ranked issues.

Barrier	Number of responses	% of total responses
Lack of confidence	48	21.2
Lack of access	47	20.8
Lack of time	37	16.4
Lack of effective training	34	15.0
Technical problems	30	13.3
Age	4	1.8

Table 2

(A Review of Research Literature on Barriers to the Uptake of ICT by Teachers, BECTA, 2004b, Appendix B)

The second report by Scrimshaw (BECTA, 2004) analysed the enablers that school teachers use to utilise technology. The report showed that, despite the assumption that technology had the effect of developing student-centred models, a significant

proportion of teachers still wanted to use a teacher centred approach (Gibson, 2001). It will need a radical change in the way people teach and, as identified by Fabry and Higgs (1997), the development of technology will require a major cultural change. Such a perspective of the effect of technology is comparable to the situation in the FE sector, but it could be argued that at school level a truly student-centred approach could be more difficult to achieve.

Ertmer et al. (1999) identified that personal characteristics are important in the use of computers and new technology, with the major uses being:

- To supplement the curriculum,
- To reinforce or enrich the curriculum,
- To be a facilitator for an emerging curriculum.

The report recognised that, for technology to be adopted, the most significant elements appear to be:

- Teachers need to make personal changes,

- There is a need for a school-based strategy (leadership, planning, performance and technical support),
- There is a need for an externally based strategy (local community involvement, working with other schools, local training, national developments and links with peers).

(BECTA, 2004c, p. 22-24)

The FE sector displays similar issues and has recognised a need for cultural change, peer support, local and national initiatives and the need to create ILT strategies as part of the main college strategy, with the involvement of senior management and links to continual professional development (CPD) schemes.(BECTA,2001a)

Chapter Three considers the response from the FE sector towards the publication of the Higginson Report and what an initial concentration on setting physical resource targets was: that is, the ratio of PCs against the number of staff and learners, network connectivity and the creation of support networks. The Higginson

Report identified a need to analyse staff development needs; this was detailed in subsequent publications on the subject: 'State of ILT in FE colleges' (BECTA, 2001a, p. 3, LSDA, 2002, p.6, Dfes, 2002, p. 22). The concept of using a tutor mentoring system has also been supported by the work on staff development using peer coaches (Showers and Joyce, 1995). Proponents advocate that such peer coaching methods should be used not only as a complement to general improvement initiatives but a main element for driving organisational change.

They all recognise the need to disseminate good practice and to set up a tutor mentoring system. Work carried out by The Further Education Resources for Learning (Ferl) and The National Information and Learning Technology Association (NILTA) over the last decade has indicated a growing awareness of the need to introduce a culture of continual professional development in relation to ICT skills and ILT generally. Ferl created a Ferl Practitioners' Programme (FPP, BECTA, 2002) that identified the range of skills needed by a FE teacher, cross matching these needs with the ILT FENTO standards. It introduced those ILT skills

required for training teachers and reinforced the need to update existing staff, as well as pointing out the need for colleges to respond to the additional challenge. The FPP is a follow-on from the previous BECTA programme designed to create 'ILT champions', highly effective and developed teachers who act as mentors within a college. The FPP suggested two possible routes for staff to take: tutor /trainer led or self-directed. It was intended that this would eventually lead to an accredited qualification, in addition to a standard teaching qualification, and would be part of a college's CPD programme. The FPP identified the need to develop a teacher's range of teaching methods in order to develop a range of learning styles using new technology since research has shown that learners benefit from teaching materials that meet a variety of learning styles (Agogino et al., 1995; Krammer-Koehler, 1995). This has contributed to the practice in the sector of forming individual learning plans and of differentiation during delivered sessions.

In the report to the Learning Skills Council Distributed Learning Group (DELG Report) it stated:

‘... the potential of e-learning, and the value of LSC and college investment in networking, infrastructure and resources, will not be realised without significant change in the norms of delivery within the tutor-led, classroom- based teaching and learning.’

(LSC, 2002, p. 5)

Cantor (1992) showed that staff have a variety of motivations for learning and that the six reasons adults want to learn are generally goal orientated, practical, and problem solving. Cantor mentioned the six reasons which are:

- To make or maintain social relationships.
- To meet external expectations.
- To learn to better serve others.
- To achieve professional advancement.
- To escape and be stimulated.
- For pure interest.

(Cantor, 1992, p.37-38)

Cantor also identified three potential barriers to adults learning.

These were recognised by Ferl as particularly relevant for FE staff development:

- Lack of time.
- Scheduling problems.
- Having many other responsibilities.

(Cantor, 1992, p. 32)

Cantor suggested the use of logs, journals and brainstorming as useful techniques to develop self evaluation which, he advocated, helps motivation and the identification of personal needs. (ILT development set in adult education theory context is covered in section 2.2 of this chapter)

The development of the FENTO standards for ILT and subsequent expectations in Ofsted inspections raised these issues up the agenda but there is still a need to identify what are the

perceptions of practising staff in FE colleges. As previously mentioned, the latest major piece of research into the impact of ILT was performed by Sheffield Hallam University for the LSDA (ILT, 2004). The research took place between October 2003 and February 2004 and surveyed 347 staff respondents across 54 Colleges; two thirds of respondents were teachers. It also considered the views of students and was an extensive piece research, covering a wide range of issues; the results agreed with the similar research undertaken in schools.

A significant result was that 64 % of respondents wanted subject-specific help with the use of technology in their delivery and with web-based materials. They said they were prevented from using new technology due to lack of time (57%), with over a third also mentioning the lack of support or general guidance as a factor. 63% stated that the level of support while in the classroom greatly influenced their use of technology and 57% wanted more personal ICT training. An interesting fact was that only 17% stated that a lack of personal confidence was an issue.

A more important issue was the lack of access to equipment, specifically for part-time staff, which makes up a large proportion of staff in the sector. Issues of gender seemed to match the results from the school sector with males more likely to adopt and use ILT, with females preferring specifically arranged rooms. This preference for a specific layout was also an issue for part-time staff who were not overly keen to adopt new ILT. The actual age of teachers was not a significant factor but the number of years they had been teaching in the sector was. Staff who had been teaching for less than five years were more likely to use the full range of technology available.

It was preferred that the creation of new teaching materials was achieved by using a mixture of local and national sources, modified for individual preferences, rather than using commercial or private sector sources, which was 4% of the use level. The type of technology adopted was interesting in that the majority stated that they used computers in their work but only 20% used multimedia technology, such as video conferencing or mobile devices in the classroom.

The survey and literature review in the report identified a link between the qualification of teachers and the uptake of ILT (Somekh et al., 2004). This may not be viewed as a surprising result but with the sector having teachers with a range of qualifications and experience then all experiencing the same training provision style may be an issue. The LSDA research (2003) into the impact of computers in FE found that 55% of training provided was by written instructions although a significant amount of informal support from friends and colleagues was also taking place. This highlights that training could be an issue for people who want to learn through different styles if the learning environment that is available is restrictive.

The use of appropriate learning styles in staff development was also highlighted in the school surveys and is obviously an issue for further in-depth study. While over half the FE staff (56%) who responded felt competent in the use of ILT, lack of support was again a factor. So there appears to be an issue regarding those being encouraged to start using technology and those already

using it. One comment is that such survey results need to be considered in context when the respondents are replying to an on-line survey, as it may be that people who are not confident in the use of technology are unlikely to reply to such a request for views; they may not even know that such survey requests exist.

The comparison between school, FE and HE sectors is complex and it could be argued that such a comparison is not really valid. One issue that is common is that professional development effectively involves adult learners and is a form of adult education; and such work contributes to the development of learning organisations. The HE results are inconclusive, as stated earlier, and the true state of ILT is still to be identified. In FE and in schools, however, there seems to be some similarities in the lack of time, the type of training, resistance to change, and subject-specific support. Rogers (1995) suggested in his model concerning the diffusion of innovation, that not everyone in an organisation is a true innovator. In fact, only 2.5% are really innovators with another 13.5% being early adopters. This means that about 15% are the drivers of the use of new technology. The BECTA survey on

ILT in FE, carried out in 2004, supports a similar model by identifying that 29% of the sector are innovators. With the pace of technological development and restrictions on funding and yearly budgetary cycles, it is not surprising that, ten years after the Higginson report, issues of anxiety, resistance to change and conflict between student and teacher-centred learning are still being identified.

2.2 Adult Education in Context

Historically, a difference has evolved in terms of adult education and the education of adults. Hostler (1977) identified that a common error is the image of adult learning as liberal education that is not undertaken for results. However, compared to figures for employer-led training and education, and the emergence of the availability of the Open University and Open College style provision, such an attitude can now be challenged as it is a particular and partial provision. It is important to distinguish between adult education and education for adults before these concepts are discussed further; it is also necessary to define what is understood by the term 'adult'. Obviously, staff development cannot be regarded as liberal education and furthermore, accreditations are important, even if these are not formal in nature. (Ferl Practitioners Programme (FPP), 2002)

Adulthood is not just a simple matter of a prescribed age; nor is it entirely related to attitude, behaviour and maturity as it is more complex. Knowles (1980) put forward the concept that people are

treated as adults if they behave as adults. It is more important that they perceive themselves as adults in terms of social maturity and holding an acceptable position in society. Paterson (1979), however, countered this stance by considering the concept of adulthood as a status involving levels of responsibility related to age but not necessarily to maturity. This could be regarded as logical when studying staff development in an FE college where there is the assumption of adulthood but where staff have varying levels of responsibility.

It is also logical to argue that however adulthood is defined there is no definite line of division and the transition is gradual, continuous and at different rates for different individuals. Reece and Walker (1997) express the view that people should be treated as individuals; everybody learns in his/her own way and adult learners have their own personal expectations.

Trying to distinguish the difference between the education of adults and adult education is made more complicated, not only because of historical, national or cultural differences, but also

because of the contradiction between adulthood being a state of maturity, or a particular level of academic or skill attainment, or seeing adulthood simply in terms of age and assumed levels of social responsibility (Wiltshire, 1976).

The nature of the staff in an FE college relates to this complexity when considering their development of ILT and it is relevant to consider both age and qualifications as a guide to the methodology used in delivering training plan. This research investigates if such parameters appear to be an issue when considering the views of FE teachers.

Rogers (1986) expressed the view that the term “education” is often used loosely; it is not the same as learning but includes it. Learning is a lifetime activity while education is planned learning. It is contrived, purposeful and is not a learning process that takes place by chance. This seems to lead to the conclusion that education is some form of course while learning is an on-going process.

Peters (1966) expressed the idea that education is related to the involvement or initiation by others in a worthwhile activity, that it is the process of delivery of preconceived content supporting the delivery of a course or programme.

Rogers (1996) identified three major characteristics to help separate adult from non-adult education in almost all societies. He suggests that adulthood is a state we all strive to attain in order to become a mature, balanced individual. The three characteristics are: personal growth and development, perspective, and autonomy. Having outlined these elements, Rogers then identifies the implications for education. This analysis can be considered with reference to the development of FE teachers who may be already regarded as adults, but adults who are still striving for autonomy and self-fulfilment. This indicates links with the ideas of self-directed, goal-orientated characteristics expressed in other adult education theory.

Adulthood/ Maturity	Childishness	Implications for educational goals
Personal growth/fully developed	Lack of perceived talents, interests	Personal development and exploitation of talents and interests
Perspective / mature judgements about others and self	Lack of perspective : over important, too humble	Development of sense of perspective
Autonomy/ self reference/ decision-making	Flight from responsibility	Development of confidence/ practice of responsibility

Table 3: **Adulthood and Education.**

(Source: A. Rogers, Teaching Adults, 1996, p. 96)

Two elements of education can be effectively separated in relation to adults: those items that should have been covered or which would have been better learned before leaving school (or compulsory education), and those items that can only be learnt once enough experience has been obtained. Such a distinction

seems logical and could be the reason why stress, friction or possibly anxiety is created in some staff training programmes when such a distinction is not clarified. This effect could be an issue with ICT and ILT staff development when individuals have weaknesses in key skills that have not been recognised, irrespective of their qualification level.

The 'front end model' (Boyle, 1982, p.8) introduced the concept that education only occurs during the formative years; when maturity or adulthood is reached, it stops. This front-loaded model can be regarded as acceptable for a society with low levels technology but the idea of education stopping at adulthood is no longer appropriate, not only for individuals' personal self-esteem and development, but in the case of FE because of the need to develop professional staff in a continuously changing environment, to develop a learning organisation, and truly to achieve the return on the human capital investment.

This need to return to education and hence the notion of

life-long learning was identified as early as 1916 by Dewey. This is echoed in the key report on adult education following World War1 (Smith, 1919). Such analysis resulted, in simplistic terms, in both Dewey and Smith identifying two types of education for adults: that which naturally follows on from school, and that which provides what should have been achieved at school or in initial stages of education. The difference between learning and education is important as it has implications for provision in relation to adults compared to education for non-adults.

If it is assumed in the UK that adults will have experienced school and, in some cases, tertiary education (even if this was unsuccessful), their experiences would have developed their individual expectations as adult learners. Pearce and Walker (1997, p.9) identified and categorised four main expectations.

They assert that adults:

- Expect to be taught,
- Expect to work hard,
- Expect that work will be directly related to the vocation,
- Expect to be treated as adults.

This relates to the work of Knowles (1970) who popularised the concept of 'andragogy'. He defined his andragogical assumptions as follows:

- Adult learners bring a great deal of experience to the learning environment.
- Adults expect to have a high degree of influence on what they are to be educated for, and how they are to be educated.
- The active participation of learners should be encouraged in designing programmes.
- Adults need to see applications for new learning.
- Adult learners expect to have a high degree of influence on how learning will be evaluated.

- Adults expect their responses to be acted upon when they are asked for feedback on the progress of the programme.

Burns (1995) elaborates this approach:

'by adulthood people are self-directing. This is the concept that lies in the heart of andragogy.... andragogy is therefore student centred, experience based, problem orientated and collaborative the whole educational activity turns on the student.'

(Burns, 1995, p. 233)

Burns (1995) also expressed his views in terms of learning being a life-long journey and while definitions for adult education are not clear, he identified that it was different from pedagogy.

Pedagogy, according to Burns, is like filling a petrol tank before you start your journey while adult education, or andragogy, is like having filling stations on the way and you pick up what you need as you went go on your journey.

Andragogy is a term based on the Greek root "*andr -*" meaning man and the concept was originally developed in the nineteenth

century but Knowles is generally regarded as the main promoter of the term in the modern era and he distinguished a main difference between the way adults and non-adults learn. Knowles is a major contributor to recognising the difference between learning and education and ascertaining whether activity relates to the various ideas concerning adult education.

Knowles(1978) asserts that there is a difference between andragogy and pedagogy which follows on from the main andragogical assumptions and he summarised what is specific in the way adults learn:

- a change in self concept: adults prefer to be self directed;
- experience: mature people accumulate experience which is a source for future learning;
- readiness to learn: adults want to learn in areas that are causing problems that they regard as relevant;
- orientation towards learning: adults are orientated around problems and are therefore less likely to be subject centred;

Knowles constantly worked on his concept and suggested a potential fifth characteristic: “of a need to know” (Knowles, 1989) and this research investigates if such concepts are important when considering how teachers in an FE College develop.

The assertion that there is a difference between adults and children has been studied by many philosophers and McKenzie (1977) recognises a difference based on age or on the definition of adult. McKenzie (1977) also studies assumptions concerning the difference between men and women in readiness to learn and concludes that that there is, in fact, no difference.

Work undertaken by Label (1978) researches education of the elderly; he calls this gerogogy, since he maintains that education should recognise that adult development has phases. Knudson (1979) took this a stage further and suggests a combination of pedagogy, andragogy and gerogogy into a term he calls “humanagogy”. This is an overall concept of learning that simply takes into account the age of the learner but regards it more as an

issue of analysing the needs of the individual at a particular stage of his/her development. Such an approach could be regarded as the basic foundations of individual learning plans and personal learning. Knowles (1979) agreed that pedagogy and andragogy are discrete terms but they are not mutually exclusive to either children or adults; instead, they are dependent on the personal situation.

The idea of andragogy has been challenged and criticised by various philosophers such as Hartree (1984) and Tennant (1986) but the underlying concept of autonomy is generally recognised. Adult education as an ideology has been established and has been extended to what Knowles (1986) called a contract.

The idea of a learning contract has been established in FE with the development of learning agreements between students and the College so extending this to a relationship between staff and the College could be regarded as taking place in a CPD process. In such a process it may be relevant to consider the stage of personal development of the staff member.

While the theory of adult learning or andragogy is well established it is only one of many relating to adults and how they learn. This review by no means covers all such theories but concentrates on the ones that relate to the research and those that are applicable to teachers as learners in an FE College environment.

Burns (1995) commented that learning leads to a change in behaviour and attitudes. This includes motivation and relates to the concepts of self-directive processes and goal-related motivation; it is related to the humanist approach to human development. Laird (1985) expressed the idea that learners are more comfortable when considering new ideas if there is a suitable atmosphere and if they do not feel threatened by external factors such as expected competence standards or formal qualifications. Certainly this is an issue for teachers in FE when mandatory requirements and standards are being imposed by government policy and when competence is beginning to drive issues in inspection processes.

Analysing other work on adult education, Kolb's (1984) four stages to develop a learning process, often referred to as experiential learning, (McGill and Beaty, 1985) also relates to adult education with the inclusion of a reflective element which prevents repetitive mistakes. This cycle or process relates to the work of Schon (1983) on adults becoming reflective practitioners. Kolb also developed the concept by suggesting that most individuals begin with their preferred learning style in the experiential cycle and develop from there. Certainly there is an issue if the training or learning opportunity being offered in the workplace does not allow for such expression by using a formal structure with no cyclic characteristics.

Rogers (1969) in an alternative context argues that educational development is a matter of achieving a fully functioning person, with education as a form of therapy. Srinivasan (1977) identifies a difference between what he calls self-activation and problem-centred education; he also recognises an important difference when analysing staff development. Rogers links the need for self development and self direction with Knowles' concepts of

andragogy and adult education theory. He links this with experiential learning, even in a formal setting, and advocates that experiential learning should be self initiated. This again could be an issue if teachers are reacting to what is perceived by them as externally imposed criteria.

Rogers (1969) developed the theory of facilitating learning which provides the environment for the adult to participate responsibly. He researched how a person learns and identified a number of principles which seem to correlate with the general elements of andragogy.

These principles are:

- people have a natural potential to learn,
 - learning is significant when the person perceives the purpose,
 - learning which creates a perception of a change to self
- organisation tends to be regarded as threatening and is then resisted,

- learning which is perceived as threatening is more likely to be resisted if driven by an external criteria,
- learning is made most efficient by doing,
- self directed learning with independence and creativity and self evaluation has a lasting effect,

(Rogers, 1969, p. 157-164).

This notion of self direction is reinforced by Brockett and Hiemstra (1985) who suggested that people need to meet regularly with experts, they need to develop the tools to self evaluate and must have an opportunity to reflect, networking and reward elements should be provided and there is a need to broaden opportunities and links to objectives of learning.

Mezirow (1977) expanded a number of established theories to develop his theory of learning. He worked on the idea that people have an interpretation of reality from their experiences which is effectively a personal perspective; learning takes place when an experience does not match a perspective. He analysed what happens when there is a clash between a person's perspective

and experience and came to the conclusion that such clashes cause a learning cycle of experience, alienation, reframing and reinvestigation.

Aslanian and Bricknell (1980) took this approach further by suggesting that people return to studying when they have a life crisis. Mezirow (1981) expanded the concept by developing a cycle with ten stages:

- dilemma
- self examination
- critical assessment
- relating to the experiences of others
- exploring options
- building confidence
- planning a course of action
- acquiring knowledge
- experimenting
- reinvestigation.

(Mezirow, 1981, p. 7).

The process of self evaluation is again covered by Mezirow (1981) who suggested that individuals can be transformed by the process of critical reflection. This idea leads, to his theory of transformative learning which built on earlier work by people like Freire(1972) whose work related to critical reflection and the development of new ways of interpreting experiences.

Mezirow suggests there are levels of reflection:

1. reflectivity: awareness of specific perceptions, meaning, behaviour,
2. affective reflectivity: awareness of how the individual feels about what is being perceived, thought or acted upon,
3. discriminant reflectivity: assessing the efficacy of perception,
4. judgement reflectivity; making and becoming aware of the value of judgments made,
5. conceptual reflectivity: assessing the extent to which the concepts employed are adequate for the judgement,

6. psychic reflectivity: recognition of the habit of making percipient judgements on the basis of limited information,
7. theoretical reflectivity: awareness of why one set of perspectives is more or less adequate to explain personal experience,

(Mezirow, 1981, p. 12-13).

The last three relate to adult learners and lead on to Mezirow's work (1991) on the transformative dimensions of adult learning where he states that adults learn by interpreting experiences.

This may be relevant when analysing the effects of change due to new technology and how teachers react and reflect on the implications of this on their teaching, their relationship with students, and how they perceive their learning needs as individuals.

It is part of our society's development to come to terms with the concept of lifelong learning and the need not to stop learning.

The culture of dipping into education at various stages of

adulthood is relatively new but is becoming more of an acceptable requirement a part of CPD programmes. In the past this was not the case with the assumption that once a craft or professional qualification was achieved, then education stopped unless you changed career. The wealth of the nation, not only financially but also culturally, is becoming more reliant on adults continuing to be involved in education. The economic necessity in terms of human capital has forced adult learning to the centre ground of policy, and studies on human capital theory are becoming more in evidence in political thinking and policies on lifelong education, while the skills agenda and even setting targets for population achievement levels, are developing a high profile. (HM Treasury, Leitch Review of Skills, 2006).

This introduces vast areas of potential for the provision of ILT, open distance learning, outreach centres, basic skills, key skills, and provision for adults. Hughes and Major (2000) studied the perceived needs of a knowledge-driven economy, changes in the global market, and the developments in ICT, introducing the need for a strategy to co-ordinate actions to overcome social, economic

and educational disadvantage, enable people to make a contribution to their country's economy. The link between the education of adults and the economy was identified as a critical one and this will need to be part of shaping the style of education, access and supporting mechanisms required.

2.3 An FE College – The Learning Organisation.

Lecturers in FE colleges are a unique group of teachers with a mix of vocational skills; many are part-time practitioners. They are made up of people who are teachers by their original vocation, with some having experience in the compulsory school sector; people who have originated from a vocational and industrial/commercial background; and individuals from the HE sector with related research skills and high-level academic backgrounds. The sector therefore has staff with a range of experiences and routes into the sector. They may find themselves isolated specialists, with a restricted chance to discuss vocationally specific issues. They may encounter staffrooms containing people who do not have a common experience in terms of their day-to-day requirements or the level of learners. Some of them are not even qualified as teachers or do not consider the concepts of learning in depth as part of their priority skills base. Colleges are faced with having to create a balance between recruiting staff with the required vocational experience, who can be trained and

developed into teachers, and those who have teaching as their original profession. Such a mix of experience can be regarded as a major strength and a vital characteristic of the sector, but it does create a unique environment. The FE college sector could be described as a sort of mix between a school and an HE institution with staff ranging from subject specialists with research skills to a group of teachers delivering a common national curriculum to a set age range. This obviously has effects on staff development, especially in relation to developing skills related to teaching and learning and ILT, and the structures the organisations develop. Colleges are faced with the challenge of creating a CPD environment that includes the effects of fast-changing and developing technology on the learning experiences and expectations of students.

One question that comes out of the research to date on the impact of technology is whether an FE sector institution has a suitable environment to become a learning organisation in terms of staff development. It might be claimed that the development of

ILT and the related staff development create a need for the institution to become a learning organisation if it is not already.

Argyris and Schon were among some of the earlier researchers in the field, formulating the concept of organisational learning .

Argyris and Schon (1978) defined organisational learning as a process which is: *'the detection and correction of errors'* (Argyris and Schon, 1978, p. 2).

They describe two types of learning in an organisation of single and double loop and indicate the relationship as:

'When the error detected and corrected permits the organisation to carry on its present policies or achieve its present objectives, then that error-and-correction process is single loop learning.

Single-loop learning is like a thermostat that learns when it is too hot or too cold and turns the heat on or off. The thermostat can perform this task because it can receive information

(the temperature of the room) and take corrective action. Double-loop learning occurs when error is detected and corrected in ways

that involve the modification of an organisation's underlying norms, policies and objectives'

(Argyris and Schon, 1978, p. 2-3).

An additional definition of organisational learning is provided by Fiol and Lyles (1985)

'The process of improving actions through better knowledge and understanding' (p 803), stating that factors such as environment, structure, culture and strategy have an influence i.e. the adoption of certain strategies or structures will create learning.

Such an approach to development, it could be argued, is evident in the publications that have appeared since the Higginson Report and is strongly demonstrated by the *BECTA* (2001) publication concerning the need for colleges to have a strategic plan related to ILT and with recognised links to a staff development plan.

Dodgson (1993) described organisational learning as the way an organisation arranges its routines and sources of knowledge around activities, and develops the organisation's efficiency by improving the skills of the workforce. He also suggests that it allows organisations to become more adaptable to change and to be stimulated by environmental factors, individuals and culture, as this is a complex relationship that really starts with knowledge acquisition. Mason (1993) expanded this by describing that, with the creation of technology and the information made available as part of its effect, this acquisition can take two forms; assimilating knowledge from outside or creating new knowledge from within. This can be recognised as taking place in the development of ILT in colleges by obtaining IT knowledge from outside sources, such as commercial companies, and support centres like JISC, Ferl, NLN and BECTA, and developing skills and materials in-house.

Dodgson (1993) also stated that knowledge is not just the sum of the parts of individual learning but an accumulation of history, norms and experiences that create an organisational memory.

Thus, the system does not influence just immediate members but also future staff, facilitating change and allowing learning to occur influenced by the organisational structure, strategy, environment, technology and culture.

Huber (1991) suggested that there are four constructs to organisational learning: knowledge acquisition, information distribution, information interpretation and organisational memory. These elements are accepted and elicit observable changes in behaviour. He also identified that the effects of technology play a role in these constructs, with the ability to archive data being specifically related to the organisation's memory. Linking this with FE colleges, the categories can be related to the creation of knowledge and information systems using technology, an increase in demands for data from funding bodies, and the development of teaching materials and web-based information. At teacher level it may be perceived that the technology will result in the teacher no longer being the main source of information and students accessing data via web sites.

Prahalad and Hamel (1994) introduced another important factor by stating that there was a need for an organisation to have the ability to unlearn or, to put it simply, to forget some of the past. This could be recognised as acutely important when looking at the development of ILT and its effects on teaching and learning, together with the changing relationship between tutor and learner. Some techniques used in the past, such as dictating notes, may now be regarded as no longer appropriate as the main technique for the modern-day learner, if such a method ever was. Instead, the concept of blended learning and the integration of the ways people learn needs to be adopted.

Such concepts of change can be related to FE colleges since they have a need to develop as an organisation and to facilitate change in the skill-mix for teaching and learning due to the continual rapid developments in learning and information technology. The speed of the development of new technology was and is so fast that FE colleges need to become true learning organisations; they must not only develop the individual staff members to meet the need of

learners and the expectations of outside bodies, but also for the survival of the organisation and ultimately that of the FE sector.

Taking this theme of developing staff, Argyris and Schon looked at individuals in an organisation and their experiences of learning, basing the theory of organisational learning on understanding actions in terms of matching intentions with outcomes (Argyris 1976, 1982; Schon 1974, 1978).

Senge defined such an organisation as one:

'in which you cannot not learn because learning is so insinuated into the fabric of life'

(1990, p.7).

He goes on to say that learning is really a group of people doing something because they either want to or understand the reason and that there is a philosophy ingrained in the organisation to respond, react and anticipate such a need. Senge took this further with the idea of Generative Learning. This is effectively continual

experimentation and feedback as an on going process for solving problems. He states that '*the rate at which organisations learn may become the only competitive advantage*' (Senge, 1990, p. 7).

Although such studies by people such as Senge, Argyris and Schon are primarily not aimed at education, it is evident that they may apply to FE colleges as they need to make themselves distinctive as a sector and be able to be reactive and proactive both to the needs of society and also to governmental pressures.

Argyris and Schon argue that individual and organisational learning is the basis for understanding how people react and processes or actions that are created. They assert that it is not possible to design every action, as people will not have all the knowledge relevant to a given situation; they do not carry around beliefs and values about how others should behave. This idea introduces the 'Theory of Actions' model which argues that a reaction or consequence is based on preset beliefs or knowledge so a set of propositions can be scientifically formulated to give certain reactions.

Argyris (1982) identified that individuals hold two theories of action: their espoused theory, which describes the way they say they behave, and their theory-in-use, which describes the behaviour that they actually display. The research showed that while individual behaviour and espoused action varied widely, there was almost no variation in the theory-in-use response.

‘When someone is asked how he would behave under certain circumstances, the answer he usually gives is his espoused theory of action for that situation. This is the theory of action to which he gives allegiance, and which, upon request, he communicates to others. However, the theory that actually governs his actions is the theory -in- use’

(Argyris and Schon, 1974, p. 6-7)

From this, a theory model that was highly generalised (Model I) was created and Argyris identified that people hold theories-in-use. This means they are more likely to deal with a threat by bypassing it i.e. trying to get around the issue. Such a response is

generally regarded as non-corrective and eventually can escalate when it becomes defensive behaviour by projecting blame onto instigators. Argyris and Schon (1982, 1978) identified that, after the initial attempt to bypass, the second phase that often appears is to confront the issues head-on, producing a predictable defence. They went on to say that organisations then deal with this by asking managers at the top 'to take a stand' or 'read the riot act' and they tell the staff to 'shape up or ship out'. This is usually accompanied by firing or transferring personnel which ultimately does not solve the problem. This concept could be relevant to, or even an explanation of, the responses and reactions by teachers to the introduction and effects of technology in the classroom. They may regard technology as a threat and then react defensively. Argyris described this defence process as complex (and hence not easy to solve) but is, in essence, really related to enabling people to have some degree of control over their own learning.

Argyris (1982) then developed a Model II which was a way of enhancing the learning of the individual and the organisation. It

worked by governing the variables of valid information, and by creating a free and informed choice with a commitment to monitoring the effectiveness of choices made. It was designed not to be the opposite of Model I but to reduce the dysfunctional features of Model I while still identifying targets and creating learning systems.

Argyris went on to explain that Model I learning is not an inferior version to Model II,

'... the misunderstanding that the goal of Model II implies that Model I is somehow bad or ineffective and should be suppressed. On the contrary, Model I is the most appropriate theory in use for routines, programmed activities or emergency situations (such as rescuing survivors) that require prompt unilateral action. We must not forget that the strategy of all organisations is to decompose double loop problems into single loop ones.'

(Argyris, 1982, p. 8)

The set of beliefs or ideology adopted is an important element of adult education and is relevant to how FE lecturers react to the

changing skills and knowledge needed due to the fast growth of technology. FE colleges need practitioners (teachers) who continue to pursue productive learning and improve their performance as adult learners themselves. The need has created a system of using observable data and strategies to create knowledge in order to work with practitioners to form productive organisational learning that includes the increasing use of ILT.

With the need for staff to develop their knowledge and skills, and in order for a college to become a learning organisation, this has meant that there is a need to have a model that does not create defensive responses but which will create actual learning processes. The strategic option chosen obviously depends on funding limitations, the type of staff and communication links: poor communication can affect the efficiency of any learning.

As mentioned earlier, looking at the actual process of staff learning, Huber (1991) identified four constructs which take into account the action theories as follows:

1. Knowledge acquisition: learning occurs when an organisation acquires knowledge from monitoring the environment and using information systems.
2. Information distribution: an organisation shares information across departments, promoting learning through informal processes.
3. Information interpretation: distributed information is given common meanings developing belief structures and a rule base. Greater learning takes place when a wide range of interpretations are developed but sometimes central information systems may restrict the development.
4. Organisational memory: this refers to the knowledge stored and can also be called 'corporate knowledge' (Prahalad and Hamel, 1994). Decision makers store the formal and informal information and knowledge. The challenge is to make such organisational memory easily accessible.

Argyris (1994) developed the process further by identifying two main types of learning in an organisation. The issue of espoused theory and theory-in-use introduced the terms single loop,

double loop and deuterio learning. Deuterio learning only occurs if an organisation carries out the other two so it is really a term that shows that it is aware that it needs to learn and can accept change and has developed both single and double loop learning processes.

Nevis et al. (1995) stated that an organisation has to have the ability to recognise the learning needs and be able to create the appropriate processes and environments. In order to achieve deuterio learning it has to have the ability to identify performance gaps and an awareness of ignorance motivates learning. Nevis et al. also expressed that there is a need to identify the learning orientations or styles and Dodgson (1993) complemented this by stating that the type of learning depends on where it takes place and who is experiencing it. (He described this in terms of commercial roles such as research and development, design, marketing but this could be translated into the FE college context by identifying types of teachers e.g. instructors, learning support, HE, support staff, management).

The concepts of single and double loop learning have generally been accepted as a solution of the problem of the difference between theory and practice. Argyris (1994) states that the gap that exists between theory and practice is not a bad thing as long as both remain connected in some way, as it creates reflection and dialogue. Double loop learning can be simply described as what goes on in a changing organisation when it analyses why and how theory into practice can be achieved, while single loop learning demonstrates the acceptance of change without questioning the assumptions.

Usher and Bryant (1989) stated that single loop learning places an emphasis on 'techniques and making techniques more efficient.' And this form of learning takes place when the strategies, framework and goals are taken for granted. Any reflection is directed towards making the strategy more effective. Usher and Bryant go on to say that double loop learning 'involves questioning the role of the framing and learning systems which underlay actual goals and strategies'.

Argyris (1982) expressed this in an even clearer way by saying that single loop learning follows routines and a sort of controlled preset plan; it is also less risky. Double loop learning, on the other hand, is more creative and reflective as it confronts basic assumed policies and ideas.

Argyris (1974, 1982, and 1990) argues that double loop learning is necessary if staff and their organisations are to respond to rapidly changing and uncertain situations.

Double loop learning is *'those sorts of organisational inquiries which resolve incompatible organisational norms by setting new priorities and weightings of norms, or by restructuring the norms themselves together with associate strategies and assumptions'* (Argyris and Schon, 1978, p. 18).

Argyris and Schon have therefore effectively defined two types of learning which Jarvis (1983) expressed as conformist and innovative reflective learning. Such concepts are not unique and were suggested by earlier people such as Botkin *et al.* (1979) who

also used the terms “maintenance” and “innovative learning” and Freire (1972) when he called them non-reflective (‘the banking concept of education’) and innovative (‘the problem posing education’).

It could be a viewpoint that such studies of organisational learning and the types possible are linked to the process of preferred learning styles of individuals and the theories identified for adult education. A theme of this research is whether FE colleges are learning organisations, and whether staff are reacting to what may be perceived as a single loop learning process with regards to ILT, rather than a double loop learning. The research considers whether there is a feeling that the previous experiences and knowledge of staff are being recognised and whether they feel in control of the situation, and have freedom of information and freedom to choose. This relates to the adult learning theory proposed by Knowles (1970) which includes concepts of andragogy and the characteristics of adult learners. These adult learners bring experience to their own learning environment and have a high degree of influence on what they are learning despite

the external influences setting targets on the use of ILT and required general teaching qualifications.

This relationship to an assumed level of professional skill links into studies on professional development: the assumption that there is a need to learn, possess and develop general professional knowledge and confidence. In the context of education, Lawton (1973) identified two types of curriculum model: romantic and classical. The classical model is the experience of being educated didactically, with specific outcomes. The teacher's role is clearly defined in this context, the curriculum clearly displays essential learning elements as one of the main methods, and there are standard forms of assessment. The alternative romantic model could be regarded as the opposite, with the teacher or trainer playing a facilitating role, stimulating learning, and not even thinking in terms of learning outcomes. Assessment in this model places an emphasis on active learning and uses elements of peer assessment. In the field of adult education, this binary division is reflected in Jarvis' (1985) comments on the models formed by Knowles (1980) which introduces a comparison between

pedagogy and andragogy. The pedagogical assumption is related to the classical model, the use of didactic methods and teacher control, and concentrates on the acquisition of subject matter. The learner's experiences are therefore of little worth since the process is focused on knowledge acquisition. Andragogy could be said to relate to the romantic model and introduces the term "self-directed learning". This is a more independent process, using the learner's experience as a rich source and concentrates on the problems to be solved. Jarvis (1985) suggests this education of equals fits nicely into adulthood and hence, adult education and the term self-directed learning in the romantic model introduced studies of professional knowledge and competence attainment.

Eraut's (1994) work on developing professional knowledge and competence identified the increasing need for continuing education as a fact of life. It also identified what was needed to be learnt to gain a professional qualification and what is best postponed until after the completion of the formal qualification. This work considers the concept of on-the-job training and development, and can be compared to Dreyfus' model (1988) of

skill acquisition, which contains an implied process of development from novice, advanced beginner and proficient, to finally, expert.

Schon (1983) in his book called *The Reflective Practitioner* noted that true professionals are reflective in action in situations which are complex and ill defined and where they need to draw on their expertise and intuition. This mode of operating could relate to college teachers who have had to rely on their intuition to create the most effective learning experience. They also have to continue to develop their skills and knowledge of ILT, not only in relation to the specialist curriculum, but the in the context of preferred learning styles and the environment generally.

Barnet (1993) recognised that the world is changing at an increasing rate and is becoming “super complex”. In the context of information overload and the increasing availability of media, such as e-mail, the Internet or mobile phones, we are faced with a range of options for finding information and with a choice of extended learning styles. Jarvis (1992) identified that the

disjunction between conceptual frameworks is creating the potential for a wider learning experience; the super complex nature of the world is also a potential source of the disturbance of present beliefs. There is also recognition that the type of learning that occurs can be influenced by the organisational structure and its strategy, the environment learning takes place in, technology available with the related culture of acceptance and support: a recurring theme in FE colleges.

It is logical to argue that colleges need to be learning organisations in terms of staff training and development as staff constitute a unique group of adult learners that need to engage in the concept of continual lifelong learning in terms of their teaching skills and use of technology. It has always been recognised that skill updating is needed in the vocational subject areas, but with the fast development of technology, this has now also become relevant with regard to for the actual skills and techniques of teaching.

Taking these studies of organisational learning into account with reference to the world of a teacher in an FE college it can be suggested that there is a need for teachers to have a constant learning experience combined with the addition of the use of new technology and the change in relationship between teacher and learner. Curriculum change due to the introduction of a range of potential ways to learn with the aid of technology, unlike in the past, is arriving into institutions alongside the expanding markets, such as workforce development and pre-16 initiatives. These are all adding to the complexity of the environment. Barnett (1993) identified a second dominant force: that of the government wishing to limit public spending and wanting to measure and achieve value for money. The increasing need of the state for more intrusive evaluation has added to the already complicated internal quality assurance systems and the international movement of clients has led to standards of professional credibility being more international in character. This has added to the perceived skills and competences of teachers in the sector at an assumed base line.

Barnet expresses the view that there is a need to generate the capacity to continue to be creative as individuals and that the organisational environment and the organisation itself will need to become an organisation that learns how to learn. This need to learn might be thought of as easy to achieve in an educational institution with professional teaching staff facilitating learning but is it reasonable to assume that staff members perceive a need to continue to learn as individuals? Medical doctors' advise people to be non-smokers yet some of them smoke themselves, so do lecturers really have the environment to become part of a learning organisation or are they merely reacting to preset targets or external needs that are just assumed to be correct?

Huber (1991) noted that more learning occurs when there are varied interpretations and the development of information systems restricts this variation, effectively causing a convergence. Argyris (1977) expressed the view that the effect of technology on the development of information systems, related Management of Information Systems (MIS), quality control systems and related audits causes a convergence of interpretation and results in single

loop learning being dominant. The technology creates a command and control structure based on looking for gaps in knowledge.

Organisational Learning theory is based on the detection and correction of error but the use of MIS creates a dominant single loop process and suppresses the double loop learning. It also may restrict the capacity to know when an organisation is unable to identify and correct errors. It could be argued that a similar process could take place in the development of staff with the uses of technology creating a convergence of learning environments rather than the assumed expansion.

Chapter Three

The Growth of ILT in Further Education

The importance of education in society has been recognised for thousands of years with the availability and entitlement to education now a reality for the majority of people in the developed countries. These countries have recognised the need to set minimum standards both of quality of provision and content, to promote life skills by way of lifelong learning and widening participation, meeting the needs of the individual and the skill needs of their economy.

How education has developed over the centuries is related to the social environment, the relative wealth and economic position of a given country or region, and their access to the rapid development of technology. The real beginnings of the effect of technology on education started with the invention of writing, which dates back to the Middle East over 3,000 years ago with the Sumerians, but it was not until the invention of the printing press

in the 15th century, with Gutenberg's Bible (1456 in Germany) that there was a real increase in written material and a related effect on teaching and learning. The availability of books, pamphlets, leaflets and posters had a profound effect on the range of possible opinions perceptions and knowledge people developed; this started to change the way people learn and communicated. Prior to the invention of printed material, texts were written out by hand and were then copied at great expense with it being a common practice for a single text to be read out to groups. Rich students had their own copies created and bound, while the poorer students would copy from unbound versions hired for the purpose, creating restricted access based on wealth, also restricting any subsequent progression. Clark, in his paper called "*Pedagogy and E- learning*" (Clark, 2003) , identified that the move away from limited access to printed copies created availability on a mass scale and started the introduction of a learning style based on a more a solitary experience rather than group listening. Prior to the invention of the printing press, people had developed an ability to write and read but it was not until the mass access to printed texts did a significant change in learning

take place. It created the motivation and need for people to develop the skill to read and write and increased their thirst for wider knowledge. It also had a major effect on the way people were taught and started the creation of a student-centred approach. The development of technology affects society in general but has a significant effect on teaching and learning styles and the types of skill developed; the printing press had a major effect.

In the mid to late 1800s telegraphy and radio were invented and in 1906, the first voice and music radio broadcast took place (Everyday Practical Electronics, 2000). Following on from radio was the invention of television, with the first broadcast being made in 1926 and the first regular broadcast in the UK in 1939, ten years after the USA. These significant inventions swiftly became available to the general public and opened up further forms of communication, progressing from the earlier creation of printed text. The possibilities of the use of radio and television technology in education was, at the beginning, not realised and techniques we now take for granted were not generally identified

in these early days of what has become multimedia technology . Even though we now take this type of technology for granted its true potential in teaching and learning is still to be explored and many more possibilities are yet to be realised.

In the late 1920s a few people like the educationalist J.C. Stobart, who at the time was working for the very young BBC, and R.C.G. Williams of the Institute of Electrical Engineers (IEE) suggested that lectures could be broadcast by radio or television and backed up by pre- sent texts and visits to conventional universities. They even floated the idea of what they called a 'tele-university' and these creative ideas were the green shoots of what later was to become the Open University and the beginning of e- learning, nearly forty years later. The progress of multimedia and electronic technology progressed swiftly from these early inventions and, in 1971, the first computer processor was placed on an integrated chip leading to the creation of the first microprocessor in 1974, optical telephone links in 1977, and the first hard drive for personal computers in 1978. This led to the formation of the first World Wide Web, and cordless telephones

and cell phones in 1980; this could be regarded as the start of the digital age. The pace of technology development and invention relentlessly went on with the first laptop being introduced to the market in 1981, CD ROMs in 1985, and the first web browser in 1993. Whether such technology was developed for another purpose, or initially as tools for education or vice versa, is only relevant when analysing the speed with which such items have been utilised; what is important is how the growth of information technology and learning technology as learning tools has been realised and introduced into education, and specifically in relation to my research, the FE sector.

Clark (2003) in his paper describes this development of technology chronologically in the form of an hour in time. He represents the 3000 years from the creation of writing to the present day as an hour on a clock face; every second in the hour is equivalent to 50 years of history. Therefore, an hour in time represents the time that has lapsed since writing was invented; the printing press is 9 minutes before the end of the hour, the Internet seven seconds and so on. Technical innovation that has affected education is

therefore represented on a clock face, pictorially demonstrating the speed of change that has taken place in society and education.

Medium	Time
Writing	1 hour
Printing press	9 minutes
Radio	80 seconds
Television	60 seconds
Audio cassettes and video cassettes	23 seconds
PC	18 seconds
Games consoles	12 seconds
Internet	7 seconds
Mobile devices	4 seconds

(Source: Clark, D., 2003)

A great deal of emphasis in ILT has been put on the use and availability of personal computers (PCs) and related technology, which is understandable as it is the latest major technological step. However this quantum step should not be analysed in isolation and should be kept in context with the development of the written word, printing press, television, and radio technology

in terms of its effect and place in the evolution of learning styles.

Radio and television had a major effect on how people communicate and ultimately learn in today's world and is a comparable quantum jump to the invention of the Internet and related computer systems technology. The real effect of the development of digital and Internet communication systems, as a progression from the introduction of the pc and how people will use such equipment to learn, is still to be clearly seen.

However, it is becoming accepted that it will have a major effect on the relationship between the pupil and teacher, and the skills the teacher is expected to possess in making use of the technology. A problem with the requirement of such a skill base is the pace of change that a teacher has to and will have to deal with that is taking place within one generation. Old dogs will have to learn new tricks in order to survive in the new environment as students become more assumptive of the use of technology in their learning experience.

ILT is a big issue and not only includes the changes taking place in teaching and learning, but also in the knowledge management

and information systems in a FE College. This does and will affect both support and management staff in terms of how they work and communicate, both internally and externally, with government offices, partners and awarding bodies. The role of the teacher or lecturer is changing in terms of the relationship with the learner, but so will the role of support services and knowledge management systems. A simplistic approach is to look at what the end user wants and in what format, as the main driver in order to develop the wider range of skills and opportunities available. The creation of the printing press, and eventually cheap printed texts, together with the related availability of books, became a major factor in the learning styles that were chosen. Teaching methods were changed using related texts and publications were specifically written for a learning need. This controlled the specific teaching style developed at the time and it became a necessary skill for a learner to be able to read to continue to progress beyond a certain level. This demonstrates that teaching and learning develops around technological advancements. The invention of multimedia is another example of how

technological advancement has had a major effect on moving the control of the experience from the teacher to the learner.

It has long been established that learning can take place without a teacher or without a teacher being in direct control. While this is still very effective, the development of personal computers, the Internet and digital mobile devices have changed the role of the teacher and put the experience of learning into the hands of the learner.

' New approaches provide small 'chunks' of learning , delivered using high quality well designed material, which make effective use of sound and pictures as well as text. They are available to the learner at times and in places – such as the home or workplace- convenient to them. Learners can be well supported by a mixture of staff with an appropriate spread of expertise, and by the opportunities for learners to work with each other. These methods should be combined with other more traditional approaches in the right blend, to meet the needs of the individual'

(LSC (DELG), 2002, p1).

This change in the relationship between the learner and the teacher is obviously having an effect on educational institutions and the emphasis in this thesis is the effect on the teaching staff in an FE College.

The Open University is a good example of how multimedia technology is being used in education as one source of effective innovation in teaching and learning. After sowing the idea in the 1920s, it took until 1962 when Michael Young proposed the Open University as a way forward for improving accessibility and in 1963, Lord Young produced a report for the Labour Party on how this could be used to make higher education available to the lower income groups and proposed the use of radio and television for adult education (Open University, 2005). All this was nearly forty years after R.C.G. Williams' original idea. To be fair, however, in the 1920s it was not possible to make technology available to the majority of the population and so such access would have been

for the privileged few. By the 1960s the cost of technology had reduced, making it increasingly available to a wider population; today we consider a television or a pc as a relatively low unit cost item.

In 1964, the Labour Party won a general election and looked at the concept of open access by producing a white paper in 1966. In 1967, the Cabinet decided to form a planning committee to start the formation of the 'Open University'. In 1969, the Open University was created and foundation courses were started by 1971. Numbers steadily increased until, by 1980, there were over 70,000 students with 6,000 of them graduating each year. In the early 1980s the university expanded into Europe and introduced the Professional Development curriculum. With the rapid availability of pcs and related peripherals, new study methods were being added to the television, radio, and preset pack and summer school methods. Initially, the University used broadcast lectures on radio and terrestrial television, with accompanying workbooks, support tutor groups and summer schools. This made undergraduate studies available to working adults and was a

prime example of the use of technology in increasing accessibility in adult education, together with the development of different learning methods.

Taking the study of the use of technology into learning, and concentrating on the Further Education sector, it was not until the early 1990s that similar effects began to show. FE Colleges had developed ICT suites or PC rooms but these were generally restricted to specialist areas such as Computing, IT, Engineering and Business Studies (National Council for Education Technology, 1998).

In these curriculum areas the use of software and PCs was integrated into the curriculum and, in some instances, they had specific units of study built into the qualifications. Colleges, similar to the O.U., started to explore the use of technology and this increased alongside a reduction of costs and improvements in the availability of on-line materials, and user-friendly software and operating systems. Increases in the availability of technology stimulated the then FE sector funding body, The Further Education

Funding Council (FEFC), to form the Learning and Technology Committee, chaired by Professor Gordon Higginson. This committee published a report, generally referred to as The Higginson Report, which made recommendations for the future place of technology in Further Education.

The report identified issues common to the sector and made five major recommendations:

- Staff Development,
- Learning and Technology Centres,
- Demonstration Projects,
- Linked Communication Networks between Colleges,
- Research and Evaluation Programmes.

Staff Development and Related Support

The report identified that staff in Colleges were central to the technology becoming useful to learners, and noted that there was large proportion of scepticism and a need to raise awareness of

the possibilities and eventual use of technology in learning programmes. This sounds an easy proposition but nearly ten years on from this report such issues are still being discussed; only recently have they become an element on inspectors' agendas when assessing the performance of colleges or specific curriculum areas within colleges by being included in teaching observations. The report did spark initiatives and people started to look at teacher training and the future skills that would be needed by teachers in the sector. It identified that subject specific courseware was an issue and noted that some form of support would be needed regarding the use of related hardware and software in order for colleges to start using these in delivery.

The main elements identified were:

- Raising awareness and commitment to the possibility of new technology,
- Enhancing the capability of staff in the use of technology,

- Focusing on teaching and the management of learning competences, integrating electronic materials into learning programmes.

(Higginson Report, 1996, p24).

The report recommends two elements of a foundation programme to develop the skills of both teachers and those staff delivering training. The result was the development of ILT champions by the FEFC, the creation of the FENTO standards, and the construction of an ILT inspection framework.

Learning and Technology Centres

The Higginson Report identified that while there was a need to develop staff in the use of technology facilitating learning, there was also a need to provide information, to set up a resource base, to offer advice at a subject level, and to provide support in starting to integrate material and technology into specific curriculum areas. A main recommendation was the provision of independent advice before colleges started investing capital and to combine this with some form of networked centre. This evolved

into the formation of Regional Support Centres (RSC), run under the heading of the Joint Information Systems Council (JISC) which works with the British Educational Communications and Technology Agency (BECTA) and the National Learning Network (NLN) to advise colleges, support projects, produce materials and offer advice about hardware and software.

Demonstration Projects

The report identified that that there was a need to develop a range of projects, through the regional centres, on course information, support systems, video conferencing, materials for multimedia delivery, remote login systems, and the improvement of accessibility.

Network Links

The advances in technology, as discussed earlier, can become a problem for FE colleges and the Higginson report identified that there was a need to develop the skills of staff after colleges had

acquired new learning technology as colleges would need access to a highway system or network to enable them to gain access to the Internet and to use on-line material. The report outlined six potential main uses of the network:

- Supporting independent learning,
- Facilitating remote learning,
- Sharing teaching materials,
- Professional development,
- Marketing,
- Information collection and distribution.

Combined with these main issues it also recognised that colleges could share materials, use bulletin boards and e-mail, use worldwide data and communicate to funding and awarding bodies. As already mentioned this constituted recognition of the effects of technology on information and management systems in the sector as well as the learning experience.

Research and Evaluation

It has been highlighted that the rate of change in terms of technology is and will be high, with implications for teaching and learning; this was referred to in the Higginson report. The report recommended that on-going support for research programmes for the FE sector would be needed with a concentration on the effectiveness of new approaches to teaching and learning, the way technology can be used and its effect. It also identified that there would need to be a link to the regional support centres and it was recommended that such a link should be created.

(Higginson Report, 1996).

The Higginson report can be regarded as a major milestone or turning point in identifying what would be the effect of technology on the FE sector. It logically identified issues of staff development, the integration of technology, changes in teaching and learning, and the support and advice that would need to be available to colleges. Following the report, the FEFC required colleges regularly to review their development of ILT (FEFC Circular 96/34) and, after the results of the FEFC national survey

of 1998 were issued it raised the debate within the FE sector (FEFC ,1998). The survey was performed to get a feel for the state of the sector in terms of the effectiveness of technology in teaching and learning, the factors that influenced this, and the level of development. The survey looked at 44 colleges using visits, classroom observations, inspection data and discussions with students. It identified inadequate network links for computers with a very low use of e mail (9%) and low levels of accessibility to technology generally. Looking at the main areas of importance, it identified a low routine level of IT use to help improve learning by teachers in the classroom, but there were some isolated examples of good practice. It was evident there was little use of technology to assist students to learn independently while there was also a limited availability of technology resources. Some media technology, such as videos and audio tapes, was in use but the main source of knowledge was still text based. Looking at the curriculum areas, Science was a low user, Computing was using the pc as a teaching aid, and developments were taking place in Engineering, Construction and Business with these areas using specialist software and hardware. Some business centres were

formed, and there were a few examples of staff developing skills to use the available technology to improve their teaching in the areas of music, and art and design. While colleges had identified a growing need and had created resources such as ICT suites, it was evident that the staff still had low skill levels and limited confidence in using technology in their teaching, despite the £1.9M investment. The FEFC had, up to 1998, funded transformation projects and research on the use of learning technology through the National Information and Learning Technologies Association (NILTA), Further Education National Consortium (FENC), BECTA, and the Further Education Development Agency (FEDA), now known as the Learning and Skills Development Agency (LSDA), and through colleges generally.

The survey did identify some positive elements: there was an increase in awareness, resource reviews were taking place, and learning centres were being developed in colleges. The main issue was that there was limited availability of this technology with the financial limitations of most colleges, limited resource expertise, low confidence, and the limited general experience of staff in

developing the use of technology. In 1998, the National Council for Education Technology (NCET) produced a paper called 'Planning for ILT in Further Education'; following visits to speak with senior managers in colleges. The paper addressed what it considered to be the key issues that needed to be addressed to get ILT properly integrated into colleges.

'The Role of ILT in FE: Information and learning technology is now so central to the work done in further education that its development cannot be left to chance. ILT is a strategic issue and needs to be treated as such in the overall planning process that takes place in the College. ILT applications have become more widespread, varied and complex in the 1990s. The demands on a College ILT structure are considerable'

(NCET, 1998, pg 2)

In this document the NCET highlighted that it was more a matter of convergence of technology, so despite the fact that little

movement had occurred from the Higginson recommendations and in spite of some injection of funds, the option for the FE sector not to buy in to the effects of technology was not acceptable. Considering the time line representation offered by Donald Clark, it is not surprising that little happened in the two years after the Higginson report. This is still an issue in the present time and the problem is not just down to the demands of the learner, even if a very powerful driver; it is also a matter of the culture and attitude of the teaching staff and a college's strategic priorities. The NCET paper identified that technology would create more flexibility and consequently changes in teaching and learning methods. However, friction did exist between the decisions made on how to allocate the technology: to preferred vocational areas, to open learner resource access, or to teaching staff. It was considered that the FE sector was in a period of transformation and people resisting change would not even remember the issues a few years later. With hindsight, however, this was an optimistic opinion that did not really demonstrate an appreciation of how difficult it would be for a large percentage of

the teaching staff to change; the effect of limited college funds and priorities after incorporation was also not fully recognised.

In April 1999, the FE Information and Learning Technology Committee (FEILT), set up by the FEFC, published a consultation report on the development strategy for ILT in Further Education (An ILT Development Strategy for FE, 1999), which then led to a FEFC circular in May, 1999 . The report constituted a further sector response to issues highlighted by the Higginson report and identified the need for a link between ILT provision and lifelong learning, as well as the need for the government to provide substantial funding to develop the IT infrastructure.

The limitation of funds was recognised as a major factor in the ability of the FE sector to implement the proposals of the Higginson Report and the committee expressed the view that that any strategy should be driven by the needs of the learners and their requirements. This may be perceived as an obvious view you but it was felt that some strategies tended to look at the needs of managers, teachers and support staff, rather than those of the

learners, evidenced by the numerous studies on the availability of e-mail for staff or the ratio of PCs to staff.

The report did recognise that IT would provide an effective means of accessing information independent of the written word and could help people with learning difficulties and problems with text-based information. The creation of support like QUILT (Quality in Learning and Teaching – a staff development initiative) and FERL (FE Resources for Learning – an Internet-based information service) had helped the development of ILT expertise since the Higginson report but between 1996 and 1999 the needs of the learners had changed since these had also been evolving as more technology became available. One issue in terms of staff development was that staff might experience problems reacting quickly enough to these changes of need, the changes in their relationships with the learners, and the skills set they themselves would need to meet the learners' needs effectively. The report identified the continuation of the move towards student-centred and individual learning needs and the effect of technology in accelerating this process. In the report, one of the main recommendations was the need for a continual programme of

staff development on the use of ILT and a minimum entitlement of access to a networked PC for both staff and students by 2002. The report also identified the need for a vision and a set of assumptions for the following ten years in the FE sector, linking it to a lifelong learning context. These assumptions nicely summarised the continuation of the development and potential use of technology and its effects on the relationship between the learner and lecturer. The assumptions decided on in the report became the basis for future strategies. This led to the creation by FENTO in January 2002 of a set of ILT skills required by staff in the sector together with future professional development priorities and initiatives for teachers (LSDA, 2002).

It was assumed that over the next ten years (1999-2009) that:

- New technology will have been fully developed to support the individual learner.
- Remote learning at home or at work will be an option for most courses.

- For most courses, even those followed at college, part at least of the course is likely to be delivered by individually followed learning packages.
- As the notion lifelong learning becomes more embedded, so will the concept of intermittent learning. Credit accumulation will therefore become a way of achieving a qualification with a modular structure and various pathways.
- Credit accumulation, and pathways within and between qualifications, will affect the framework of FE, increasing choice and options. There is therefore a need for an IT system that can track individual progress and the credits that have been accumulated

(FEFC, 1999).

Taking these assumptions to be valid then there will be a logical effect on the characteristics of typical colleges.

- It will be an expert at managing a highly diverse portfolio of individual learning.

- It will have large flexible study centres with access to the Internet and be networked to the community and learners' places of work.
- It will have support systems for face-to-face or remote requests.
- It will have fewer buildings but will have extensive partnerships and outreach provision.
- It will rely extensively on learning materials packaged for individuals and will have sophisticated tracking systems linked to a national system

(LSDA, 2002).

This report, and FEFC directives 99/18 (An ILT development strategy for FE) and 99/45 (ILT implementation plan), were published identifying that there was a need to improve teaching skills, to provide an information and advice service for specialist subject areas, and to enable good practice to be disseminated.

The cynic might say this was very similar to the conclusions made in the Higginson Report and it is strange that it took three years for the sector to come to the same conclusions. However, progress had been made in terms of the IT infrastructure, as

demonstrated by the BECTA survey *The State of ILT in FE College*' in November, 2001. The sector had also identified the teaching staff skill base required by FENTO in the publication *Skills Foresight for Further Education (2002)*. Since 1996, £1.9M, over five years, had been allocated to staff development in ILT in the FE sector but this was a tenth of the amount allocated to training school teachers (NCET, 1998). The 2001 BECTA survey indicated that colleges were still struggling with the availability of ILT and the continuous shortage of funding had affected colleges by making them prioritise toward resources resulting in staff development lagging behind when compared with the amount spent on the IT infrastructure.

'There is a lack of suitable e-learning materials for all curriculum areas other than ICT skills and the overall volume of materials available is relatively small in proportion to the range of subjects and levels. Only 16% of learners use e-learning materials regularly'

(DfES, July 2002, p 11.)

The FENTO standards for teaching and the support of learning in the FE sector did identify the skills staff required for the future in an ILT context. It was assumed that staff would conform to existing and emerging codes of practice, reinforcing the idea that although traditional teaching skills were still relevant, elements related to the effects of technology, and hence ILT, needed to be added to the skills set. This was added to teacher training courses but the other issue was how to up-date existing qualified staff in FE colleges. How do you also ensure that the actual learner experience in or out of the classroom has significantly changed and that the use of technology is really being adopted and used correctly? The FENTO standards identified the main elements of change and the related skills that were needed. It also reflected the need for continuing change in the relationship between learner and teacher but as the technology progresses at a fast pace, is it viable for staff to keep up?

The FENTO standards mentioned above can be summarised as follows:

- Encourage learners to manage their own learning pathway.
- Plan the use of ILT as part of the learning programme.
- Facilitate learning on- site using ILT.
- Facilitate online learning.
- Develop and adapt ILT materials to support learning.
- Provide learners with support to use ILT.
- Track and assess learners using ILT.
- Champion the application of ILT to teaching and learning.

(LSDA, 2002)

The following year, the E Learning Task Force Report (July 2002) identified that colleges were still concentrating on the physical resources of hardware and related learning materials rather than the e-development of staff. This was an understandable response since, with BECTA stating that equipment and related needs should be part of a college's strategy, it was easier to set targets for equipment and materials rather than targets for employee development. Concentrating on setting targets and making plans

to improve items like ratios of PCs to staff and students is easier when compared to those plans needed to develop teaching staff in the use of new technology, together with the necessary improvements to teaching and learning standards against a change of learners' needs and preferred learning styles.

This concentration was highlighted by the way funds were being allocated:

74% of funding was devoted to infrastructure.

23% of funding was devoted to content.

3% of funding was devoted to skills development and training, for staff.

(DfES, June 2002, p 11.)

Staff development, in terms of ILT skills, was covered by the FENTO standards and repeated as an important factor in the report by the Distributed and Learning Group in 2002, generally

referred to as the DELG report. This report again identified the continual change in the relationship between teacher and learner caused by technology. This report and the FENTO standards were used as a sources of information for the Department for Education and Skills to produce the **Success For All** discussion document on how colleges, trainers, communities and employers should finalise strategies to make sure that learners needs in the FE sector are fulfilled (Dfes, 2002). This discussion document reinforced the breadth of provision in the sector and suggested a credit-based approach to qualifications, together with the development of a related assessment methodology. It also identified that some good teaching was taking place in curriculum areas and this should be disseminated. Following the DELG and E- learning Task Force reports, it was recognised that a coherent national e- learning strategy was needed in order to meet the needs of learners.

'It is our intention that ICT will be available to all learners to enable them to develop new skills and access a wider range of learning opportunities. This will be achieved, in part, by helping

staff to develop the competences , skills, and knowledge needed to use technology to manage, deliver and support learning'

(DfES, June 2002, p. 17)

How such a cultural change was to take place is still being debated and the sector now have staff that have experienced rapid changes, due to technology, in their relationship with learners. Previous generations experienced a much slower rate of change and whether an old dog can be taught new tricks is one issue that needs to be resolved. It is no use creating excellent resources, however, if teachers are resisting change in the teaching and learning that are related to them. The present 16-19 cohort entering FE colleges is the first generation to take multimedia and digital technology for granted and to assume that access to the technology is the norm. These learners have also developed a range of learning styles that could clash with an older teaching style. They assume that when they move into the FE sector it is an upward progression from their school experience and that technology and the learning experience will be more advanced and self directed. The DELG Report was the result of

analysing the implications, challenges and opportunities due to the growth of ICT. It included a series of yet more recommendations to advise the now new funding body of the FE sector (the LSC), on how to make sure the technology could be used to achieve provision of the highest possible quality, specifically looking at the concept of E- learning. The ***Success for All*** document published after this

report meant that the issue had become high on the government agenda for the sector and that the related inspectorates would be looking for the use of technology in delivery. The skills have been set as a requirement in teacher qualifications and have also entered key skills in the sector as the DELG report set out the professional development requirements. In doing so, this report set the agenda for an assumed skill base for teaching staff.

'...the potential of e – learning , and the value of LSC and college investment , will not be realised without significant change in the norms of delivery within tutor led, classroom based teaching and learning.'

(LSC, 2002, p18).

A report by BECTA for the LSC (2004) (***ICT and e – learning in Further Education***) identified that the sector has a robust IT infrastructure and is capable of delivering a wide range of electronically structured learning experiences. Access for staff and students is on target and there is evidence that ICT is being used in traditional teaching classrooms; some blended learning is also taking place. It identifies that the use of ICT and e-learning are still, however peripherals to the traditional classroom-based teaching, and are mainly being used as support activities to extend independent learning. It states that colleges have developed an ability to identify and adopt innovations using ILT and that the allocation of funds has made the replacement of equipment sustainable; therefore the availability of resources is generally no longer a major blocking factor. After 1999, the factors identified in

the Higginson Report started to be noticed with the number of computers in the sector having roughly doubled; this is still rising. The ratio of Internet linked PCs to students is at 4.4 :1, improving from 21:1 in 1999, it seems to have stabilised since 2003. The PC ratio for permanent staff has fallen from 3:1 in 2001 to 1:1, and 86% of colleges now use the internet as a learning platform with 94% using shared areas on a college network. Similar increases have taken place across the board but it appears that work still needs to be done on the traditional classroom with only 24% of colleges using ICT as a widespread classroom tool and only 20% using it as a traditional learning resource.

Such increases could be attributed to funds being made available via the National Learning Network (NLN) being used to develop the IT infrastructure and targets e.g. PC ratios, connectivity, materials and software. From 1999 to 2002 the sector (FE and Sixth Form Colleges) received £74M, with a further £84M from 2002 to 2004, and the plan is to go out to the wider sector of post 16. However, even with this investment, figures still show a low use of the technology for individualised learning (24%) and even

lower for remote learning (18%). This, in hindsight, is probably not surprising as the cultural change of moving away from classroom-based delivery will not be an easy one to adopt. (BECTA, 2005).

Whatever the direction the FE sector takes, it is evident that the effect of technology over the last decade has and will continue to have a major effect on the relationship between the learner and teacher, and the characteristics of a typical college. The skills teachers need for the future have been defined and will require people to up-date and change teaching styles while still keeping their traditional skills. Technology will not replace good teachers but will help them become more effective and have more tools in their armoury to help learners meet the lifelong learning and widening participation agendas. A good tutor will be one who can take on board that a continual professional development culture will be the norm and they will have to be lifelong learners along with their students.

Chapter Four

Research Methodology

4.1 Introduction

The approach used for this study was to adopt a methodology based on illuminative evaluation (Parlett and Hamilton, 1985), and the grounded theory work of Glaser and Strauss (1967). The primary concern was to interpret and identify issues of FE teachers' perceptions of the effects of new technology rather than with measurement and prediction. The task was to gain an understanding of the complex issues related to the perceptions of FE college teachers and any illuminating factors when analysing the adoption and use of ILT.

The strategy was to use a survey approach, and in order to achieve a range of perspectives from teachers to enable triangulation a combined method of using two data collection methods, questionnaires and focus groups was used. (Cohen, Manion and Morrison, 2000).

4.2 (a) Research Instruments

The plan adopted was to initially create a basic questionnaire, after discussion with ILT managers and champions, which was sent to a large range of teachers to identify a group of teachers that used technology to a high level in their teaching. The initial questionnaire was distributed to the lecturers in two FE Colleges to obtain data on the level of ILT used and identify the high level user group for future focus group interviews (see Appendix I for the questionnaire and Chapter five for the results).

This high user group was then used as the source of attendees for focus groups. The content of the main steering questions of the focus group sessions was based on a pilot meeting made up of ILT managers, advisors and staff development officers. The main items on the agenda to be discussed were based on the results of the initial questionnaire and the proposed focus group questions.

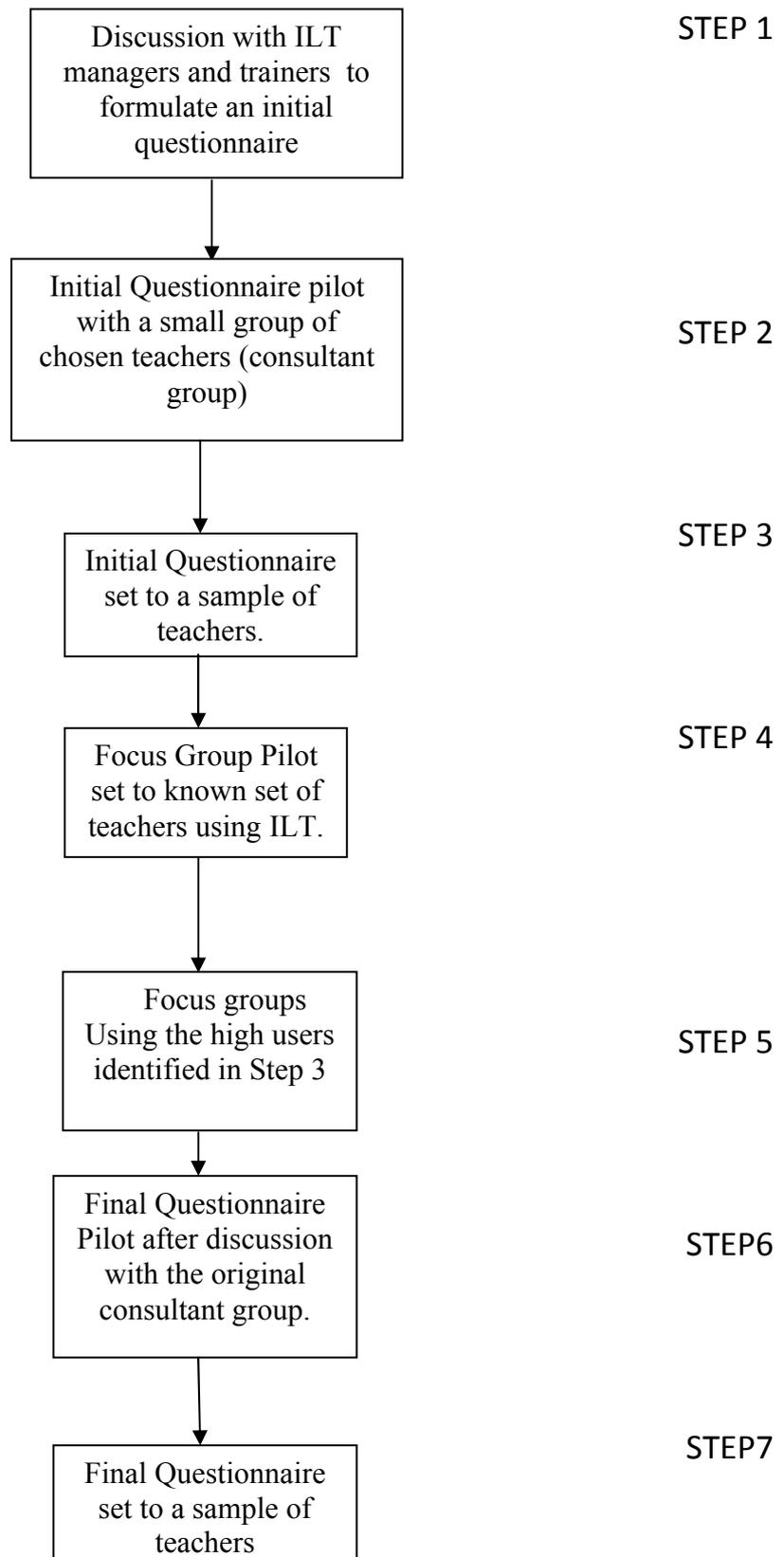
The focus group interview schedule was piloted with a group of known teachers who used ILT in their teaching. This raised a few issues that adjusted the final interview schedule. There was a

need to define the terms ICT, ILT and IT and this was added as part of the brief and issued paper based. Formulating a question on transferring from formal to self taught was too assumptive and was changed to a more open question asking if they had considered their preferred learning style and they considered to be the most effective way to develop their ILT and ICT skills. The links with curriculum development, evaluation and future planning were also added as specific questions as the pilot identified that it may be an issue that teachers do not deeply relate ILT development with these factors.

The focus groups emerging perceptions that were common issues were then used generated three key factors. These key factors were then used as the foundation for the formation of a final questionnaire (see appendix II) that was distributed to the original teacher population used in the first questionnaire.

The sequence below summarises the process adopted

Planning Sequence



4.2 (b) Initial Questionnaire Design

The initial questionnaire (Appendix I) was designed with the objective of accessing as many teaching staff as possible. The distribution was paper-based so that data on low-level IT users could also be obtained. The intention of the initial questionnaire was to establish a broad picture of the actual usage level of ILT generally, and the depth to which the new technology had been introduced into the learning environment. This initial questionnaire was not designed to identify why or how the technology was being used but to provide basic data of a general nature and primarily to identify a high ILT user population for further study. Some of the questions were intentionally jargon-loaded to help identify this high user group, using responses that indicated the level of knowledge of ILT and general ICT skills. The questionnaire was formulated as a result of discussion with managers and training officers and piloted on a chosen group known to use a high level of technology in their teaching

The questionnaire was issued to a sample of FE teachers and the responses used to identify a high ILT user group to obtain members of focus groups. The measurement criterion used to achieve this was: if the internet was used weekly for teaching and at least 50% of the second section of the questionnaire was completed accurately, thus demonstrating the respondent was a potential high user. This method was to concentrate on elements that were related to supporting teaching and learning, and not just as an effective means of communication using IT. Somebody may be a high user of e-mail, for instance, but may not use the technology in their actual teaching sessions or for planning. (The in-depth analyses of the results are provided in Chapter Five).

4.2 (c) Focus Groups

From the initial survey, focus groups were created after piloting the instruments with a group of five ILT practitioners (champions, team leaders and managers). After running the pilot (the transcriptions are in Chapter Five) an interview schedule was

created and two focus groups were performed with the resulting responses used to identify three key factors (learning style, staff needs, self evaluation) for the final questionnaire. Built into the focus group sessions, following the pilot , were definitions used for the purpose of the research of the terms IT, ICT and ILT. The interview schedule used is specified as follows and the emerging issues are summarised in Chapter Five.

Focus Group Interview Schedule

Definitions needed in brief: these were read out as part of the brief and issued paper based

Many documents have been published mentioning ILT and its development in Further Education. One issue that needs clarification is an agreed definition and the difference between ILT, IT and ICT. Here are definitions that have been adopted by most people and the ones we will use or assume in the College.

The use of learning technology in Further Education environments is rapidly changing and this has introduced a need for new skills and knowledge. In Further Education, information technology is becoming a widely requested and used method to promote, improve and create effective learning. This has caused the formation of a number of terms and abbreviations. The definitions of the terms used in the research are those used by the

Further Education National Training Organisation (FENTO) and the National Training Network (NLN).

Information Technology (IT): The computer infrastructure, hardware and software used to process data and deliver information.

Information and Communication Technologies (ICT): The combination of computing and communication (including computer networks and telephone systems) that connects and enables some of today's most exciting systems e. g. the Internet.

Information and Learning Technologies (ILT): this is used, in further education, to refer to the use of information and communication technologies to support the core business of college: the delivery and management of learning.

(Source: ILT, standards for the application of ICT to teaching and supporting learning and management in further education, FENTO, published by LSDA, 2002.)

Interview Schedule

The intention was to use an open-ended construction for the schedule to enable perceptions to be explored, misunderstandings to be cleared up, to establish a rapport, identify unexpected answers and clarify understandings. The schedule was intended to use prompts to support open-ended questions so responses could be used to identify some of the questions and key factors for the second questionnaire.

Each focus group was briefed on the reason for the interview and that specific terms needed to be defined .It was in the briefing that questions were open ended in style with some structure to cover previously identified key issues using lead questions and follow up questions .

Below is a schedule covering the lead questions and intended prompts if needed (*italics*).

Preferred Learning Style

- Can you describe for me exactly how you developed the ICT skills you use in your work in the College?

Self taught (trial and error), formal courses, mentor either formal or informal.

If a course, what types of course?

- Do you feel you learn most effectively in a particular way?

If so, give some examples

- Can you describe some learning methods that have been effective and some that have failed?

- Were there ways in which these preferences influenced the way you worked to develop your ILT skills?

Could you give examples?

(Interviewer prompts:

Theory: Reflector, Theorist, Pragmatist or Activist

(Behaviourist, cognitive or humanist)

Type of Learning: Knowledge (memory, reading, class presentation, discussion)

Psychomotor (demonstration, worksheets, on the job)

Attitude (assessment reinforcement, experience debates, self assessment)

- How did the College support your development?
- Was the support appropriate for you?
- Could you suggest ways in which the support could be improved for you and colleagues?

Did the College provide a route you wanted?

What did you use that the College provided?

Sources of Knowledge/ Skills in ILT

- Can you describe how you came to identify your specific needs in ILT?

- How did you come to choose particular aspects of knowledge or skills?

Trial and error, reactive i.e. student request, awarding body specification.

College initiative.

Your own goals.

- What were the main methods you employed to develop your ILT skills and knowledge, and did they match the ones you used for ICT?

Experiential, formal courses, demonstration.

- Can you describe the reasons why you have developed elements of ILT in the curriculum?

Enforced, trial, informal, evaluative.

- Can you describe ways in which the use of ILT has created curriculum change?

Content, process of delivery, introducing a different learning style, differentiation.

Evaluating Techniques ILT

- How did you evaluate the skills you thought you needed in relation to ILT?

Time taken to produce resources, improvements in quality of resources, problems encountered.

- How did you evaluate the knowledge you identified you needed to implement the use of technology in teaching?

Use of computer software, interactive white boards, Internet links, quizzes, chat rooms.

- Can you describe exactly how you assessed the success of the changes introduced? Please give examples.

Student feedback, observations, self evaluation.

Future planning and Updating of ILT

- Can you say something about your future plans for developing ILT in your work and for your personal development?

How do you expect to update your skills?

Any other statements

4.2 (d) Final Questionnaire

Following the completion of the focus groups, **three key factors** were selected for the final questionnaire (**staff needs, learning style, self evaluation**) together with one specific question on staff perceptions concerning whose responsibility it is to identify ILT skills needs (i.e. employee or employer) which could be related to any continual professional development, or CPD process. In the non-randomised version(see appendix II) this is addressed in questions 13 and 14 and in the randomised version questions 19 and 34 which is summarised in table 4 below . Under each factor, sets of positive/negative questions were created covering identified issues and reliability was tested using the Cronbach's alpha, α method (Cronbach, 1951) and utilise a scale based on psychological constructs by Kline (1999).

Summary of question sets against each factor using the

Non randomised and randomised questionnaire templates.

Factor	Question Set	Non randomised question numbers (positive question first)	Randomised question numbers (positive question first)
Learning Style	New skill acquisition.	1,2	7,13
Learning Style	Learning environment preference.	3,4	24,2
Learning Style	Formal or informal training style preference.	5,6	14,28
Learning Style	Formal or informal training	7,8	21,33

	programme preference.		
Staff Needs	Proactive or reactive to student ICT needs.	9,10	9,29
Staff Needs	Awareness of continual ICT skill update.	11,12	17,4
Staff Needs	Awareness of the availability of new technology.	15,16	11,25
Staff Needs	Reference to up-dating ILT/ICT skills or specialist vocational area.	17,18	6,30
Staff Needs	ILT being syllabus content driven.	19,20	22,1

Staff Needs	Use of technology to save time as a main driver.	21,22	20,3
Staff Needs	Taking a risk with new technology in a teaching session.	23,24	15,8
Self Evaluation	Technology used to reduce workload.	25,26	27,12
Self Evaluation	Technology used to monitor student progress.	27,28	23,31
Self Evaluation	Technology used by students in assignments.	29,30	16,26

Self Evaluation	Link between personal ILT/ICT skills and teaching materials.	31,32	10,5
Self Evaluation	Valuation of ILT/ICT skills based on teaching materials.	33,34	18,32
Non Factor Question	Is it the College (employer) or the individual who is responsible for identifying ILT skills needs?	13,14	19,34

Table 4

The final questionnaire had the factor column removed and the questions randomised; it also included biographical data entries to identify if there was any correlation between responses to the key factors and this data set (see Appendix II for the final version used with FE lecturers). For example, some research in other fields had indicated that there was a possible gender-related issue with the use and acceptance of technology in the classroom with evidence that male lecturers use technology more than females (Developing the Impact of ILT, NLN, 2005).

The questionnaire was piloted with 33 PGCE students which did not identify any major changes required for the FE college sample. The data obtained from the pilot was not included in the overall sample as the pilot group did not compare with the main sample on biographical data e.g. entry qualifications and gender and in cross tabulation indicated a significant difference in the difficulty to learn in the workplace (see Appendix III for pilot results). The analysis of the final sample is offered in Chapter Five.

CHAPTER FIVE

Analysis of Results

5.1 Introduction

The research data is separated into three elements.

- Initial questionnaire
- Focus groups (which included a pilot)
- Final questionnaire (which included a pilot).

The final questionnaire was the main element of the research data but the initial questionnaire and focus groups produced useful data that generated the final questionnaire content and factors of study. The structure of questionnaires used and details of the focus group interview schedule is covered in Chapter four as part of the methodology and this chapter contains the analysis of the data.

5.2 The Initial Questionnaire Results.

The initial questionnaire as already described in previous chapters was circulated to FE lecturers in two Colleges and to help these Colleges use the initial results the responses were displayed separately. Being able to have access to the teaching staff at two FE Colleges enabled a reasonable sample of 240 responses to identify the initial issues for the focus group schedule. The data from this initial questionnaire was used to identify a high ILT user group that could be used to form the focus groups.

The responses from the initial questionnaire were not the only source used to generate the focus group interview schedule content, but were used in conjunction with subjects raised during pilot discussions and in previous studies.

The questionnaire was split into two sections. The first section asked views on the regularity of using specific technology as a tool. This enabled a general picture of ICT skill being used in

communication and preparation. It therefore asked about the use of email, Internet, intranet, accessing material using CD ROMS, networked videos. The second section asked about the use of specific tools in the actual teaching sessions. These grouped into major types or specific software. On-line material through virtual learning environments , Hot Potatoes which is a specific ice of software that generates questions or quizzes, FENC material which is a specific source of learning material (summarised in the analysis as NLN) , the use of video conferencing in a teaching session and the use of shard tools such as calendars, joint or shared drives.

The analysis is summarised in three tables below with the first the two tables being the responses in the two colleges (tables 5 and 6) and the third , table 7 is a summary of each College and an overall summary in rounded percentages of section one showing the adoption of technology for preparation and communication. The chart shown in Table 7 summarises section two of the responses of the teachers on the use of tools in their teaching .

The summary of the initial questionnaire responses are as follows:

Totals for College 1

Tools Used			Tools Applied			
College email	Daily	104	On line learning	Yes	26	
	Weekly	19		No	118	
	Monthly	6				
	Never	15				
	Don't Know	0				
Intranet	Daily	30	Hot Potatoes	Yes	7	
	Weekly	53		No	137	
	Monthly	32				
	Never	28				
	Don't Know	1				
PowerPoint	Daily	12	Video conference	Yes	10	
	Weekly	28		No	134	
	Monthly	30				
	Never	73				
	Don't Know	1				
Internet - teaching	Daily	22	NLN	Yes	3	
	Weekly	47		No	141	
	Monthly	43				
	Never	32				
	Don't Know	0				
CD ROMS	Daily	0	Shared Tool	Yes	43	
	Weekly	4		No	101	
	Monthly	35				
	Never	101				
	Don't Know	4				
Videos on network	Daily	0	Other	Yes	6	
	Weekly	3		No	138	
	Monthly	17				
	Never	112				
	Don't Know	12				
Other	Daily	6	ILT focus group			
	Weekly	13	Would attend?	Yes	21	
	Monthly	7		No	73	
	Never	115			Possibly	50
	Don't Know	2				

Table 5

Totals for College 2

Tools Used			Tools Applied		
College email	Daily	6	On line learning	Yes	45
	Weekly	32		No	101
	Monthly	28	Hot Potatoes	Yes	18
	Never	29		No	128
	Don't Know	1		Video conference	Yes
Intranet	Daily	6	No		127
	Weekly	32	NLN		Yes
	Monthly	28		No	127
	Never	29	Shared Tool	Yes	54
	Don't Know	1		No	92
PowerPoint	Daily	6		Other	Yes
	Weekly	32	No		0
	Monthly	28	ILT focus group		
	Never	29	Would attend?	Yes	
	Don't Know	1		No	
Internet - teaching	Daily	6	Possibly		
	Weekly	32			
	Monthly	28			
	Never	29			
	Don't Know	1			
CD ROMS	Daily	6			
	Weekly	32			
	Monthly	28			
	Never	29			
	Don't Know	1			
Videos on network	Daily	6			
	Weekly	32			
	Monthly	28			
	Never	29			
	Don't Know	1			
Other	Daily	6			
	Weekly	32			
	Monthly	28			
	Never	29			
	Don't Know	1			

Table 6

Summary of responses to tools used as rounded percentages.

Tools Used		College 1	College 2	Combined
		Total Responses 144	Total Responses 96	Total Responses 240
College email	Daily	72%	6%	46%
	Weekly	13%	33%	21%
	Monthly	4%	29%	14%
	Never	10%	30%	18%
	Don't Know	0%	1%	0%
Intranet	Daily	21%	6%	15%
	Weekly	37%	33%	35%
	Monthly	22%	29%	25%
	Never	19%	30%	24%
	Don't Know	1%	1%	1%
PowerPoint	Daily	8%	6%	8%
	Weekly	19%	33%	25%
	Monthly	21%	29%	24%
	Never	51%	30%	43%
	Don't Know	1%	1%	1%
Internet - teaching	Daily	15%	6%	12%
	Weekly	33%	33%	33%
	Monthly	30%	29%	30%
	Never	22%	30%	25%
	Don't Know	0%	1%	0%
CD ROMS	Daily	0%	6%	3%
	Weekly	3%	33%	15%
	Monthly	24%	29%	26%
	Never	70%	30%	54%
	Don't Know	3%	1%	2%
Videos on network	Daily	0%	6%	3%
	Weekly	2%	33%	15%
	Monthly	12%	29%	19%
	Never	78%	30%	59%
	Don't Know	8%	1%	5%
Other	Daily	4%	N/A	N/A
	Weekly	9%	N/A	N/A
	Monthly	5%	N/A	N/A
	Never	80%	N/A	N/A
	Don't Know	1%	N/A	N/A

Table 7

Tools Used College 1

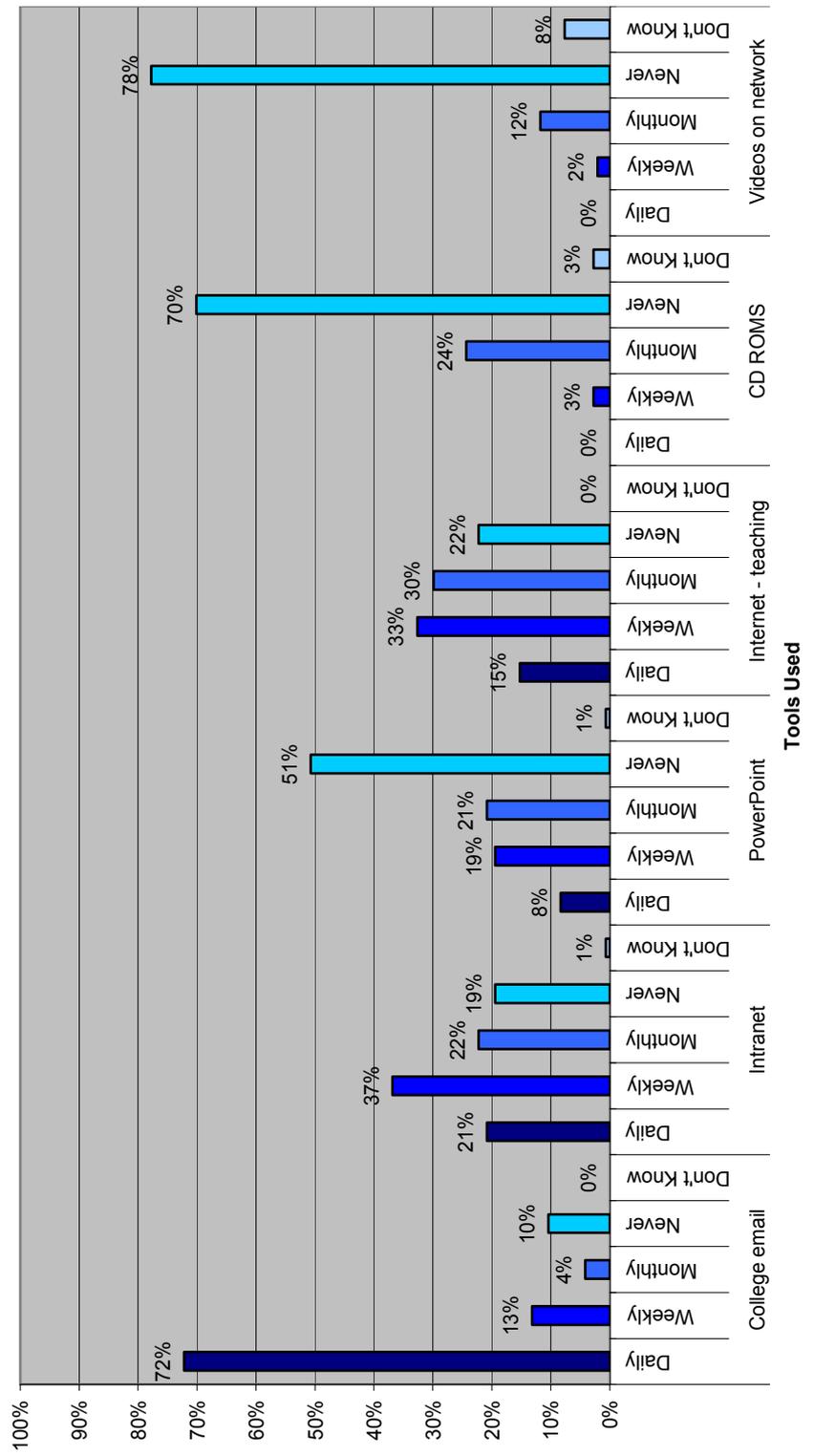


Fig 1

Tools Used College 2

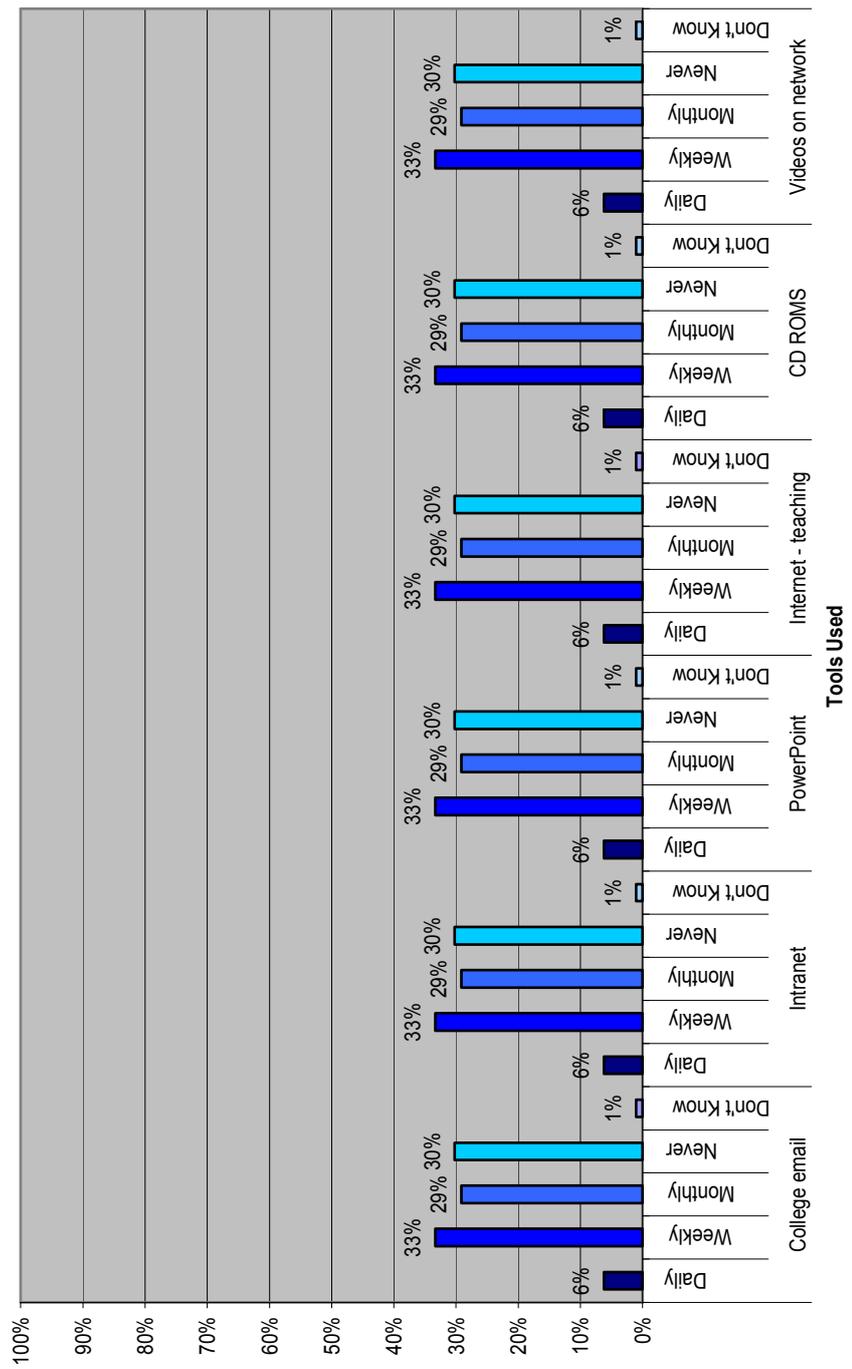


Fig 2

Tools Used Combined Results

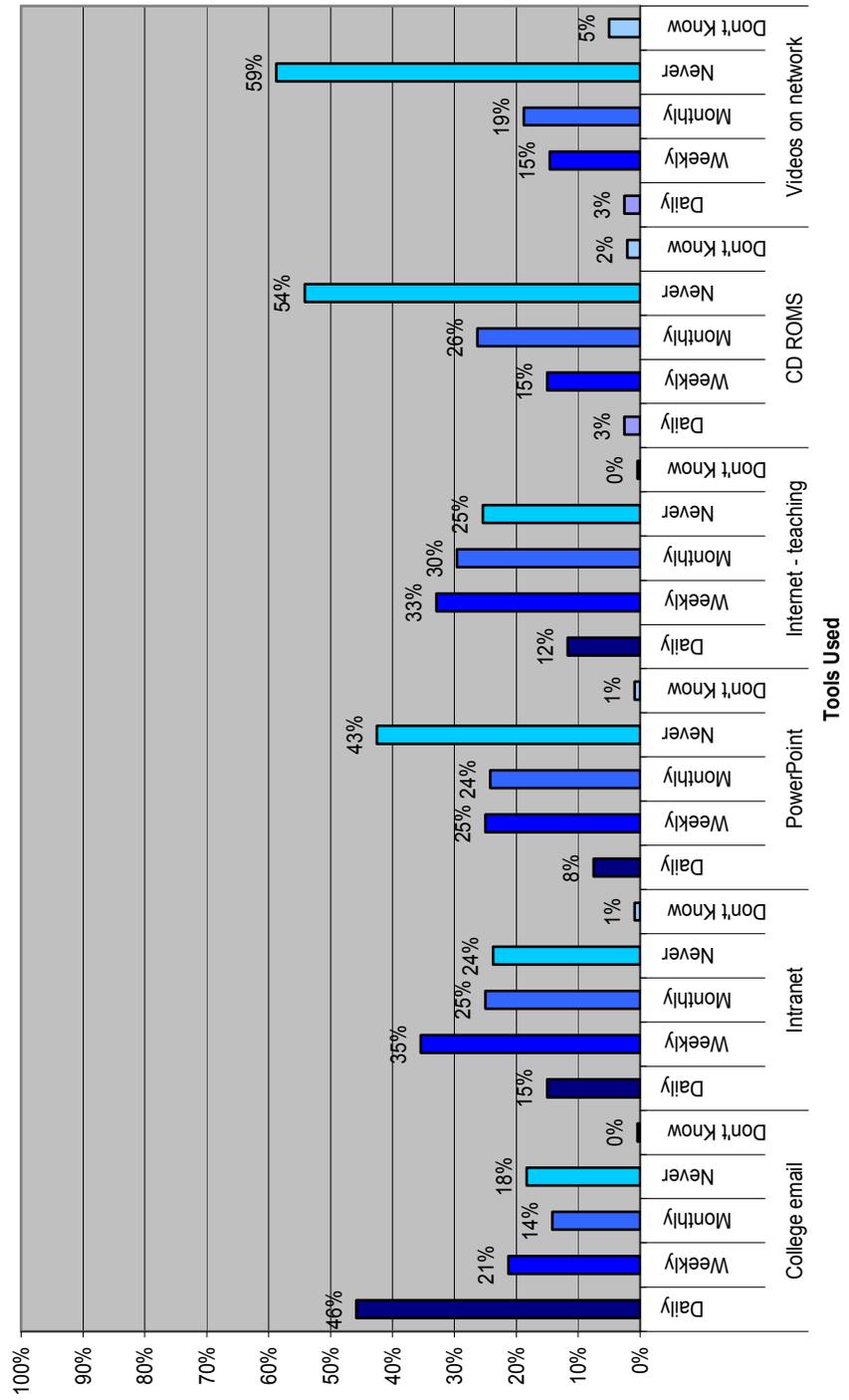


Fig 3

Tools Applied College 1

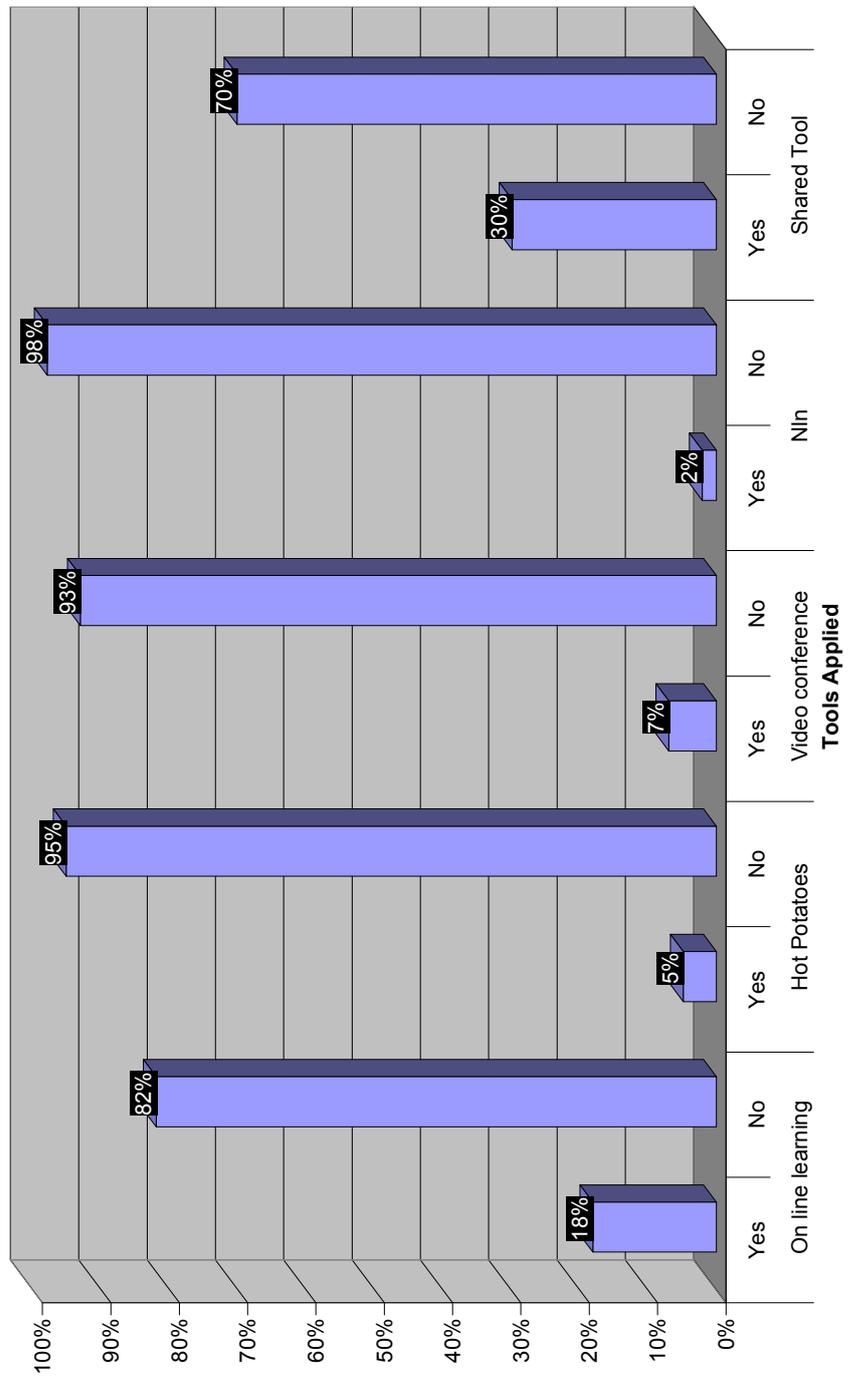


Fig 4

Tools Applied College 2

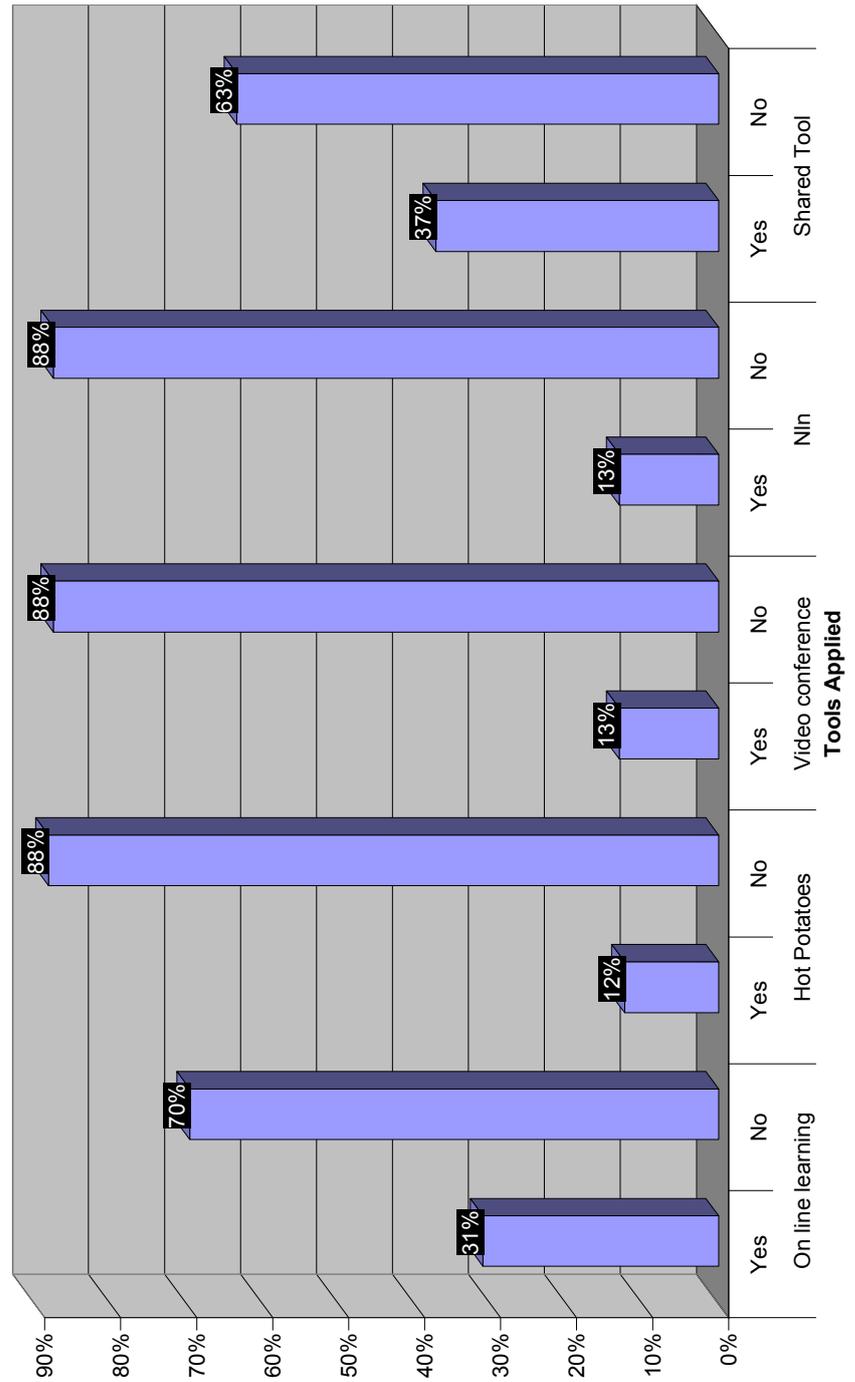


Fig 5

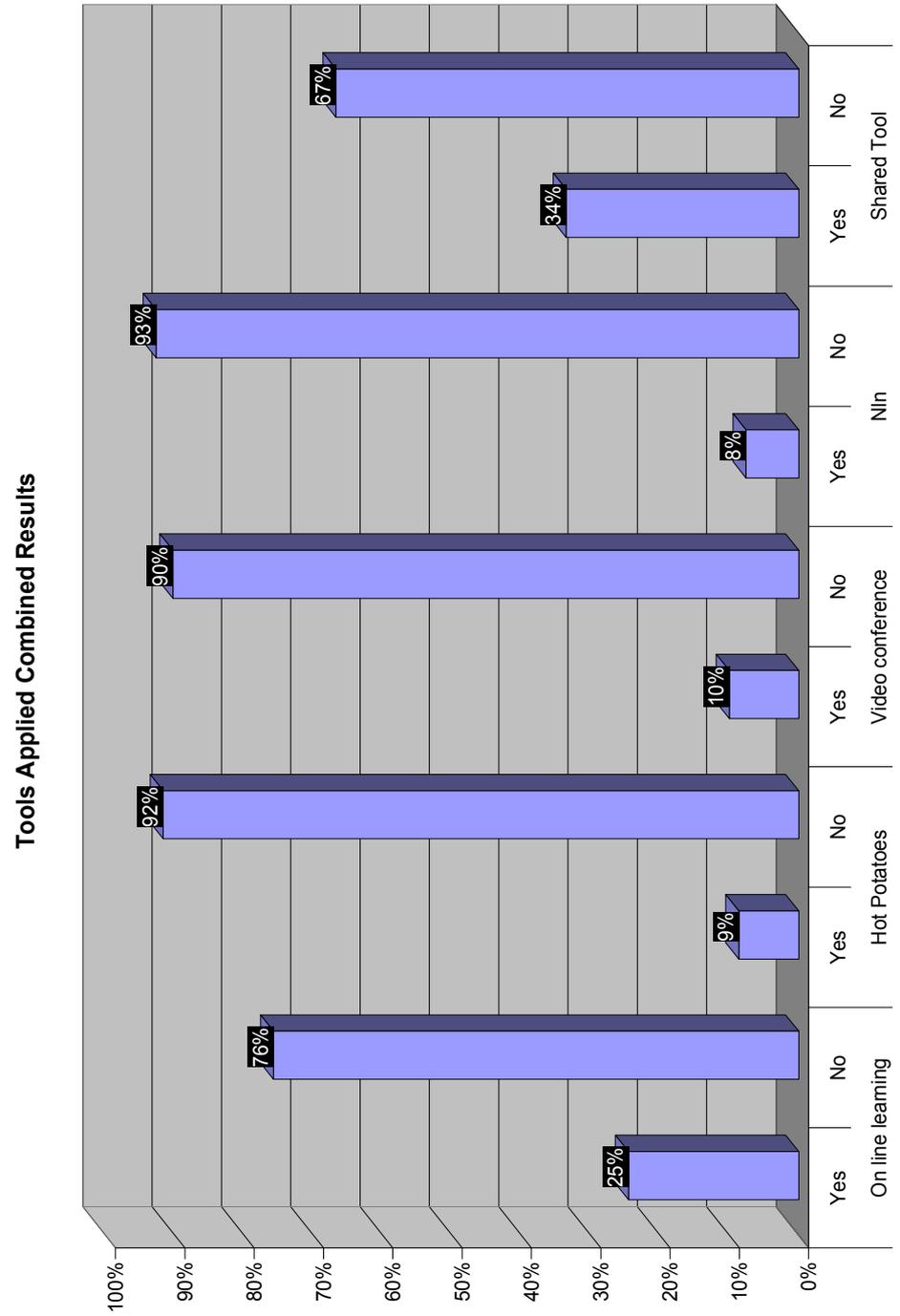


Fig 6

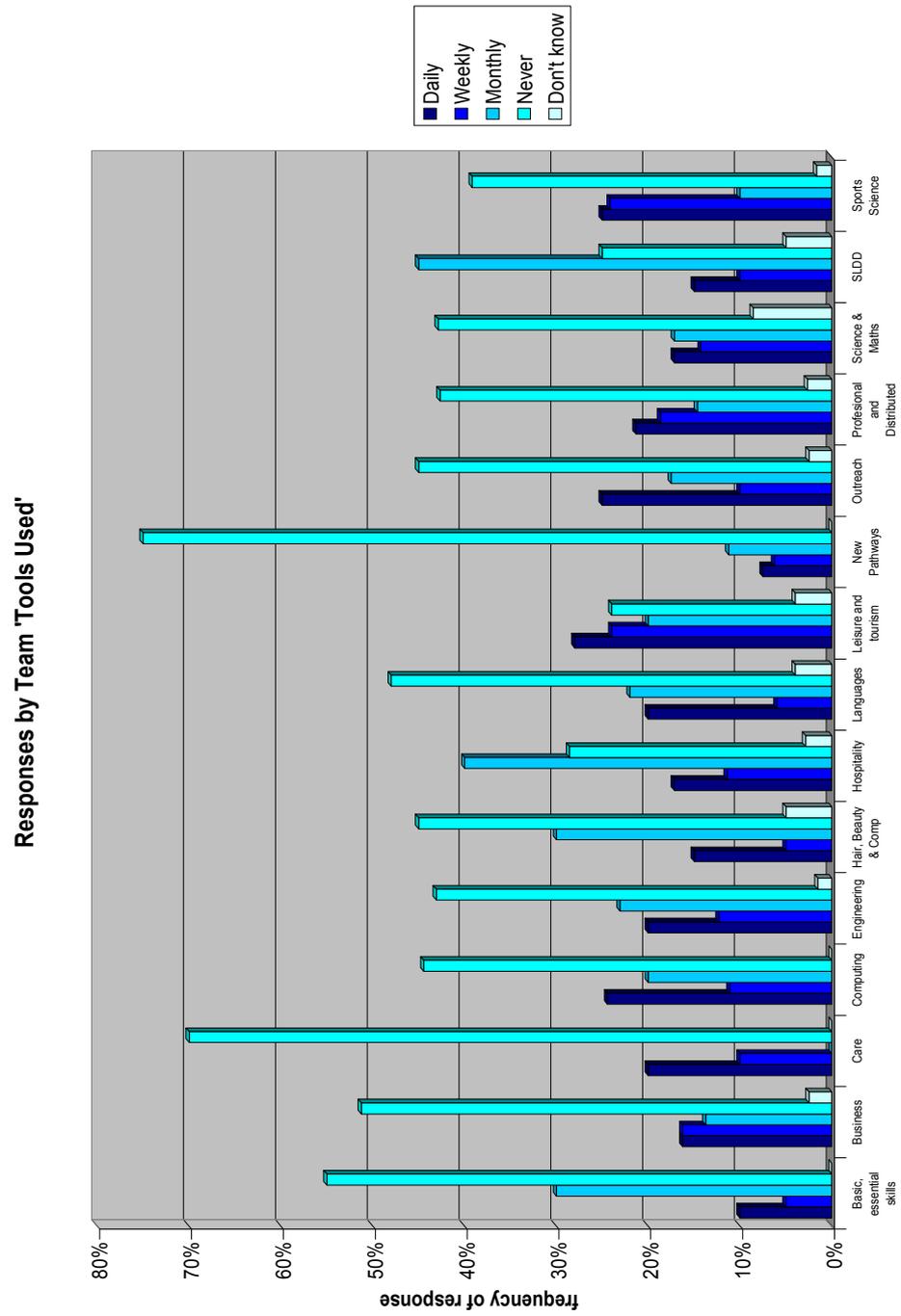


Fig 7

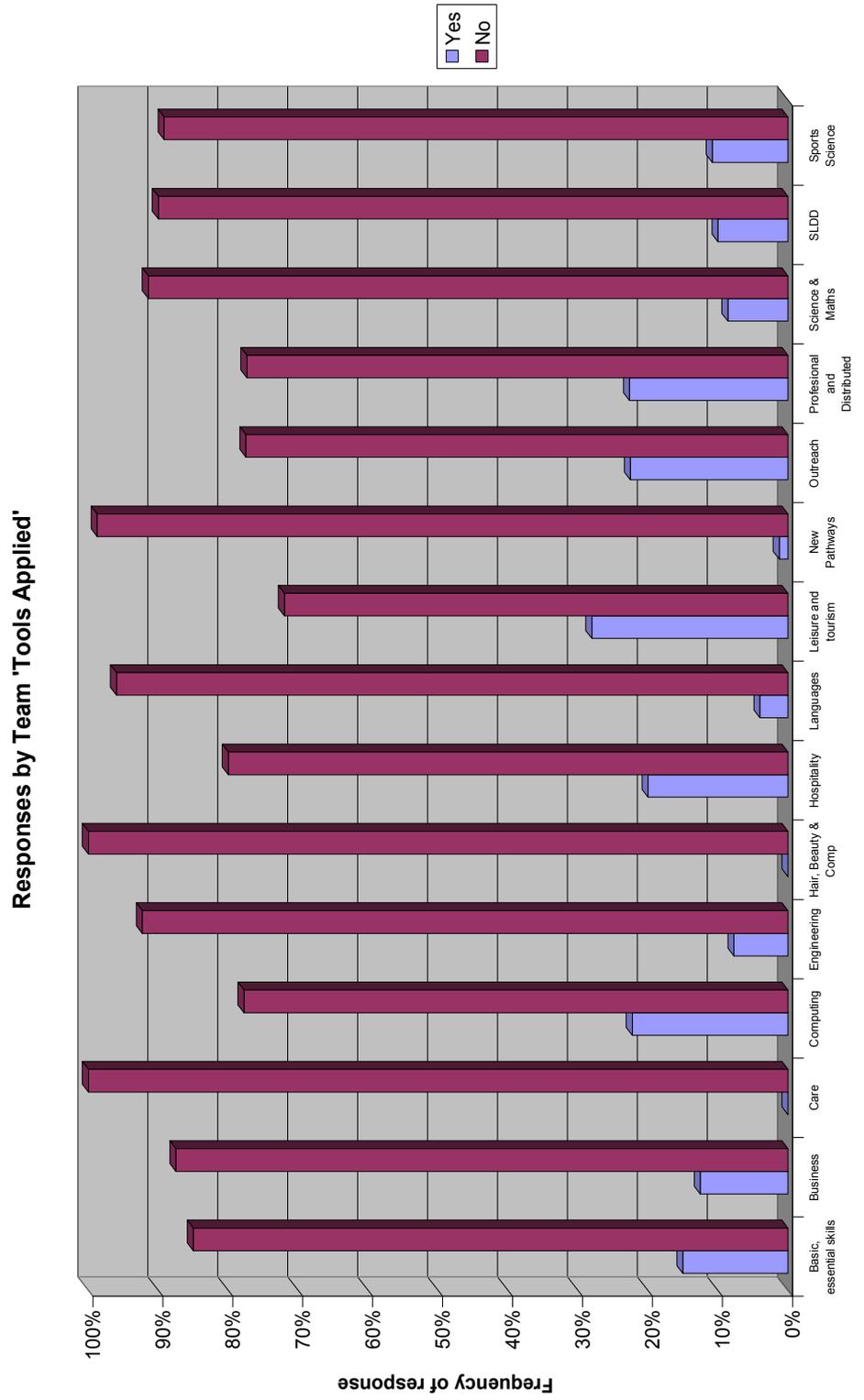


Fig 8

The initial questionnaire used in this research was used to identify a high user group; it indicated some responses that supported areas of consideration from previous research and provided the focus for subsequent discussion. The initial questionnaire was not designed to provide exhaustive data that could withstand significant analysis but to isolate general indicators of adoption of technology in supporting learning were reasonably clear.

Analysing section one the data indicates that ,apart from the college e- mail which shows a 72% to 6% daily use difference between the two colleges both colleges' ,response rates across the questions are largely similar. The data indicates that e-mail has generally become a regular method of communication, 82% use at least monthly and 46% daily. Respondents seem to have adjusted to the technology. Similar adoption rates exist for the use of the Intranet 75% monthly use or above with 50% weekly or above and the Internet with 45% using it weekly or ore regularly.

The use of e-mail, Intranet and the Internet are systems that use technology for communication and administrative purposes as well as facilitating learning and therefore their usage level may not always be related to teaching preparation. When the responses to tools used that are more specific to teaching needs the use levels drop. The use of Power Point is only 58% monthly or more regular, CD ROMS only 46% monthly or better with only 3% daily and the use of videos from networks is 59% never. The higher use of use of Power Point and the Internet compared to CD ROMS and networked videos can be explained by considering Power Point as effectively only an upgrade of the old teaching technique of transparencies. The use of the Internet is also at a reasonable level with 75% of teachers using it as part of their teaching at least monthly. Such a high level could be driven by the demand of learners to facilitate the availability of knowledge and support by the use of general search engines and specific commercial subject related web sites which may replace traditional text book use for ease of finding subject data. (see Fig 2). The analysis also indicated that this level of use was similar

across all subject areas with care and new pathways being particularly low .(see Fig 7)

Analysing section two of the questionnaire that concentrated on specific applied tools (on-line learning, Hot Potatoes, video conferencing, NLN material, shared tools such as calendars or shared drives) the data indicates that there is an even lower level of use compared to section one. On- line learning is at 25% with video conferencing and related learning material availability at approximately 10% (see Fig 6). The curriculum areas showed an equal trend on using new technology tools except new path ways, care , languages and hair and beauty vocational areas which indicated a specifically significant low level of use. One interesting factor in these areas is that there are a high percentage of female teachers.

5.3 Focus Group Findings

Two focus groups were formed after analysing the responses of the initial questionnaire with a membership of teachers who demonstrated a high level of use of technology in their teaching. Each focus group was between 8-10 in number and prior to running these focus groups a pilot group was run with content generated from previous issues raised in earlier studies (JISC 2002, Becta(a) 2003, Becta (b) and (c) 2004, LSDA 2004) and general personal knowledge of the field. After performing a pilot *with* a group made up of ILT champions (teachers given the role to lead and develop a curriculum area on ILT) and curriculum team leaders a final interview schedule was created.

The pilot group comments below are a summary of key repeated issues of the session.

Emergent Issues from the pilot focus.

Group made up of five major ILT practitioners to trail the proposed interview schedule as a pilot.

Can you describe for me exactly how you developed the ICT skills you use in your work in the College? (Main question)

Whatever interested me at the time.

Formal courses then self-taught

Formal courses as trial and error get me down.

Go to a formal one first.

How do you transfer over from formal course to a self-taught?
(sub-question)

Need support after the formal.

Where did you get the support over the last three years?

(sub-question)

Don't think I did.

As I couldn't understand it or do it the support took too long.

I found the formal element frustrating, as I need to be shown how to do it and then use it.

Some of my ICT skills were from trial and error and I shared ideas with colleagues who also had an interest. I then found I moved on quickly to being a mentor for students.

(All understood the question and could answer clearly)

What do you think is your learning style? (Main question)

Initially trial and error, prefer to be self-taught.

I like to be initially shown how to use it then practise it.

Need to get my hands on it and try.

After attending a course I need to use it straight away, been on some course that were all talk and came away none the wiser.

Do you regard yourself as learning primarily via psychomotor i.e. demonstrative activities ? (sub-question)

Yes

Time is very important to me and I have experience misguided input support. It didn't give me what I wanted

Yes I need it to be bite sized and related to my area for it to be useful.

Do you therefore know your preferred style? (Sub question)

No not really.

Use it with students but never really thought about myself.

Not really considered that I have a preferred style.

(The question of a preferred style seemed difficult to answer and it was more a way that worked rather than an idea of a preferred one)

Sources of Knowledge with ILT

Can you describe how you came to identify your specific needs in ILT?

I was shown what was available and then went away and thought about it and because I was told to get involved.

I could see material and the need to develop for the students so I developed the skills needed. This was combined with some prompts from certain people in the College.

What methods did you use to develop your ILT skills?

(sub-question)

To be truthful the same as the ICT skills.

There are so many sources of input that I can't really answer specifically.

Try it then bring it into the classroom. The ICT and ILT is the same to me so all part of the same issue.

(There seemed to be a general agreement that ICT and ILT are integrated. It was identified that there was a difference and also this varied depending on the curriculum area. In some case ICT was part of the syllabus and students need a certain skill level at entry)

The focus group comments below are a summary of key repeated issues of the sessions and the interview schedule was adjusted after the pilot comments.

There was an attempt to run a third focus group using a chat room due to the difficulty of coordinating at one session, but this was a failure as nobody entered the site and engaged in dialogue.

Emergent issues from focus group one .

Started the session by defining IT, ICT and ILT using the FENTO versions and the reason and process of the session.

Can you describe how you developed your ICT skills?

Trial and error.

Self taught.

Yes agree

Do you feel then you learn most effectively in a particular way?

A lot of trial and error I suppose.

Not sure I do it the most effective way.

Yes the best way may not be the most efficient time wise I feel.

I tried on line and found it to difficult.

Any preference then on how you developed your ILT skills?

Not really tend to use support or specific training.

Not really thought about in detail.

Accessibility is an issue for me, I can get to some sessions but my teaching load gets in the way.

The contract I am on restricts the time I have for all this and attendance to set sessions.

How do or can you transfer into the classroom?

This is an element of attitude and being scared to use something new. Time restriction does not help.

I have a resource problem in terms of access to the equipment to prepare and use regularly.

Yes would be nice to have interactive white boards in all rooms and better access to PC rooms.

Well ILT doesn't have to be in a PC room does it? But I do have an issue with interactive whiteboard locations.

I have to justify use to get it but need access before I can see if I can justify it.

I feel the same about access to wireless laptops. Not always available when I want them and how to I practice it all?

Yes sometimes I can't complete tasks in a booked session and can't continue next session as not booked so causes a problem using the equipment.

How do you identify the ILT skills you need?

I don't really I rely on the ILT training schedule and advisors.

I am lead by what is on the training on offer.

I am lead by the syllabus content.

No I don't agree with that I think it is a concept of delivery not content.

A mixture of formal and informal I suppose and some experiential.

Ok then how do you feel it has created a curriculum change?

I think all the recent technology has helped me produce better handouts and the introduction of interactive whiteboards has helped.

It is a matter of making things easier and more efficient.

Students are more interested if I use the interactive whiteboard.

It would help to develop learning styles and differentiation if I had the time.

Yes I agree it is everything to do with introducing different learning styles but I am also being lead by being told to.

I will use it to create evidence of coursework and general record keeping.

I teach ICT so use it every day and find it obvious

Well I am not comfortable, as I do not. I just respond to the student needs or perceived demands.

How do you evaluate your ILT skills?

If I can use it successfully, and if it works.

If it makes things easier than it was before.

A problem is time; if I see a saving I am happy.

No I don't look at it like that. Thinking about it I haven't evaluated the time taken to generate a resource but more if I can reuse it.

Well my problem is I have to learn how to use it first then prepare the material. I will only develop something I have confidence will work.

I cannot find the time with my level of teaching hours.

Yes and availability of hardware to develop with support.

For me creating a resource is a separate issue to developing my skills. I use resources already available but have not got the skills

to identify their usefulness. I think I want a central resource with financial backing.

Yes it takes just as long to find a resource as to develop. If we had some support that could do the searching bit it would help.

Yes if someone could go through and look at options it would help.

It would be useful if a IT technician could sit in the class the first time I try something to ensure it works.

How do you evaluate what you have done then?

If it helps the student to meet the syllabus needs.

I know students in the future will not be responsive to didactic teaching so I know I will need the skills.

It is not always the students not wanting to use ILT but the staff blocking I find.

If it fits into the syllabus and meets the assessment needs and is record able I'll use it. It has to create evidence for me.

Students like it when I can quickly pull up examples and can use as evidence or as a source.

If there is evidence in their assignments I am happy it has worked.

It is a matter of reducing the number of websites or sources the student uses for me. I put such details on the course website and if used I regard as self-evaluating.

I still have this problem of booking AV equipment and if arrives might not work. It is difficult unless we a continuous use.

I think some of the problem is poor lesson preparation. Blaming the equipment is a get out although sometimes you do not always have an alternative method if it fails true.

Emergent issues from focus group two.

Started the session by defining IT, ICT and ILT using the FENTO versions and the reason and process of the session.

Can you describe how you developed your ICT skills?

I did a range of ICT course IBT1, 2 and a range of short courses. I now learn on the job.

Yes I did a qualification first and expanded on the job.

No I was self-taught with trial and error, then advice. But I really cannot remember how I actually picked up the skills.

I learnt when I was in industry by the company putting me on course. I then did a PGCE and specialised in ICT. Until then it wasn't really formal apart from these short course. Now I am in FE I provide support for my curriculum area in ICT.

I have been on formal course but never as a recognised qualification.

Have any of you identified a preferred learning style for this?

Basically I like the workshop method.

No I do not like workshops and prefer to work by myself. Go away have a go and come back with specific problems.

I learnt in a formal way attending course on offer

Did any of you identify your style then?

No not really thought about it.

No

No not really but I do notice when I attend a course I want to change the way it is being delivered. Not really thought about it

being changed to my preferred style or the way I would deliver, interesting.

Yes thinking about it we spend a lot of time looking at our students, never looked at myself that way.

Do you feel your College provides suitable support for you to develop your ICT skills?

Yes for me I think they do but my time availability is an issue.

For a new member of staff I think a compulsory course should be required.

The drop in sessions attacks one specific issue. What I really need is trouble-shooting sessions for anything I need.

This is not trivial as it relates to my quality of teaching.

Has the College provided a route for ICT you prefer?

For drop in sessions recently supplied yes.

If I had someone I could talk to, like a sort of mentor who I could approach when I had a problem it would be useful.

I know staff development have made things available but I have evolved from the basics they offer. I do not think people have realised how far some of us have come as individual's skills wise. Some may need basics but others are advanced.

For self-taught I find it is people having questions and order of approach at different routes or paths. They may have a question way down the route that is a basic issue at an advanced stage. This may be due to a poor initial foundation.

Yes do we need to have a formalised process in some way?

Is that what the FPP (Ferl Practitioners Programme) is for then?

Do you think that is really for ILT rather than ICT?

Is it?

It is all the same to me.

I assume a formal course is a choice but basic skills a requirement for teachers to have.

Ok how do you recognise your specific ILT needs?

For me it relates to my curriculum, it is in the subject. I think of a way I can do it and look at options

For me it is a personal thing for what I can do for the learner.

Ofsted have commented on learning resources for Basic Skills, which I feel, is a requirement.

We need to think of the levels as well. The level of the student affects what I do and how I do it.

I know the subject area well but not sure how to bring it along as ILT all the time.

It is not in the student's culture to develop a specialist subject. I use the technology to switch them on and interact with them.

Yes I try and use animation and reduce the amount of text.

Yes I use this for students where English is not their first language.

I look at areas of the scheme of work that I can improve using ILT.

What are the main methods you use to develop your ILT skills?

It is the same as ICT as I recognise them as the same thing really.

You need to have certain ICT skills before you can do ILT.

Not the same every time thinking about it.

I prefer a specific training session, say one hour, and then try it.

I have a problem with new technology.

I relate to what I know and try and form around that.

I cannot see how you do that without basic ICT skills. My team have just identified some members do not even know how to use outlook calendar or any of the other element except sending and receiving e-mails.

Is it an issue that low ICT skills restrict ILT then?

Yes definitely.

Yes

Yes agree.

At schools they have a full curriculum that tells them what the pupil needs to do etc. In FE we have some of that but when dealing with adults it is different. They know what they want, elements to fill the gaps in their knowledge and skills.

My fear is the students know more than me on all this but always surprised they do not.

Is this an issue with technology then? In a specialist subject we are always in a position of higher knowledge but not in the technology element?

That was never the case when I taught in a school. I have had to learn all types of systems like, lotus, Apple Mac so have found myself in a need to know situation. I approach it as a functional role.

Can you describe the reasons why you developed certain ILT?

We have already answered this haven't we?

If you mean elements of change, yes.

Is this curriculum change then?

I cannot see if the syllabus is the same this is the case just by changing method of delivery.

No not if the outcome remains the same.

I do, as people having gone through school not achieving level one have to experience a different method of delivery.

Is this not what we are talking about with our own learning then?

Is the method you choose not a curriculum change then?

Oh I see so what we are saying is that if people are self taught we should be bringing that style in to the College? Yes I can see that.

Yes I agree. It is complicated when you start thinking about it.

How do you evaluate the skills you have developed in ILT?

I evaluate the skills I needed if I had a problem.

No if I have a problem I am straight on the phone to talk it through.

So do you evaluate the knowledge you need?

I see a need then estimate the time it will take.

If I use it with students or see them using it then it is worthwhile.

Yes I found if it works students want to use it as well. So if they demand it must have worked.

Yes a mixture of observing and evolving.

I use end of unit evaluation so basically based on the views of the students.

Analysis of the focus group data

The initial interview schedule was piloted and the pilot focus group was used to test the relevance of these factors and interpretation of the definitions used and assisted in the final formulation of emerging issues. From the issues that emerged from the pilot session and analysing the original schedule used for the pilot session a minor adjustment adding the specific question of preferred learning style was made for the main focus group sessions. In addition to this minor adjustment it was also identified that there was a need to define ILT /ICT terminology and this was added to the brief at the start of each interview session.

The summary below outlines the main emerging issues of the focus groups that provided illuminating data to assist in the final questionnaire content.

Summary of Focus Group Comments

Emerging Issue	Summary of Comments
ICT Development	<p>Formal delivery frustrating.</p> <p>Preference for informal process with time for trial and error. A mixture of preferences expressed between formal and informal.</p>
Preferred learning style.	<p>Psychomotor. Bite sized chunks with elements of experiential.</p> <p>No real concept of a personal preferred learning style.</p>
ILT or ICT?	<p>Consider both the same. No recognition of the difference between personal ICT skills and skills needed in facilitating learning. Awareness of the potential of technology to help</p>

	<p>engage learners.</p> <p>Aware that limited ICT skills can restrict ILT.</p>
Curriculum Change	<p>Lack of realisation that ILT can stimulate change. More focused on syllabus content than method of delivery.</p>
Evaluation of ILT	<p>Use evidence in assignment from students, time taken to prepare material and student feedback mechanisms. No real self evaluation of effective teaching taking place or use with developing self directed learning skills.</p>

The results of the focus groups identified a complex situation but three common factors were identified as strong themes for further analysis. The issues of teachers not really thinking about their preferred learning style and contradictions on a preference for formal or informal learning was evident. It was evident that confusion existed between personal ICT skills development and the development of ILT in a classroom situation. Related to this was an issue of who decided the training options and apparent friction between time to update vocational subject skills and knowledge and developing ICT and ILT skills.

There was an issue of how teachers evaluated the effectiveness of the use of technology in a teaching situation and the relationship between who dictates when it is used i.e. if syllabus driven and what type of technology is used.

After analysis of the emerging issues it was decided that three key factors of staff needs, staff learning styles and how staff evaluate the effectiveness of the use of technology in their teaching would be used in the final questionnaire. These factors being related to

teachers' perceptions and the effects and development of the use of technology in teaching emerged as suitable for further investigation with the wider teacher population using a final questionnaire.

5.4 (a) Final Questionnaire Results.

From the focus group analysis and further discussion with the original consulting group of ILT champions and curriculum leaders three key factors were selected for further study using a final questionnaire to a wider teacher population. The three factors were learning style, teacher needs and self evaluation and it was also decided to include one non factor related set of positive negative questions on whether teachers regarded it as the employee or employers responsibility to identify ILT needs. This appeared as an illuminating emerging issue along with the three factors considered of value to return to the general practicing teacher population for their perceptions.

The final questionnaire was piloted with 33 PGCE students and then after revision, which was a few minor wording corrections, was issued to a population of FE teachers in paper format (See appendix III for pilot data). The only issue that emerged from the pilot group was a difficulty for them to respond to the question of

whether it was difficult to learn while in the workplace. As the pilot group were not practising teachers it was decided to keep the question in the system for the main survey. The cross tabulation results relating to this difference was also a key factor in not using the pilot response data as part of the final sample. (see appendix III for cross tabulation results between pilot and main questionnaire)

There were 96 responses to the final questionnaire which after analysis identified some cross tabulations with degrees of significance. Summary of analysis and resulting graphical presentation of the data is as follows. (Further reliability analysis is given in appendix IV). A summary of the response data in mean order is below.

Summary of response data in order of mean value

Descriptive Statistics				
	N	Mean	Std. Deviation	Factor /positive or negative question
ILT is a general skill issue not one just led by syllabus content	91	3.2747	0.5975	Staff needs, +ve
The time invested in learning technology is invaluable	94	3.2447	0.6985	Staff needs, +ve
I aim to be prepared for students needs when it comes to my ICT skills	93	3.1290	0.6465	Staff needs, +ve
Even if the students do not use an ICT / ILT skill in assignments it is still important	94	3.0851	0.4315	Evaluation +ve
I do not mind using materials based on ICT / ILT for single events.	94	3.0638	0.4352	Evaluation +ve
Developing my ILT / ICT skills is a separate issue from creating teaching resources	94	3.0532	0.7089	Evaluation +ve
I see it as my responsibility to constantly identify the ILT skills I need.	91	3.0220	0.5573	-
I constantly have to increase my ICT skills	94	3.0000	0.6222	Staff needs, +ve
I prefer an informal process when learning.	93	2.9140	0.5449	Learning Style +ve
I gain new skills more effectively by personal experimentation	96	2.8750	0.6689	Learning Style +ve

I will only use a piece of learning technology if I am confident it will work	96	2.8542	0.7395	Staff needs, -ve
I do not mind taking risks using a piece of learning technology in a teaching session.	96	2.8542	0.7811	Staff needs, +ve
Keeping up to date with my specialist subject is more important than increasing my ICT / ILT skills.	93	2.7849	0.5870	Staff needs, -ve
Evidence of student progress is not my primary reason for using ILT.	91	2.7582	0.5445	Evaluation +ve
The College provides me with a suitable environment to learn	92	2.7500	0.6567	Learning Style +ve
I am constantly looking for new technology to help me teach.	94	2.7021	0.6852	Staff needs, +ve
I pick up new skills by being formally taught.	95	2.6211	0.6046	Learning Style -ve
I use my ICT / ILT skills irrespective of it's effect on the workload.	93	2.6129	0.6599	Evaluation +ve
Materials based on ICT /ILT are only valuable if they can be used repeatedly	94	2.4468	0.6974	Evaluation -ve
A formal, organised training programme is the best way to learn.	93	2.4409	0.6335	Learning Style -ve
Training in a formal environment does not bring out the best in me.	92	2.4348	0.5607	Learning Style +ve
I use my ILT / ICT skills mainly as a method of reducing the workload.	91	2.2967	0.4593	Evaluation -ve
I only become interested in a piece of learning technology when someone brings it to my attention.	95	2.2947	0.7127	Staff needs, -ve

It is difficult to learn while in the workplace	96	2.2813	0.8170	Learning Style -ve
If the learning technology used does not contribute to evidence of student progress I tend not to use it.	93	2.2688	0.6104	Evaluation -ve
I wait until an ILT issue is identified in the syllabus before I look at it.	92	2.1304	0.5590	Staff needs, -ve
ILT / ICT is only valuable if they create teaching resources	93	2.1290	0.7833	Evaluation -ve
It is the College's responsibility to identify the ILT skills I will need	94	2.1170	0.5459	-
I only use learning technology if in the end it saves me time.	96	2.1146	0.5205	Staff needs, -ve
Increasing my ICT / ILT skills is more important than updating my specialist subject needs.	95	2.0737	0.4434	Staff needs, +ve
An informal atmosphere when undergoing training wastes time.	94	1.9787	0.4632	Learning Style -ve
I tend not to explore a new ICT skill unless the students demand it.	93	1.9677	0.6159	Staff needs, -ve
ILT / ICT is only of value if used by students in assignments	95	1.7895	0.5815	Evaluation -ve
There is no need for me to continually increase my ICT skills	96	1.5938	0.5540	Staff needs, -ve

Table 8

As part of the questionnaire there was a section to obtain biographical data teaching subject.

Data analysis is as follows:

Frequencies of Replies

Frequency Table

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	40	41.2	42.1	42.1
	Female	55	56.7	57.9	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 9

Age in years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 26	8	8.2	8.3	8.3
	26-34	26	26.8	27.1	35.4
	35-44	22	22.7	22.9	58.3
	45-54	22	22.7	22.9	81.3
	Greater than 54	18	18.6	18.8	100.0
	Total	96	99.0	100.0	
Missing	System	1	1.0		
Total		97	100.0		

Table 10

Science and Mathematics

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	86	88.7	88.7	88.7
	Ticked	11	11.3	11.3	100.0
	Total	97	100.0	100.0	

Table 11

Land-based provision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	96	99.0	99.0	99.0
	Ticked	1	1.0	1.0	100.0
	Total	97	100.0	100.0	

Table 12**Construction**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	94	96.9	96.9	96.9
	Ticked	3	3.1	3.1	100.0
	Total	97	100.0	100.0	

Table 13**Engineering, technology and manufacturing**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	86	88.7	88.7	88.7
	Ticked	11	11.3	11.3	100.0
	Total	97	100.0	100.0	

Table 14**Business Administration**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	91	93.8	93.8	93.8
	Ticked	6	6.2	6.2	100.0
	Total	97	100.0	100.0	

Table 15

Information and communication technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	92	94.8	94.8	94.8
	Ticked	5	5.2	5.2	100.0
	Total	97	100.0	100.0	

Table 16**Humanities**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	90	92.8	92.8	92.8
	Ticked	7	7.2	7.2	100.0
	Total	97	100.0	100.0	

Table 17**Hospitality, sports, leisure and travel**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	77	79.4	79.4	79.4
	Ticked	20	20.6	20.6	100.0
	Total	97	100.0	100.0	

Table 18**Hairdressing and beauty therapy**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	92	94.8	94.8	94.8
	Ticked	5	5.2	5.2	100.0
	Total	97	100.0	100.0	

Table 19

Visual arts, performing arts and media

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	92	94.8	94.8	94.8
	Ticked	5	5.2	5.2	100.0
	Total	97	100.0	100.0	

Table 20**Health, social care and public services**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	88	90.7	90.7	90.7
	Ticked	9	9.3	9.3	100.0
	Total	97	100.0	100.0	

Table 21**English languages and communication**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	93	95.9	95.9	95.9
	Ticked	4	4.1	4.1	100.0
	Total	97	100.0	100.0	

Table 22**English for speakers of other languages**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	87	89.7	89.7	89.7
	Ticked	10	10.3	10.3	100.0
	Total	97	100.0	100.0	

Table 23

Learners with learning difficulties or disabilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	97	100.0	100.0	100.0

Table 24**Literacy and numeracy**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	97	100.0	100.0	100.0

Table 25**Other subject area**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	83	85.6	85.6	85.6
	Ticked	14	14.4	14.4	100.0
	Total	97	100.0	100.0	

Table 26**Type of other subject area**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		81	83.5	83.5	83.5
	Alevels	1	1.0	1.0	84.5
	Child care	1	1.0	1.0	85.6
	Complementary therap	1	1.0	1.0	86.6
	Electrical	7	7.2	7.2	93.8
	Teacher Ed	2	2.1	2.1	95.9
	Teacher training	2	2.1	2.1	97.9
	Teacher Training	1	1.0	1.0	99.0
	Textiles	1	1.0	1.0	100.0
	Total	97	100.0	100.0	

Table 27

Highest non-teaching qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GCSE / O level	1	1.0	1.1	1.1
	A level / BTEC NC / ND	6	6.2	6.3	7.4
	BTEC HNC/HND / NVQ 4/5	11	11.3	11.6	18.9
	Degree	43	44.3	45.3	64.2
	Masters	19	19.6	20.0	84.2
	PhD	4	4.1	4.2	88.4
	Professional or other	11	11.3	11.6	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 28

Other non-teaching qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		71	73.2	73.2	73.2
	Assoc of Textile Ins	1	1.0	1.0	74.2
	C&G	1	1.0	1.0	75.3
	CELTA	1	1.0	1.0	76.3
	CELTA & PGCE	1	1.0	1.0	77.3
	Cert Ed	3	3.1	3.1	80.4
	Cert ed & C&G	1	1.0	1.0	81.4
	Cert TEFL, DELTA	1	1.0	1.0	82.5
	Cert Tesol	1	1.0	1.0	83.5
	G&G 7407	1	1.0	1.0	84.5
	Licens Royal Photo S	1	1.0	1.0	85.6
	NNEB	1	1.0	1.0	86.6
	NVQ L3&L2	1	1.0	1.0	87.6
	PG dip & TESOL Dip	1	1.0	1.0	88.7
	PGCE	3	3.1	3.1	91.8
	PGCE & C&G	1	1.0	1.0	92.8
	PGCE Cert Ed	1	1.0	1.0	93.8
	Prof sport qual	1	1.0	1.0	94.8
	RGN & Health Vis	1	1.0	1.0	95.9
	Teach C&G IHBC Beaut	1	1.0	1.0	96.9
	TESOL Cert	1	1.0	1.0	97.9
	TESOL Dip	2	2.1	2.1	100.0
	Total	97	100.0	100.0	

Table 29

Basic skills and key skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	88	90.7	92.6	92.6
	Ticked	7	7.2	7.4	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 30**Access to HE**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	88	90.7	92.6	92.6
	Ticked	7	7.2	7.4	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 31**Key skills**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	87	89.7	91.6	91.6
	Ticked	8	8.2	8.4	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 32**General Academic (GCSE, A level)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	73	75.3	76.8	76.8
	Ticked	22	22.7	23.2	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 33

General Vocational (GNVQ, AVCE, Foundation Diploma)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	68	70.1	71.6	71.6
	Ticked	27	27.8	28.4	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 34**Vocational Occupational (NVQ)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	74	76.3	77.9	77.9
	Ticked	21	21.6	22.1	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 35**Professional Qualifications (AAT, CIM, IOSH etc)**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	92	94.8	96.8	96.8
	Ticked	3	3.1	3.2	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 36

Higher Education (HNC, HND, Foundation Degree)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	72	74.2	75.8	75.8
	Ticked	23	23.7	24.2	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 37

Other levels taught

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	84	86.6	88.4	88.4
	Ticked	11	11.3	11.6	100.0
	Total	95	97.9	100.0	
Missing	System	2	2.1		
Total		97	100.0		

Table 38

Type of other levels taught

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		88	90.7	90.7	90.7
	C&G And Cert Ed TT	1	1.0	1.0	91.8
	Cert Ed teach train	1	1.0	1.0	92.8
	ESOL	2	2.1	2.1	94.8
	ESOL / EFL	1	1.0	1.0	95.9
	ESOL / ELT	1	1.0	1.0	96.9
	ESOL Level 4	1	1.0	1.0	97.9
	Level 4 Teacher Ed	1	1.0	1.0	99.0
	Level 4 Teaching Cer	1	1.0	1.0	100.0
	Total	97	100.0	100.0	

Table 39

Hours per week teaching

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5	10	10.3	10.8	10.8
	6-10 hours	4	4.1	4.3	15.1
	11-15 hours	8	8.2	8.6	23.7
	More than 15 hours	24	24.7	25.8	49.5
	Full-time	47	48.5	50.5	100.0
Total		93	95.9	100.0	
Missing	System	4	4.1		
Total		97	100.0		

Table 40**Student age taught 14-16**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	81	83.5	98.8	98.8
	Ticked	1	1.0	1.2	100.0
	Total	82	84.5	100.0	
Missing	System	15	15.5		
Total		97	100.0		

Table 41**Student age taught 16-19**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	21	21.6	25.6	25.6
	Ticked	61	62.9	74.4	100.0
	Total	82	84.5	100.0	
Missing	System	15	15.5		
Total		97	100.0		

Table 42

Student age taught Over 19

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not ticked	46	47.4	56.1	56.1
	Ticked	36	37.1	43.9	100.0
	Total	82	84.5	100.0	
Missing	System	15	15.5		
Total		97	100.0		

Table 43**Highest Teaching Qualification**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	730 / 740 Stage 1	12	12.4	13.0	13.0
	730 / 740 Stage 2	24	24.7	26.1	39.1
	PGCE	46	47.4	50.0	89.1
	BEEd	4	4.1	4.3	93.5
	Other	6	6.2	6.5	100.0
	Total	92	94.8	100.0	
Missing	System	5	5.2		
Total		97	100.0		

Table 44**Other teaching qualifications**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		88	90.7	90.7	90.7
	CELTA	2	2.1	2.1	92.8
	CELTA TESOL Dip	1	1.0	1.0	93.8
	Cert Ed	3	3.1	3.1	96.9
	Cert Ed NVQ Level 4	1	1.0	1.0	97.9
	Cert TEFL, DELTA	1	1.0	1.0	99.0
	TESOL	1	1.0	1.0	100.0
	Total	97	100.0	100.0	

Table 45

Years of teaching experience

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 years or less	23	23.7	23.7	23.7
3-5 years	23	23.7	23.7	47.4
6-10 years	18	18.6	18.6	66.0
11-15 years	12	12.4	12.4	78.4
16-20 years	8	8.2	8.2	86.6
More than 20 years	13	13.4	13.4	100.0
Total	97	100.0	100.0	

Table 46**Years of teaching experience in FE**

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 2 years or less	26	26.8	27.1	27.1
3-5 years	24	24.7	25.0	52.1
6-10 years	22	22.7	22.9	75.0
11-15 years	12	12.4	12.5	87.5
16-20 years	7	7.2	7.3	94.8
More than 20 years	5	5.2	5.2	100.0
Total	96	99.0	100.0	
Missing System	1	1.0		
Total	97	100.0		

Table 47

As part of the analysis there was a cross tabulation performed to identify any significant relationship between two variables.

These are summarised as follows:

Cross tabulations with significance

Tabulation set No. 1,

Factor: staff needs

Sex * Increasing my ICT /
 ILT skills is more important
 than updating my
 specialist subject needs.

Crosstab

			Increasing my ICT / ILT skills is more important than updating my specialist subject needs.			Total
			Strongly Disagree	Disagree	Agree	
Sex	Male	Count	1	29	9	39
		% within Sex	2.6%	74.4%	23.1%	100.0%
	Female	Count	5	46	3	54
		% within Sex	9.3%	85.2%	5.6%	100.0%
Total		Count	6	75	12	93
		% within Sex	6.5%	80.6%	12.9%	100.0%

Table 48

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.290 ^a	2	.026
Likelihood Ratio	7.508	2	.023
Linear-by-Linear Association	6.937	1	.008
N of Valid Cases	93		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.52.

Table 49

Most disagree or strongly disagree except for one cell above 5 where of 9 males agree. However there are 33 % of cells with fewer than five so the resulting significance may be unreliable. This might be a sample size issue; however, the chi square and likelihood ratio are of similar value .

Tabulation set No. 2,

Factor: staff needs

Sex * I only use learning technology if in the end it saves me time.

Crosstab

			I only use learning technology if in the end it saves me time.				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
Sex	Male	Count	2	29	8	0	39
		% within Sex	5.1%	74.4%	20.5%	.0%	100.0%
	Female	Count	3	48	1	3	55
		% within Sex	5.5%	87.3%	1.8%	5.5%	100.0%
Total		Count	5	77	9	3	94
		% within Sex	5.3%	81.9%	9.6%	3.2%	100.0%

Table 50

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.926 ^a	3	.012
Likelihood Ratio	12.558	3	.006
Linear-by-Linear Association	.560	1	.454
N of Valid Cases	94		

a. 5 cells (62.5%) have expected count less than 5. The minimum expected count is 1.24.

Table 51

Most disagree or strongly disagree except for one cell above 5 where of 8 males agree. However there are 63.5 % of cells less than five so the result may be unreliable and this might be a sample size issue. However the chi square and likelihood ratio have similar value.

Tabulation set No. 3 ,

Factor: evaluation.

Sex * I do not mind using materials based on ICT / ILT for single events.

Crosstab

			I do not mind using materials based on ICT / ILT for single events.			Total
			Disagree	Agree	Strongly Agree	
Sex	Male	Count	1	29	9	39
		% within Sex	2.6%	74.4%	23.1%	100.0%
	Female	Count	4	46	3	53
		% within Sex	7.5%	86.8%	5.7%	100.0%
Total		Count	5	75	12	92
		% within Sex	5.4%	81.5%	13.0%	100.0%

Table 52

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.678 ^a	2	.035
Likelihood Ratio	6.815	2	.033
Linear-by-Linear Association	6.229	1	.013
N of Valid Cases	92		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 2.12.

Table 53

Most agree with one cell above 5 of 9 males that strongly agree and all cells that are disagree are less than 5. However there are 33 % of cells with fewer than five responses so the result may be unreliable. This might be a sample size issue however the chi square and likelihood ratio are of similar value.

Tabulation set No. 4,

Factor: staff needs

Age in years * ILT is a general skill issue not one just led by syllabus content

Crosstab

			ILT is a general skill issue not one just led by syllabus content				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
Age in years	Less than 26	Count	0	0	8	0	8
		% within Age in year	.0%	.0%	100.0%	.0%	100.0%
	26-34	Count	1	3	14	6	24
		% within Age in year	4.2%	12.5%	58.3%	25.0%	100.0%
	35-44	Count	0	0	9	11	20
	% within Age in year	.0%	.0%	45.0%	55.0%	100.0%	
	45-54	Count	0	1	16	4	21
	% within Age in year	.0%	4.8%	76.2%	19.0%	100.0%	
	Greater than 54	Count	0	0	7	10	17
	% within Age in year	.0%	.0%	41.2%	58.8%	100.0%	
Total		Count	1	4	54	31	90
		% within Age in year	1.1%	4.4%	60.0%	34.4%	100.0%

Table 54

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	23.284 ^a	12	.025
Likelihood Ratio	25.981	12	.011
Linear-by-Linear Association	6.196	1	.013
N of Valid Cases	90		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is .09.

Table 55

Most agree or strongly agree and there are 60 % of cells with fewer than five respondents so the result may be unreliable. This might be a sample size issue however the chi square factor and likelihood ratio are of similar value so variance due to age may be a minor issue.

Tabulation set No. 5,

Factor: staff needs

Non-teaching qualification * The time invested in learning

technology is invaluable

Crosstab

			The time invested in learning technology is invaluable				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
Non-teaching qualification	Below degree	Count	1	0	12	5	18
		% within Non-teaching qualification	5.6%	.0%	66.7%	27.8%	100.0%
	First degree	Count	3	0	28	12	43
		% within Non-teaching qualification	7.0%	.0%	65.1%	27.9%	100.0%
	Masters or PhD	Count	0	2	7	13	22
		% within Non-teaching qualification	.0%	9.1%	31.8%	59.1%	100.0%
Total		Count	4	2	47	30	83
		% within Non-teaching qualification	4.8%	2.4%	56.6%	36.1%	100.0%

Table 56

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.661 ^a	6	.023
Likelihood Ratio	15.425	6	.017
Linear-by-Linear Association	2.362	1	.124
N of Valid Cases	83		

a. 6 cells (50.0%) have expected count less than 5. The minimum expected count is .43.

Table 57

Most agree or strongly agree and there are 50 % of cells with fewer than five so the result may be unreliable. This might be a sample size issue however the chi square factor and likelihood ratio are of similar value so it may be a minor issue about variance on non teaching qualification with PhD holders being specifically high on strong agreement.

Tabulation set No. 6,**Factor: staff needs****Subject * ILT is a general skill issue not one just led by syllabus content****Crosstab**

			ILT is a general skill issue not one just led by syllabus content				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
Subject	Maths, Science & IT	Count	0	0	7	5	12
		% within Subject	.0%	.0%	58.3%	41.7%	100.0%
	Vocational	Count	0	0	29	14	43
		% within Subject	.0%	.0%	67.4%	32.6%	100.0%
	Humanities & Art	Count	0	1	9	0	10
		% within Subject	.0%	10.0%	90.0%	.0%	100.0%
	Literacy, English & Basic Skills	Count	1	2	6	5	14
		% within Subject	7.1%	14.3%	42.9%	35.7%	100.0%
	Social Care & Educatic	Count	0	1	4	7	12
		% within Subject	.0%	8.3%	33.3%	58.3%	100.0%
Total		Count	1	4	55	31	91
		% within Subject	1.1%	4.4%	60.4%	34.1%	100.0%

Table 58**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.874 ^a	12	.039
Likelihood Ratio	24.273	12	.019
Linear-by-Linear Association	.179	1	.672
N of Valid Cases	91		

a. 14 cells (70.0%) have expected count less than 5. The minimum expected count is .11.

Table 59

Most agree or strongly agree and all cells outside this range are less than 5. There are 70 % of cells with fewer than five so the result may be unreliable. This might be a sample size issue however the chi square factor and likelihood ratio are of similar value so it may be a minor issue based on subjects they teach.

Tabulation set No. 6,**Factor: learning style**

Subject * An informal atmosphere when undergoing training wastes time.

Crosstab

			An informal atmosphere when undergoing training wastes time.			Total
			Strongly Disagree	Disagree	Agree	
Subject	Maths, Science & IT	Count	0	12	0	12
		% within Subject	.0%	100.0%	.0%	100.0%
	Vocational	Count	7	30	8	45
		% within Subject	15.6%	66.7%	17.8%	100.0%
	Humanities & Art	Count	0	10	0	10
		% within Subject	.0%	100.0%	.0%	100.0%
	Literacy, English & Basic Skills	Count	4	10	0	14
		% within Subject	28.6%	71.4%	.0%	100.0%
	Social Care & Educatic	Count	0	11	1	12
		% within Subject	.0%	91.7%	8.3%	100.0%
Total		Count	11	73	9	93
		% within Subject	11.8%	78.5%	9.7%	100.0%

Table 60**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.878 ^a	8	.031
Likelihood Ratio	22.703	8	.004
Linear-by-Linear Association	.428	1	.513
N of Valid Cases	93		

a. 9 cells (60.0%) have expected count less than 5. The minimum expected count is .97.

Table 61

Most disagree or strongly disagree and there is one group above 5 in number that indicate they agree. This cell is only just above 5 at 8 and there are 60% of cells fewer than 5 so the results may be unreliable and this might be a sample size issue. This is compounded by the fact that the chi square factor and likelihood ratio are not a close comparison. Vocational staff may therefore in some case not like informal atmospheres when being trained.

Descriptive Statistics ; relationship between factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Staff needs	96	1.58	3.79	2.8196	.34146
Learning style	96	2.00	3.50	2.7076	.29124
Evaluation	96	2.30	3.80	2.8647	.26606
Valid N (listwise)	96				

Table 62

The question scale used of 1-4 with strongly disagree at 1 to strongly agree at 4 so the mean results show very little difference between the factors .They are all tending to the mid point range so most responses are not expression extreme view i.e. strong.

Correlations between factors

Correlations

		Staff needs	Learning style	Evaluation
Staff needs	Pearson Correlation	1	.304**	.543**
	Sig. (2-tailed)	.	.003	.000
	N	96	96	96
Learning style	Pearson Correlation	.304**	1	.126
	Sig. (2-tailed)	.003	.	.220
	N	96	96	96
Evaluation	Pearson Correlation	.543**	.126	1
	Sig. (2-tailed)	.000	.220	.
	N	96	96	96

** . Correlation is significant at the 0.01 level (2-tailed).

Table 63

The analysis indicates no significant differences across biographical variation and factors. There appears to be a significant positive correlation between staff needs and evaluation (0.543) but a less positive between staff needs and learning style (0.304). There is no apparent definitive relationship between evaluation and learning style (0.126). Overall there seems to be a weak relationship between the learning style factor and the other two factors specifically evaluation.

5.4 (b) General response data graphically presented.

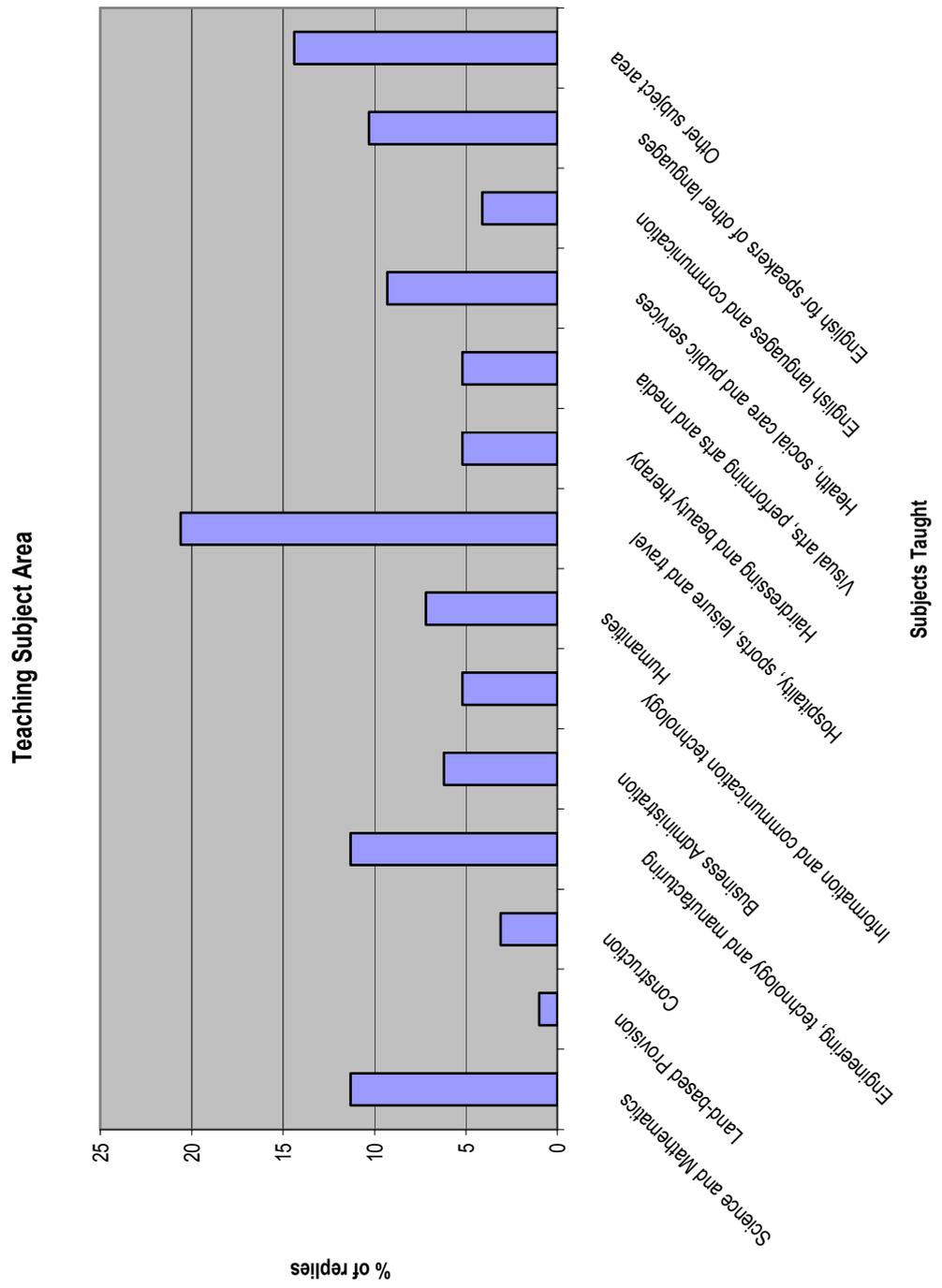


Fig 9

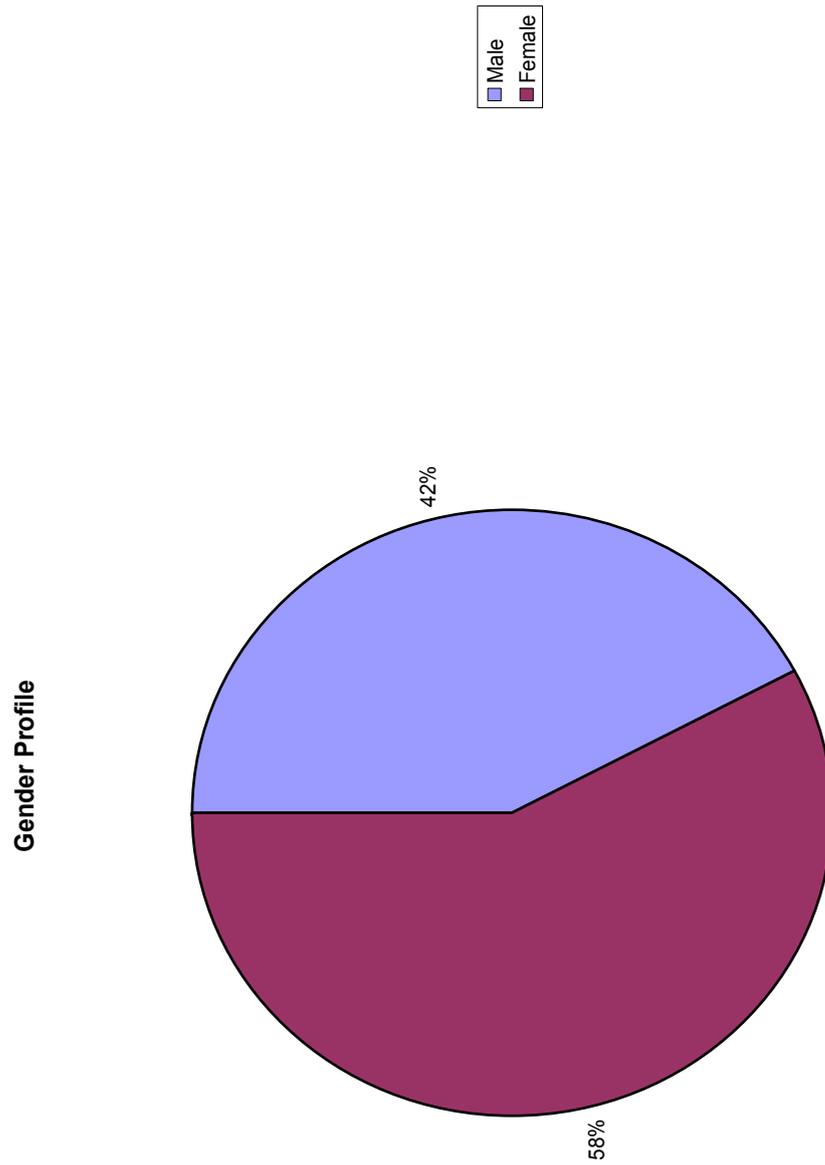


Fig 10

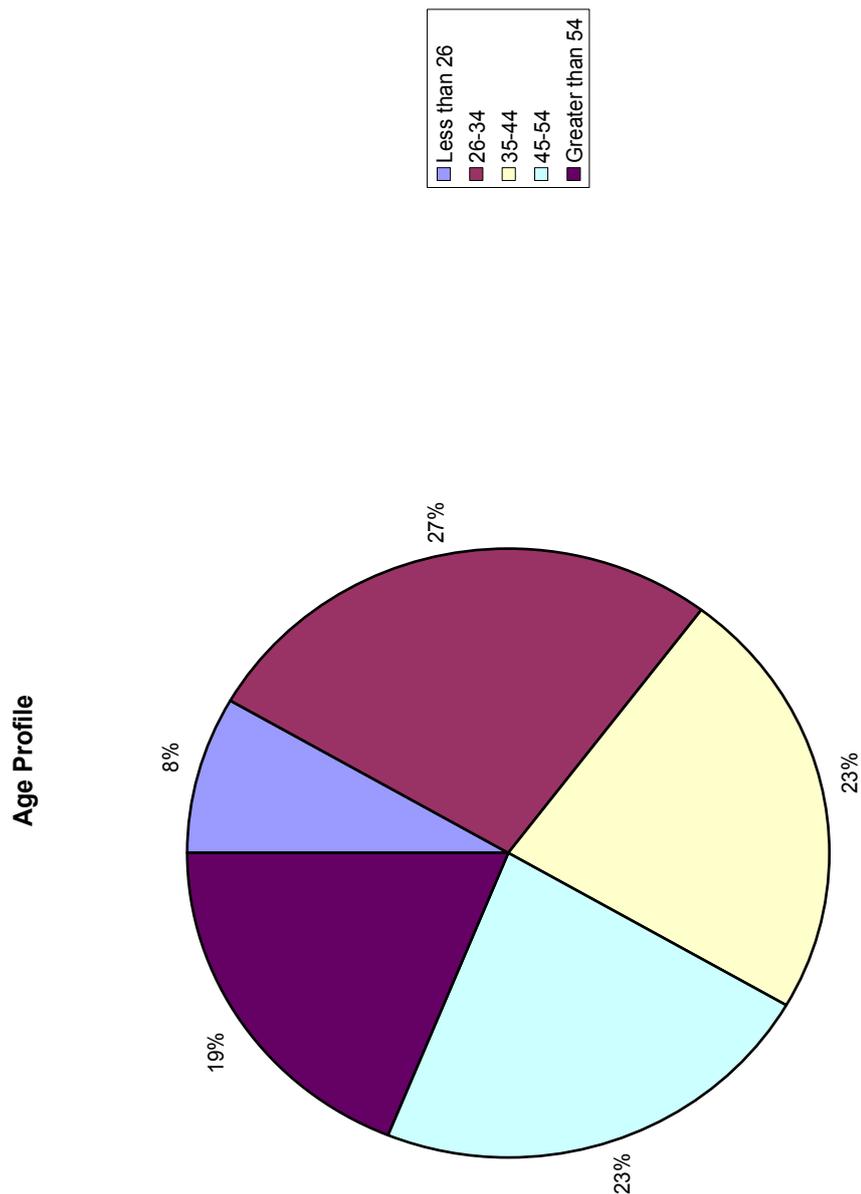


Fig 11

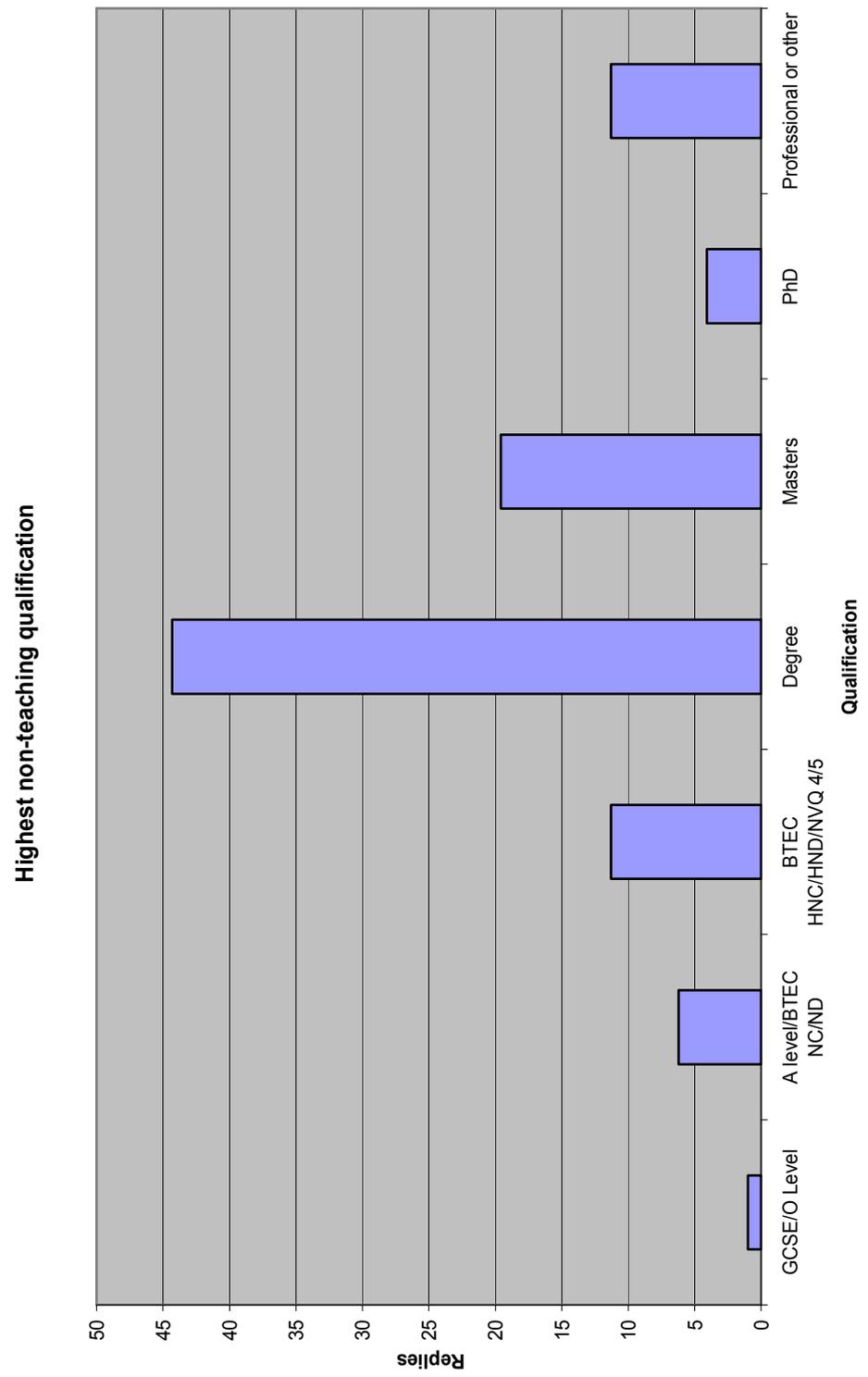


Fig 12

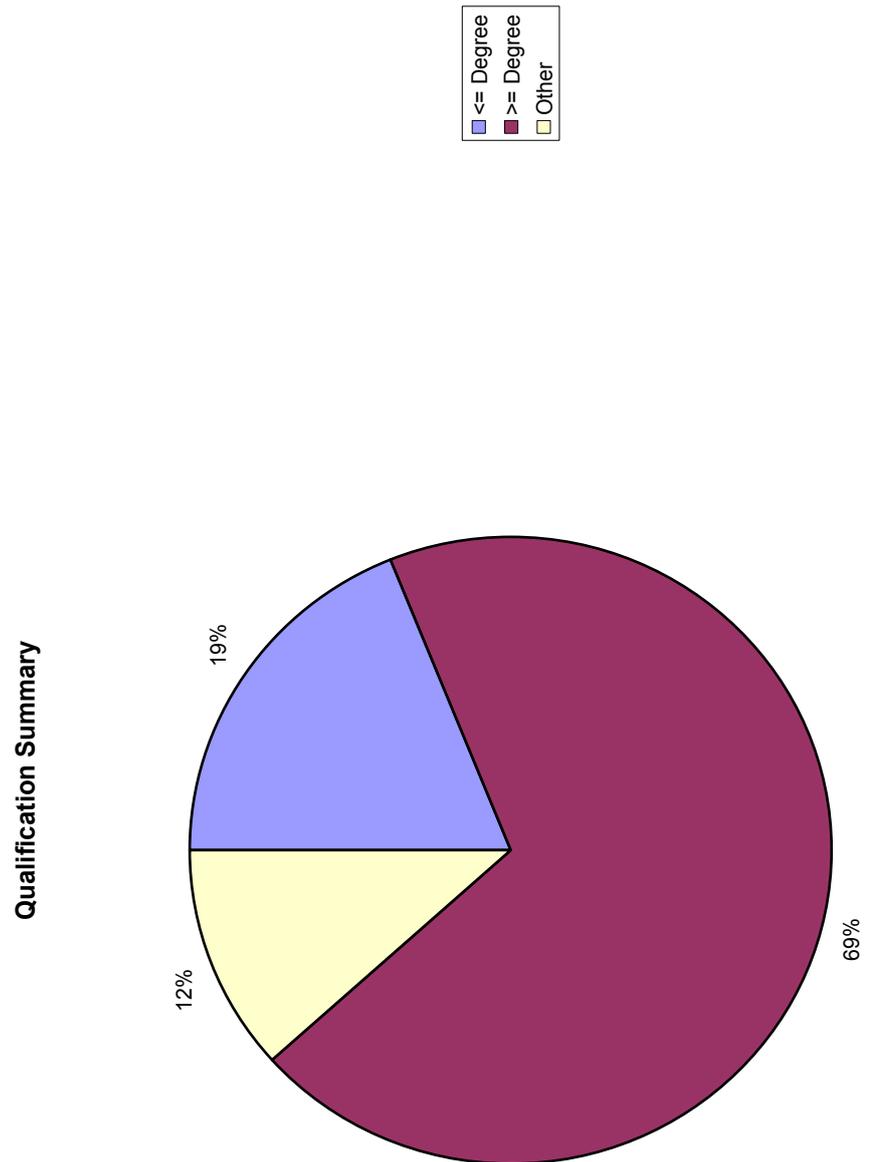


Fig 13

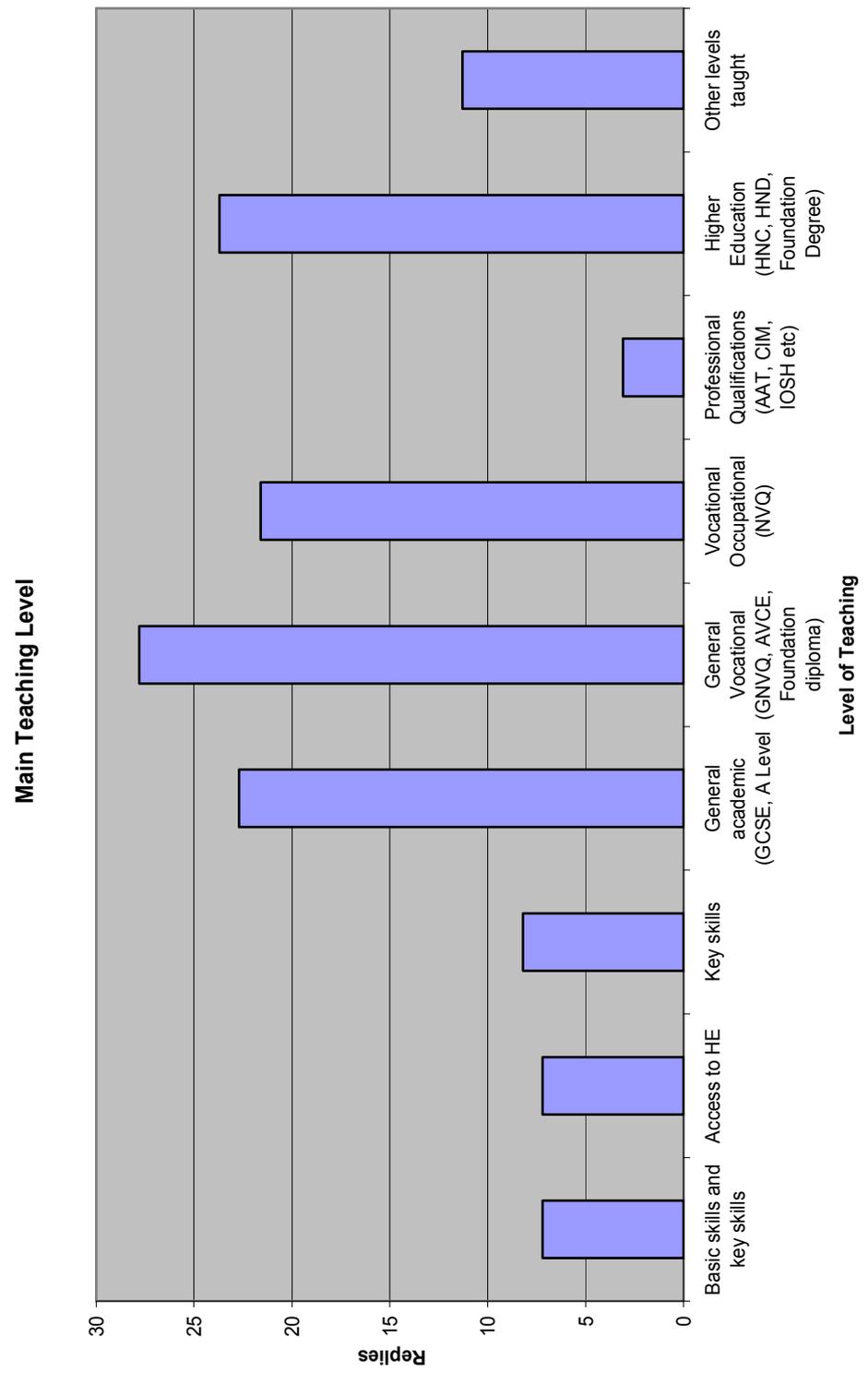


Fig 14

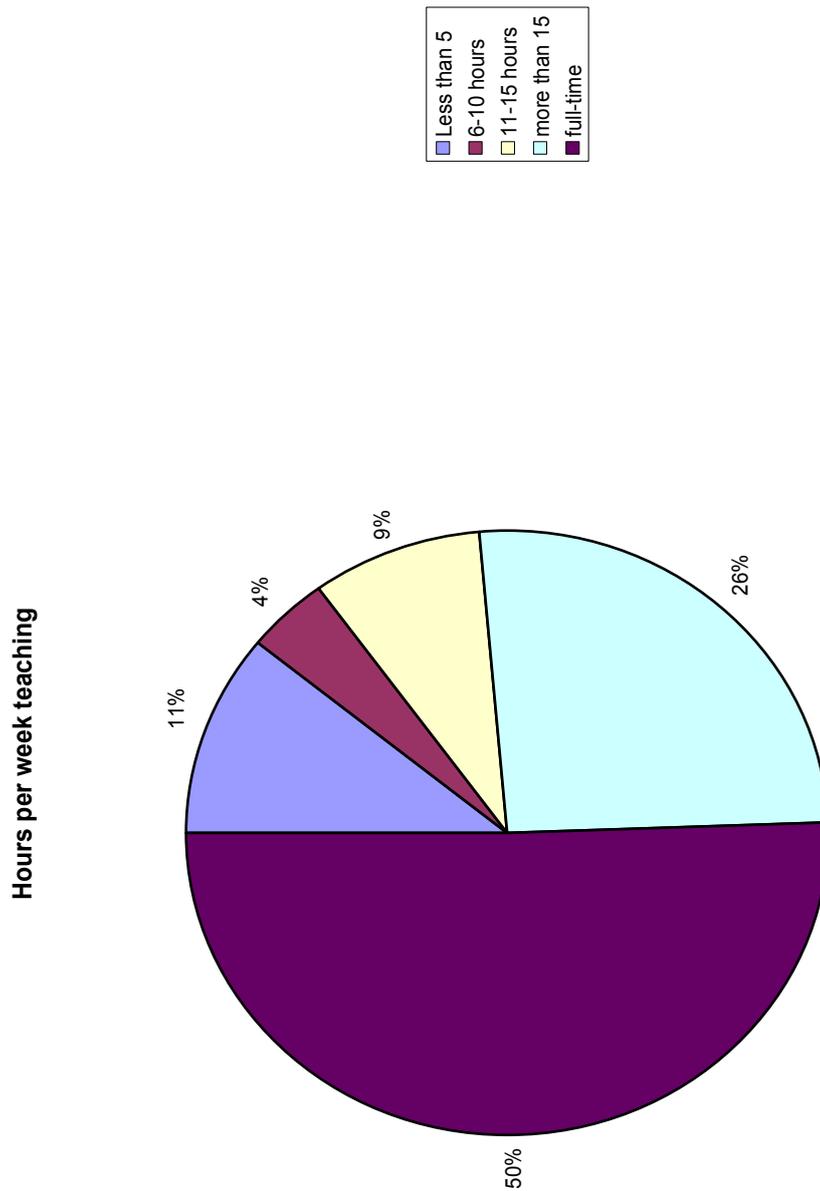


Fig 15

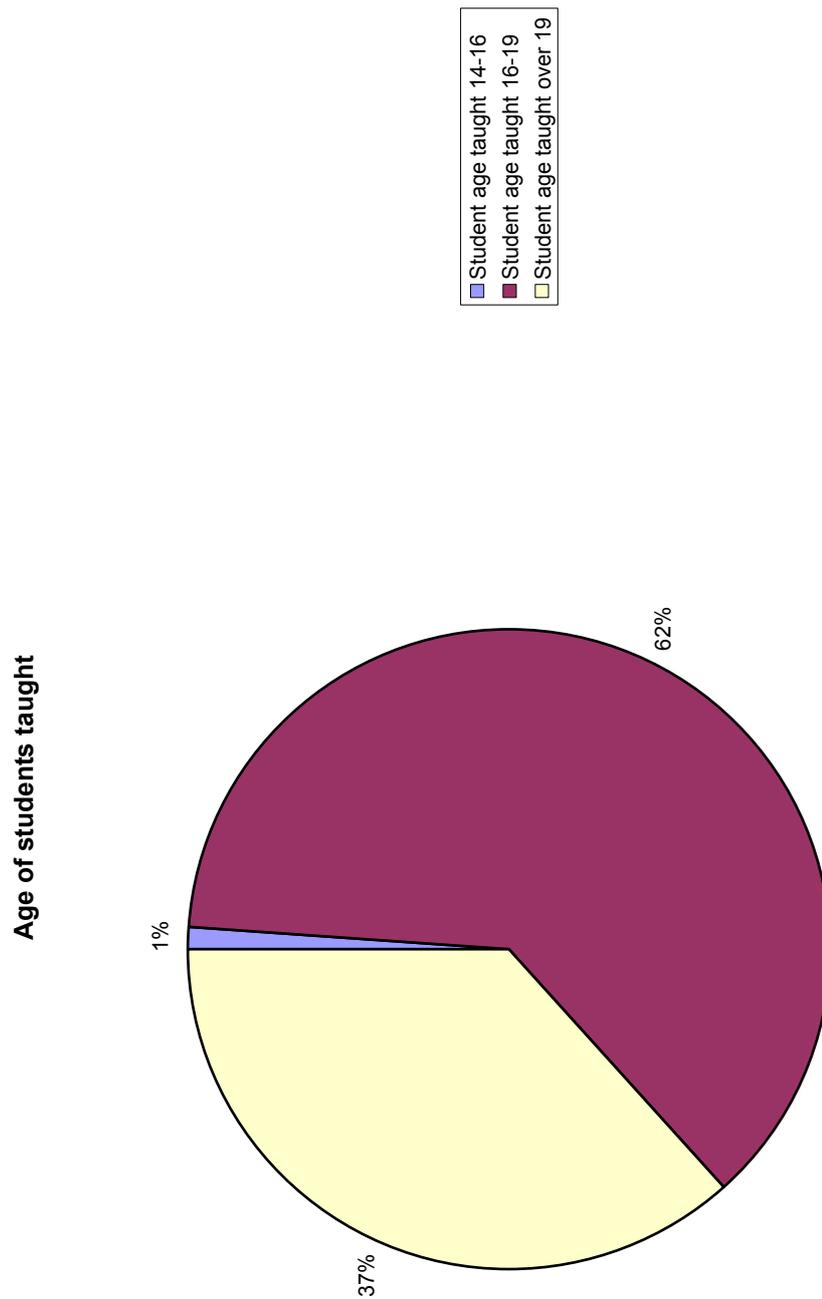


Fig 16

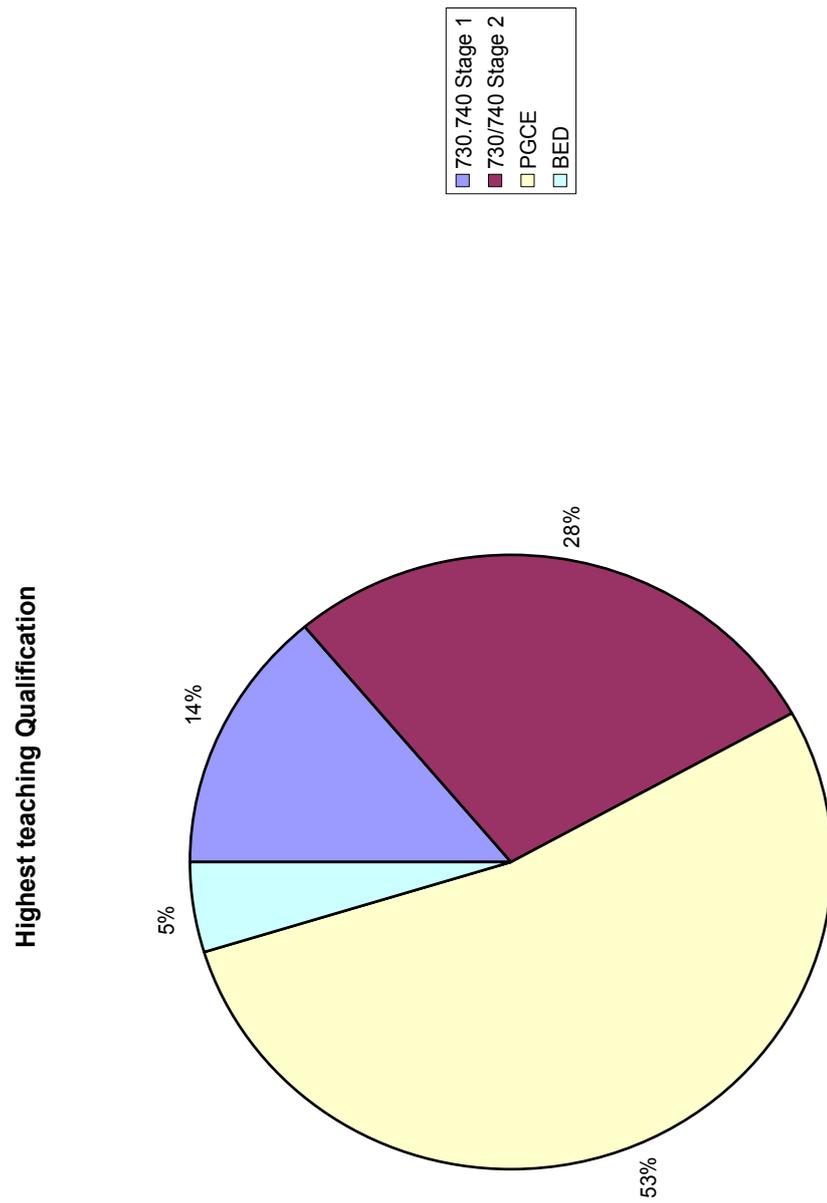


Fig 17

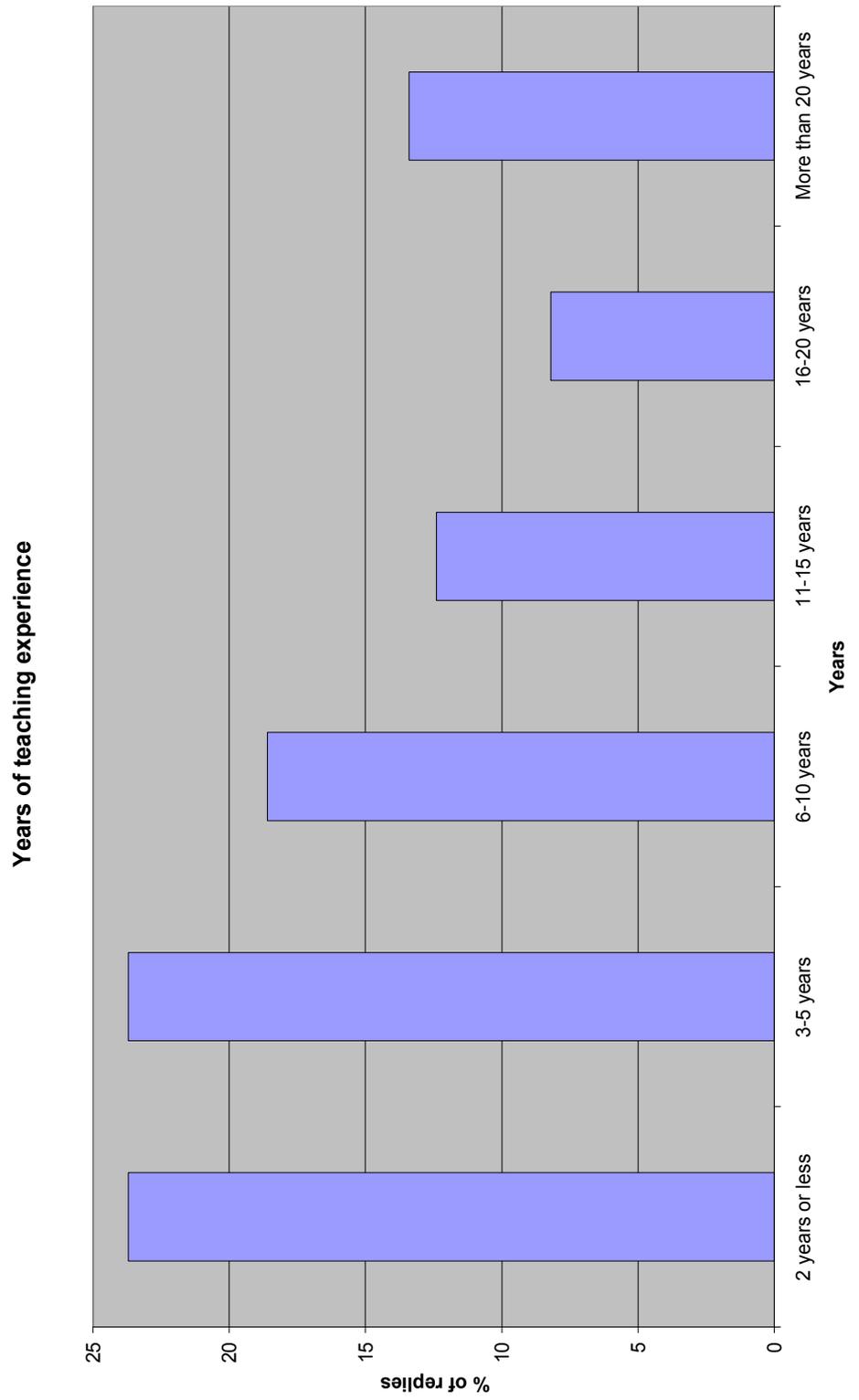


Fig 18

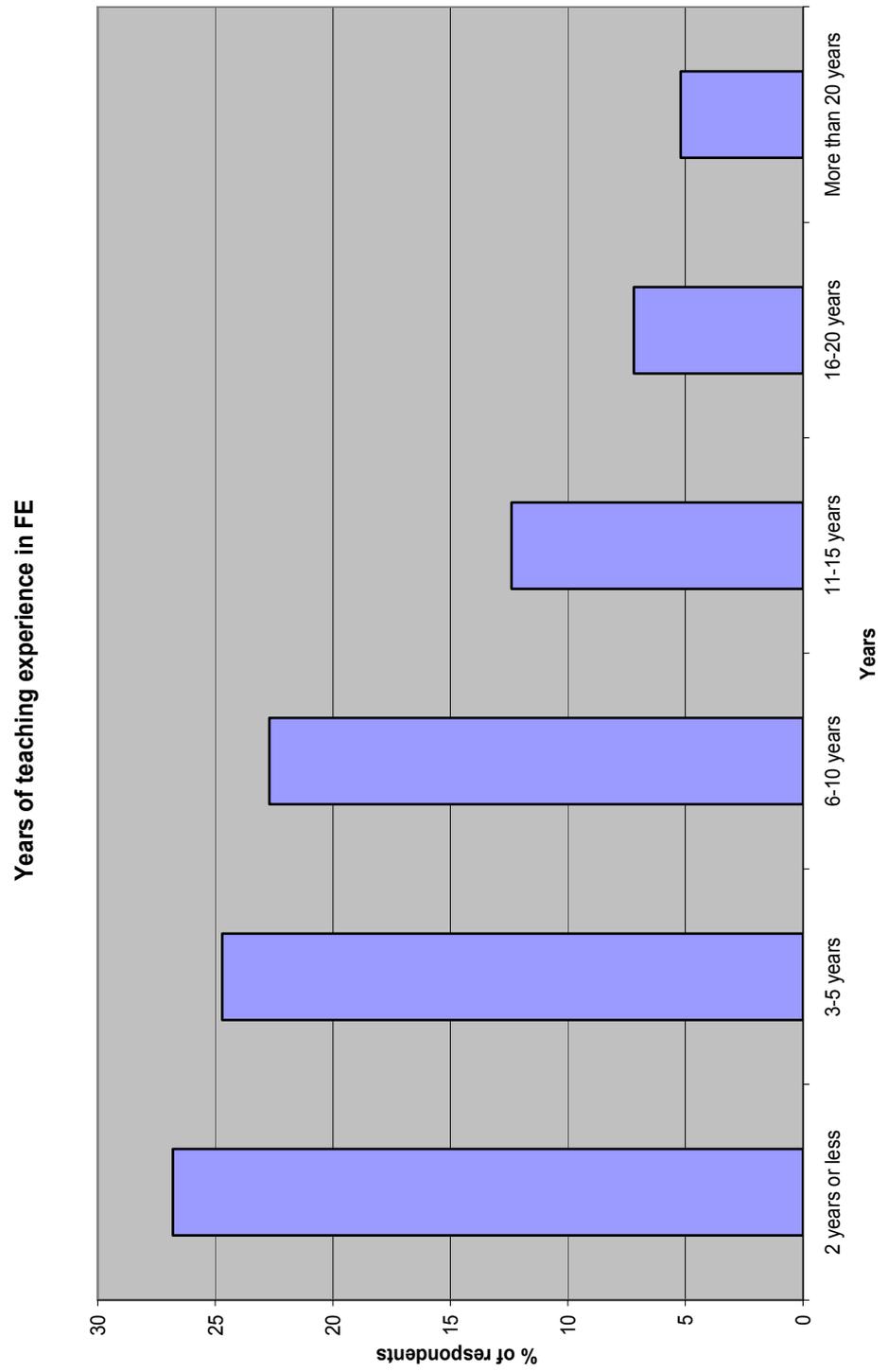


Fig 19

5.4 (c) Cross Tabulations with

Significance

Graphically Presented

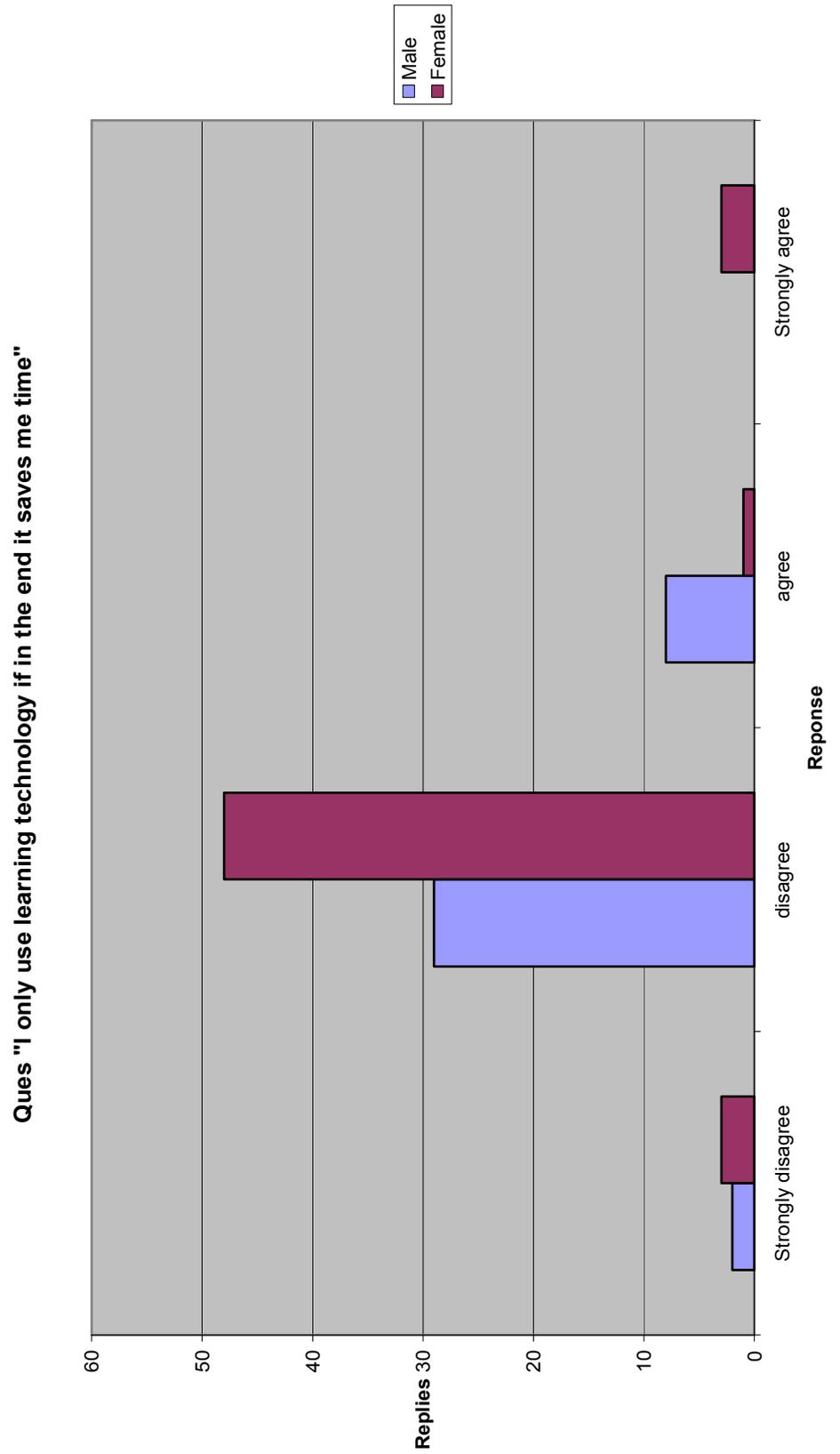


Fig 20

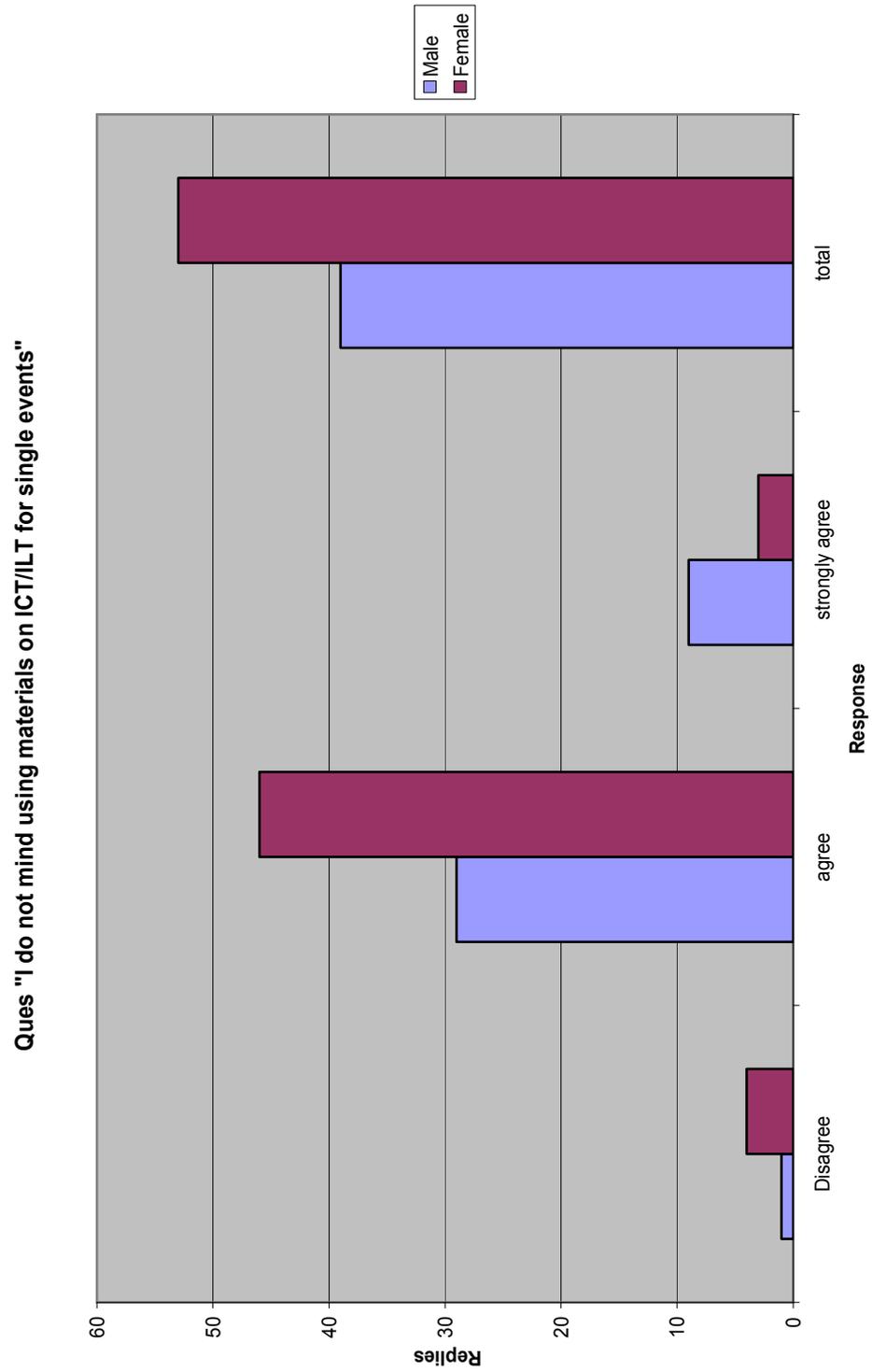


Fig 21

Ques Age in Years* "ILT is a general skill issue not one led by syllabus content"

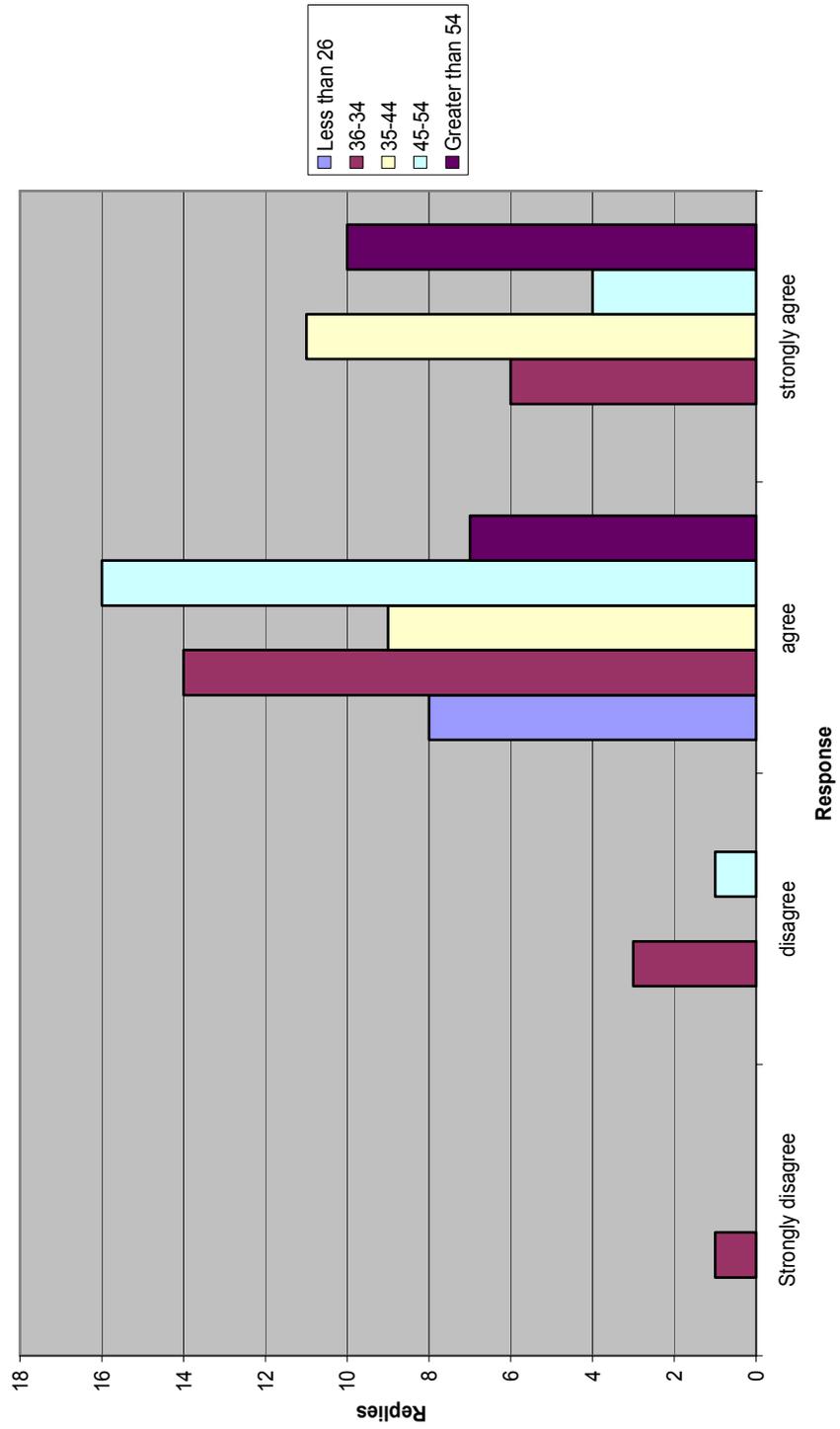


Fig 22

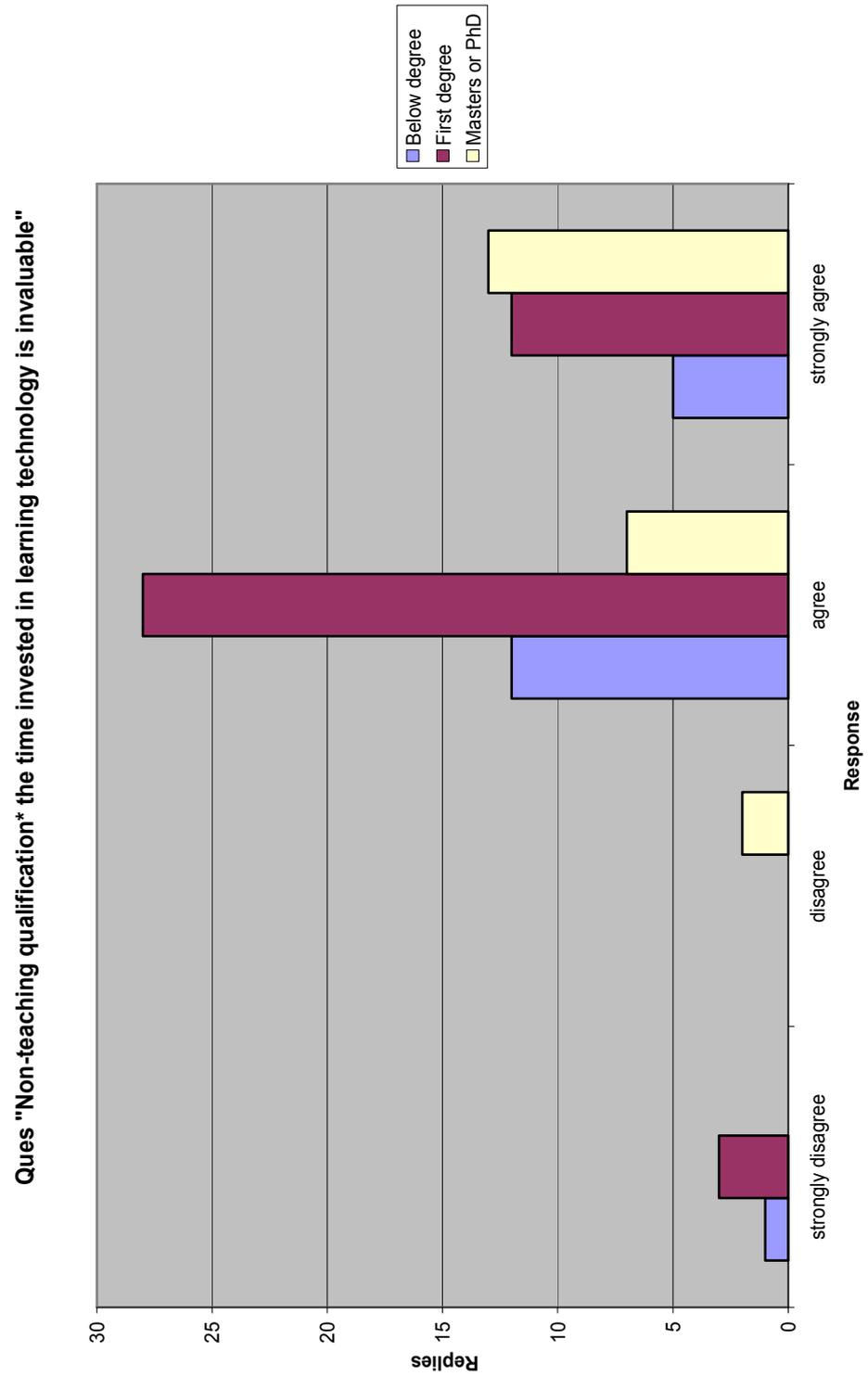


Fig 23

Ques "Subject * ILT is a general skill issue not one just led by syllabus content"

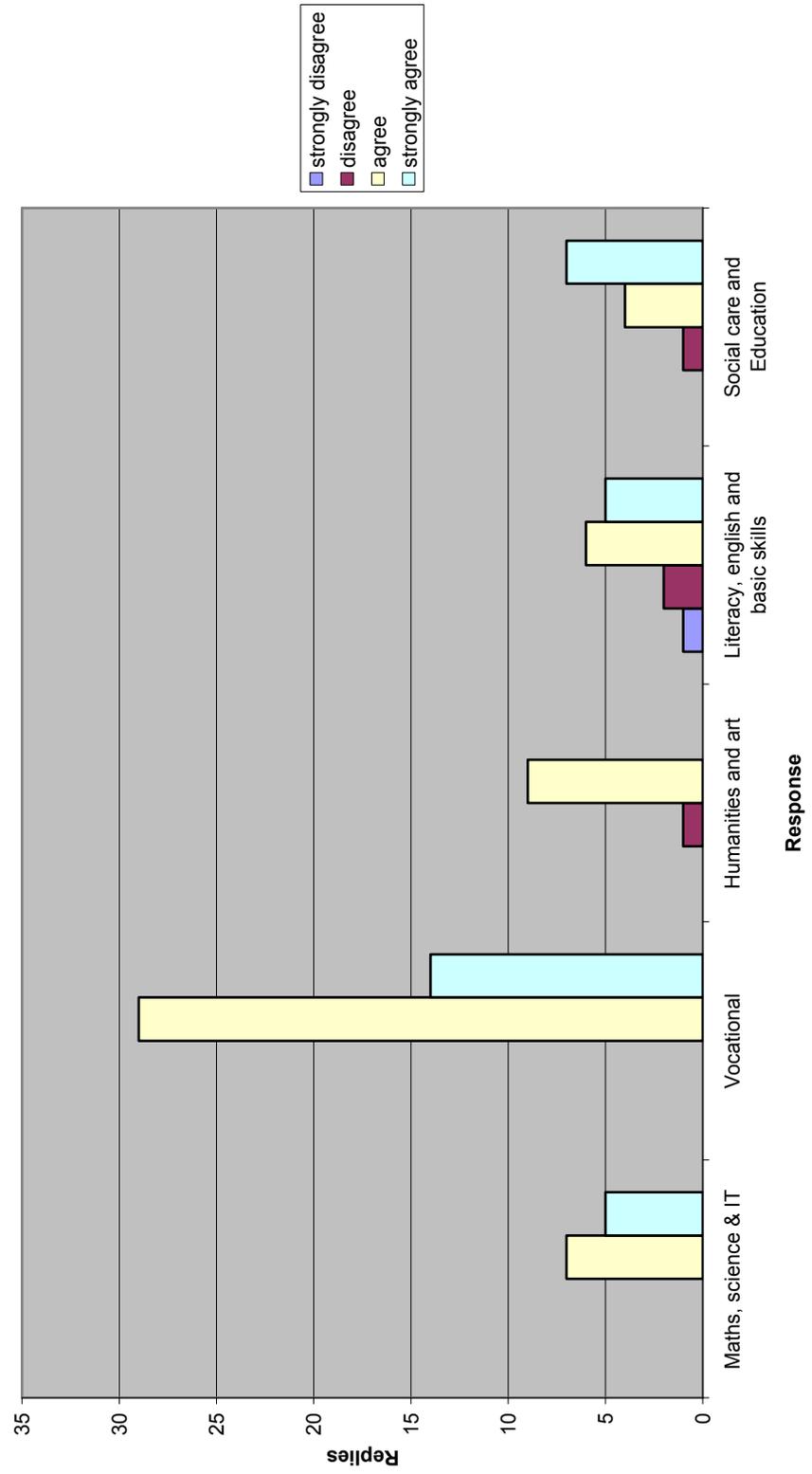


Fig 24

Ques "Subject * an informal atmosphere when undergoing training wastes time"

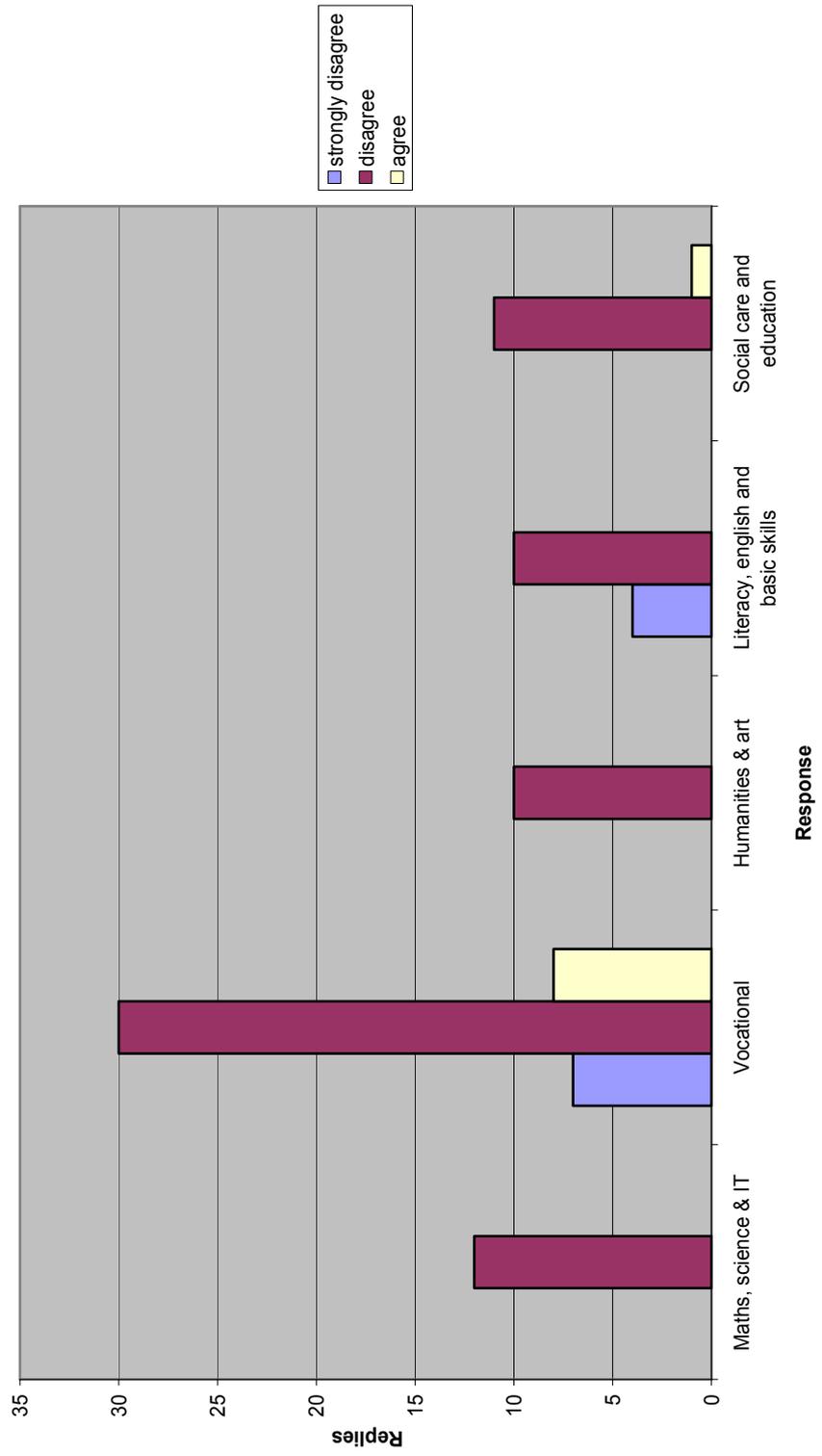


Fig 25

5.5 Summary of analysis of final questionnaire data.

The main element of the research was the final questionnaire which was centred on three key factors identified from the focus groups, learning style, staff needs and evaluation. There was also one specific question on whose responsibility it was to identify staff skill need related to ILT. The results obtained from the final questionnaire were from analysis of the 96 respondents, who at the time of responding were FE college lecturers either full time or part time.

Analysing the general biographical data the respondents had an approximate equal gender split with 39% of the staff below certificate of education/PGCE level as their highest teaching qualification(table 79) and only 15% were below degree level for their specialist subject qualification, with only 4% at PhD level(Fig 13,14). Over 25% of the part time staff who responded taught more than 15 hours per week and 50% of the respondents were full time (Fig 6). The majority of levels taught were between FE

level 1- 3, with 24% teaching at HE level and 62% of students taught in the 16-19 age range(Fig 17).

The data on the respondents teaching experience demonstrated that the majority (75%, Fig 19) had less than 10 years with only 5% having more than 20.

The age profile indicates that a small percentage had an age of less than 26 (8%) with the core being in the 26- 44 range (50%, Fig 12).

When studying the Cronbach's α value it is generally stated that values between 0.7-0.8 are acceptable. However Kline (1999) states that values of 0.8 are reliable for cognitive type tests such as intelligence test and those covering elements of ability are acceptable at 0.7 . Similarly when dealing with the analysis with psychological construct values below 0.7 can be realistic. A high value can also be achieved by using a high number of items.

Taking this approach and analysing the values obtained in this research there is indication that there is a reasonable reliability based on using the Kline (1999) and in most cases when analysing

significant cross tabulations the likelihood ratio and chi square indicators compared closely. Analysing the cross tabulation (tables 48 – 61) results with significance there was a significant number of cells fewer than five which might indicate that a higher sample size would help the reliability. These cross tabulations based on this response data may not to be very robust, and that if you grouped the agree/strongly agree or disagree /strongly disagree in sets then no significant convergence of opinion is apparent.

Considering this issue of low cell numbers in the cross tabulation results (tables 48-53) and that it is apparent only in a few of the relevant factor questions it seems valid to say that there was no significance in the responses in respect to gender as other previous research predicted the sample was a reasonable gender split of 58% female and 42% male.

Similarly the results indicate no significance between the factors when analysing the length of service in the FE sector, specialist subject area entry qualifications in terms of adopting new technology.

The cross tabulation set 7 did indicate that a percentage of vocational teachers may not like an informal atmosphere when being trained (Fig 25). Analysis of the relationship between factors shows no significant difference in the mean values and that most responses are in the middle range i.e. 2-3. Studying the correlation between the factors an interesting issue of the weak to no correlation of learning style with the other two factors of evaluation and staff needs exists. There was a no relationship at all between evaluation and learning style.

Chapter 6

Discussion

6.1 Introduction

Having studied the development of technology over the last thirty years it is evident that this is a fast changing environment and that the creation of personal computers, the Internet and related interactive technology is beginning to have a major effect on the learning environment. This research has investigated the effect of technological development since the Higginson Report (1996); issues raised in the report are still valid today.

The development of freely available printed text had an effect on the world of learning, making information and knowledge available to a large percentage of the population in the developing world. It enabled the production of multiple texts and created the need for the population to be able to read, having a direct impact on the learning environments created. As identified by writers like Clark (2003), the access to printed copies of text created

availability on a mass scale and also created solitary learning styles in addition to group listening. The interesting issue is that the development of mass accessed printed text generated a change in learning style and a need for wider inclusion. No longer was education restricted to a small sector of the population; this was a significant factor in developing the need to educate as much of the population as possible in what we now call basic skills; that is the ability to read and write.

The formation of mass- produced printed text was a major event and had a profound effect on the way people communicated and learnt, and on the role of teachers and the styles they had to develop. Textbooks became the norm and a large percentage of the population began to have access to public libraries, together with information and alternative views outside a particular educational institution. This historical event is a good example of how the advancement of technology can have a profound effect on society in general and the way people want to learn or the way they relate to teachers and each other. The various quantum jumps in technology that have taken place since the emergence of

printed text have assisted the continual move to student-centred learning and the recent concepts of individual, personal and personalised learning.

Advancements in technology can be grouped into significant events based on how they motivate a wave of fast change; certainly the development of mass printing was such an event. Similarly, the invention of radio and television in the early twentieth century is another example and, while it took a few years for radio and television to be available to the majority of the population, it is clear that these inventions also had a significant effect on the skills teachers needed and how they related to learners.

Television, radio and the ability to record audio/visual events have led to the initial concepts of such developments as the Open University, self-taught packages and the availability of learning materials and experiences using audio visual media. The time line developed by Clark (2003) see (Chapter 3) clearly demonstrates the major events in the advancement of technology and

demonstrates how we recently have seen an explosion of technology development springing from the invention of the personal computer. While television and radio took a while to really affect formal education and the skill needs of teachers, the first personal computers, developed in the late 1970s, and the digital age, established in the early 1980s, had a significant and fast effect. The development of digital equipment within the price range of a large percentage of a developed country's population, and within manageable expenditure level for colleges and schools has taken place relatively quickly and can be regarded as another example of how a technological advancement has had an effect on the learning environment and the teachers in those environments.

Recent developments of the Internet, related intranets (systems within a college or school) and mobile devices generally, e.g. phones, voting pads and interactive equipment such as interactive software and display boards, have focused issues raised by the Higginson Report; such developments have now become realistic needs. Personal computer rooms, wireless links, interactive

equipment and virtual learning environments are, for FE colleges, no longer “icing on the cake” but expected norms of resource.

Whether the relationship between learner and teacher has significantly changed to date is doubtful but it is relevant that the technology has enabled the concepts of individual learning plans and personalised learning to be a target for FE provision.

Certainly, future proposals about the role of FE highlighted in the Leitch Report(2006), indicating a more off- site provision with work- based learning and credit accumulation, will mean that technology will play a significant part of the type of support teachers provide.

This research was aimed at analysing how technology, as an example of creating a changing environment, has affected FE teachers, if they have the environment and personal tools to deal with this continuous change, and if the organisation they work in provides a suitable environment. It was not intended as a study of the technology itself or how this can be used, but how staff in colleges perceive the effects of this environment that is constantly changing as a result of technology.

The effect of technology appears to suggest that we are moving to a more student-centred style of education and highlights the important issue of whether teachers really want to change their relationship with students. It also calls into question if they have concerns about a loss of control of the learning experience by perceiving that technology de-skills the role. It could also be challenging their role as individuals, not only by using the technology, but also by introducing true differentiation into the classroom and by them using technology to improve their teaching. With the development of individual learning plans and the recognition that people have different preferred learning styles, it is then logical that technology should be able to support a teacher to meet the needs of the learner and that technology might make a good teacher better but it will not make a poor one acceptable. Obviously, a danger is that the technology will de-skill teachers and therefore there may be a perceived resistance to its adoption in traditional teaching environments with the extreme use of technology perceived as de-skilling the role, while restricting good teachers and covering up the weaknesses of poor

ones. It may be that an aspect of adult resistance to change is being demonstrated here with some teachers using their inability to take on board the use of new technology or being reluctant to use it due their perceptions of its effect on their role. They may therefore say that they do not have the time to learn how to operate such equipment though this is in fact an adult learner block to the real issue of them not wanting to engage in learning themselves. Teachers who are in engaged personal learning will always be looking at how any resource, new or old, can be used to improve the learning experience by offering a range of learning experiences. Hence, they will attempt constantly to improve their teaching or support and this will also help them to support learners with specific physical or learning difficulties and improve accessibility generally. Ideally the development and introduction of technology into colleges should act as a catalyst for the improvement of the learning practices. Nonetheless, as a form of constant change, it could expose the weaker teachers or those who find it personally difficult to take on continual learning as an adult.

This is a complex issue that involves a great many assumptions. One of these is that the use of technology is automatically an improvement rather than what could be a “death by power point” experience. Obviously good practitioners will constantly evaluate and identify the range of techniques they use to motivate and engage all learners. However, such a group may also create a problem if they instigate constant change instead of actively evaluating themselves and looking for new ways of facilitating learning. If an organisation can achieve such a population then perhaps that organisation has become a true learning organisation. Staff development and the environment of the college in which teachers can learn are recognised factors in how teachers can improve in a climate of continuous change. The various studies that have been carried out since the Higginson Report have identified professional development priorities, assuming that certain technological advancements are available. So, if we regard FE teachers as a group of adult learners with specific needs and allow them to take true ownership of their learning, they also need to be aware of externally set priorities.

Effectively, they must take personal responsibility for their learning and their skills development.

The research identified that FE teachers are a group of adult learners composed of a wide range of characteristics. For instance some teachers enter the profession with high-level academic qualifications and with experience of a route of learning in higher education while others enter the profession from a trade skill route. These might have personal academic skills, personal learning and research skills at a lower level. People entering the sector also have a range of ages and a range of hours they are contractually committed to (See Fig 12 and 16 for examples). To add to the complexity there is a wide range of provision within a typical FE college which may provide 16-19 full-time and part-time further education, higher education, apprenticeships, train to gain and 14-16 partnerships with local schools. Courses cover a range of academic levels from entry level 3 to FE level 3 and levels 4 and 5 for higher education (See Fig 15).

Therefore FE teachers are a complex group with a wide range of personal characteristics and learning needs who are involved in delivering a wide range of provision. They are a unique group with characteristics that might be regarded as a major strength of the sector. However, these may also cause problems when looking at meeting the needs and personal development of individual teachers while still meeting externally set criteria. For example, requiring a pre-set teaching qualification could be an issue when recruiting people to deliver vocational trade skills (e.g. plastering, hairdressing) as it assumes they have the study skills and key skills to complete the qualification on a part-time basis. (See Fig 18 for the qualification mix of the sample.)

It is logical for staff development and the development of learning technology to be linked but this is taking place in a complex environment but the loose use of terminology related to the use of technology in education such as ICT and ILT has not helped to identify what is a genuine issue or just the latest subject for popular discussion. People use the terms in different ways and using the term ICT when they really mean ILT. For example Ofsted

use the term ICT in their inspector's handbook for features of a good lesson when it should really be defined as ILT (Ofsted, 2007). The confusion was identified in the research being highlighted in the pilot focus group when a common response was that ICT and ILT was in fact the same subject. This resulted in the main focus groups being given definitions at the beginning of the interview for clarity. Some may argue that it is not an important issue as everybody knows what people really mean but it does create concerns if people are in fact interpreting the terms differently and publications are using the terms loosely. Until such terms are defined in a common format confusion will continue to exist and issues potentially misinterpreted.

Such loose terminology has not helped in the further development of concepts such as blended learning, e - learning, distance learning and personalised learning and has potentially confused priorities. Some earlier studies looked at the issue of ILT skills and barriers to the use of ILT as a purely mechanistic issue when it really is more of how such technology can enhance learning in and outside the classroom. In the late 1990's and early this century

many repeated publications analysed the ratio of PC's to students and the use of PC's in classrooms as if this was the specific development of the technology. The barrier for teachers in schools was focused purely on the use of PC's and their use in classroom activities. Probably a predicted approach at the beginning when such equipment was very new and had limited access. However as the technology has advanced it is now more important to concentrate how a piece of technology and how it is used is changing pedagogy and how generally such tools can be used to improve learning. In F.E. the same issues exist but the complexity of the curriculum and range of learners add to the difficulty of developing the use of technology effectively and setting standards. In both cases the lack of confidence and access to reliable resources were an issue but as the cost of equipment in real terms reduces and the reliability improves such problems may be a distant memory and no longer a reason for low use.

In relation to staff needs an important item identified in all research is the need for effective training and this still seems to be a key factor possibly linked with a lack of change management

skills and a need for the organisation to become a true learning organisation for its staff. A key issue that could make change management effective is to ensure that a change is relevant to the teacher who is effectively an adult learner. When any form of technology is used or introduced it is important that it is effective in truly enhancing learning and therefore has a recognisable effect on pedagogy rather than just the latest gadget to try out. Earlier investigations (BECTA 2003, LSDA 2004) suggested that any training or staff development that failed to identify the effects on pedagogy would be unsuccessful and there was a need to develop personal skills with ICT and ILT before any specific training on the effect of pedagogy takes place. This requires that a constant momentum is achieved and that training in the use of new equipment is then followed up by support and training in the classroom or in any links with learners. The confusion over terms such as ICT and ILT may affect the perceptions of the personal skills needed to use IT and the use of technology to enhance learning and change pedagogy. As learners move to self-directed learning and using on-line or distant mechanisms this could

become a major element of stress for a teacher who has yet to transfer the technical personal skills to the effect on pedagogy.

Until there is a widespread agreement of the meaning of such terms as ICT, ILT and e – learning across education generally there will possibly be misinterpretation between the personal skills needed and the skills required to utilise technology to enhance learning, change pedagogy and increase reflective practice. The issue of trying to cope with the use of technology in a classroom may overshadow reflection on its effectiveness on this learning experience.

This research focuses on the perceptions of teachers in FE on the use of learning technologies, not only as an example of a how they will need to cope with continuous change, but also how this specifically affects their role as teachers. The research also considers how results indicate if a College shows characteristics of being a learning organisation for its teaching staff. A study carried out by the LSDA in 2002 analysed the standards necessary to enable the application of ICT and the development of ILT in

supporting learning. It summarised the level of development of technology assumed to be characteristic of a typical college. Such assumptions are being made while there is a continuing debate on the role of FE in education, taking into account the national need to develop the 14-19 cohort; adult learners, specifically at level 2; and skills that meet employers' needs. The publication of the Leitch Report (2006) identified targets for adult education and general skills, specifically expanding work- based learning and re-setting a role for FE. This reinforces the complexity of the provision and poses the question of whether it is realistic also to outline a fixed set of ILT characteristics and skills needed by teachers in FE, together with assumptions about what is the norm regarding ILT use in the classroom as stated in the DELG Report (LSC , 2002, p. 18).

Technology has to allow learning to take place but credit accumulation has yet to be properly developed at FE level with qualifications still being distinct items, even though accreditation for prior learning or achievement is developing. Systems have been developed using technology to track students' progress but

these are still only on a college and qualification basis, and not as a lifelong journey; there is also a resistance to change to what may be seen as an imposed strategy.

These effects on a typical FE college that have been identified and the perceived future role of FE, and hence environments have raised interesting discussions. Colleges do manage a highly diverse portfolio but whether this is truly individual learning or just a wide range of provision is debatable. Performance data are still set in qualification cohorts and funding assumes that delivery hours are efficient. Flexible study centres have been developed and, in some cases, networked to the community but college sites still dominate as the place of learning. Colleges have developed the use of virtual learning environments but the actual class contact hours and timetabled pre-set groups are still in place. Attendance is still a requirement and, apart from support material being available remotely through a supported website, traditional teaching still seems to dominate. ILT is being used as part of the provision and related materials are being created. Also, some distance learning packages and programmes have been developed

but the norm is still attendance at pre-set teaching sessions (Blatchford, 2003).

6.2 Initial Questionnaire

After piloting with a high ILT user group, the initial questionnaire was designed to obtain an initial snapshot of perceptions regarding the general use of IT in day to day roles. Specific questions related to the use of technology in teaching and identified a higher ILT user group. The questionnaire was used to obtain a feel for general ICT use and for ILT in colleges. The total number of respondents was 240, a reasonable sample size to be confident of the results.

While the results are effectively a snapshot and therefore provide results that might change with time, it offers a feel for the perceptions of FE teachers. The use of ICT for communication, using systems such as email, seems well established. This as a communication medium in itself can cause issues as it can be very impersonal but it does indicate that most staff have developed

their ICT skills to utilise this technology as a basic communication tool. What is evident is that the use of technology in the classroom does not seem to have reached a similar level of use and although a specific question on the use of PowerPoint reveals the adoption of technology generally, it could be argued that this is not really an alternative medium. It might simply be a more efficient way of delivering the same materials previously used by the well established use of transparencies and overhead projectors rather than a real move towards the use of interactive technology.

The results show that the use of more advanced techniques is low and indicates that the use of multi-media or ILT in depth is lower than the general use of ICT as a communication tool. There was no real indication or significant differences within curriculum subject areas, indicating that the full adoption of ILT is not related to subject specialism. Instead, ILT is still in a state of general development across the full range of teachers. Furthermore, it may still be an issue that the use of ILT could be due to the availability of the technology rather than resistance to its use.

While this is an interesting result, the main objective of the questionnaire was to identify a population of teachers who could be regarded as high-level users of technology in their teaching.

The questionnaire was not designed to provide data that can withstand detailed analysis but it does show that there are indicators that some teachers are adopting the use of ILT in their delivery, although these are not a majority.

6.3 Focus Groups

From the initial questionnaire a population of high users of learning technology was identified. Initial discussions with a senior group of ILT champions and curriculum leaders also identified key issues to be included in the schedule while a pilot group clarified a few details in certain areas of perception as well as highlighting potential issues on teachers' perceptions of their preferred learning routes and giving a real understanding of their needs.

The pilot focus group was made up of five recognised ILT practitioners and raised some interesting responses. The development of their ICT skills seemed to be perceived by them as a personal interest developed by initial formal training. A desire for support after formal training sessions was expressed but there was a feeling that the follow-up needed to be very soon after the training to be effective. There was also a perception that there had been no real support over the three previous years and that most of their personal development had come from informal processes. If anything was provided by the organisation in a formal sense, this needed to be in a "bite-size" structure and

relevant to immediate needs. Such views indicate a corroboration of adult learning theory and that a “just- in- time” or “need to know” requirement was being expressed.

The group felt that they had not really considered their own personal learning styles; they had not even thought of whether the development they received matched their preference.

Similarly, they did not really distinguish between ICT and ILT regarding the use of technology to communicate and or to create interactive learning experiences; instead, they saw these as the same area.

However, the responses enabled the schedule for the main focus groups to be finalised. The schedule explored how people perceived their ICT skills were developed and a specific question was asked about how they identified their ILT skills to see if there was a common issue using a full range of teachers. Specific emphasis was placed on if they had thought of or identified their preferred learning style. This was a key open question selected from the pilot session.

The responses from the actual focus groups, which comprised high-level ILT users generally, matched the responses from the pilot group except for the issues of learning while at work. An interesting fact was that teachers in the groups expressed a preference for informal methods using trial and error when developing their ICT skills. They found formal sessions frustrating and that they had not seriously considered their preferred learning style; in some cases they were even unaware of what this was. The issue of no correlation between learning style and evaluation also indicates this as an issue as teachers are not relating their needs to how they want to develop. An interesting fact was that teachers, who spend a lot of their time analysing their learners' needs and developing their learning styles, had not considered what their own personal preferences were; in short they were not relating the process to themselves as potential learners. However, they expressed the idea that they considered most of their development to take place using formal processes even though they found this frustrating and preferred experiential processes and informal methods. This is a potentially confusing

result in that, as adults, they had not considered their personal preferred learning style or thought whether the methods being used met their preference if they had a choice. Potentially this indicated that they were not really engaging in life-long learning. Instead, they regarded such developments as a necessary imposed element of a working year instead of a matter of personal choice.

The assumption that ICT and ILT are the same thing could be considered as an issue of concern but it is probably more to do with confusion over the terms and their definitions, with both being used loosely and differing in the various educational sectors in the UK. There is an awareness of the fact that low ICT skills will limit the possibilities technology can offer for a teacher. This could be a reason why some uses are seen as prescriptive and a possible restriction to innovation; the expected skills set and uses are possibly causing a narrowing of possible uses.

The focus groups indicated a limited sense of how the technology could stimulate change. They seemed steered by syllabus content rather than possible styles of delivery and this may be an

indication that the high-level ILT users were people who could react to prescribed opportunities and follow set criteria rather than being a truly innovative group. If material is being supplied in a complicated format then it may be that this group is simply efficient at introducing such changes into their schemes of work rather than being inventive and original.

Group members also indicated a low level of self evaluation and said they relied on evidence from assignment content and student feedback mechanisms to inform them of how effective a process was. They did not seem to question whether the method used for teaching was the most effective and there was an assumption that, if we are using new technology and reacting to changes in syllabus content, inevitably this must be an improvement.

There were a few comments that indicated some anxiety in that teachers felt that students would know more than they did about ICT; they were surprised when this was not the case. Whether this is an indicator of a lack of ICT skills or discomfort with a climate of change, it is difficult to identify but there is evidence

here of an element of anxiety and a potential espoused theory of action with response not related to actual actions. (Argyris and Schon, 1974.)

The focus groups therefore helped identify three key factors for the final questionnaire:

- Perceived needs.
- Perceptions of learning style.
- Self evaluation specific to ILT.

6.4 Final questionnaire

From the results of the focus groups the three key factors already mentioned formed the basis of a final questionnaire; together with the inclusion of one specific question concerning whether teachers thought it was the responsibility of their employer to identify ILT skills needs.

An in-depth analysis of the results is given in Chapter 5 but while the key factors can be used for generalised commentary they are primarily aimed at how teachers perceive the development of ILT. This is, however, a good example of a drive for change, both from internal and external forces. In many situations people use the term of “culture change” when it is really a case of having to adopt a new skill. In the case of learning technology it can be argued that this is beginning to have such an effect on the learning environment and is imposing externally set expectations on teachers that, the need manage change may be relevant both to an individual and to an organisation. It has highlighted a need for learners to develop communication and literacy skills to help in ILT development and for teachers truly to embed what are now being called life skills into their delivery utilising interactive technology.

The development of learning technology has been rapid and younger learners are entering F.E. with an assumption, rather than an expectation, of its use. The final questionnaire was designed as a result of the focus groups to identify the perceptions of a sample

of FE teachers; it generated some interesting results. The pilot group of trainee teachers did not correlate with the actual sample of practising teachers, however this may be due to their training which, at this point, is a state of intensive learning while the practising teachers, who are dealing with multiple pressures, have a possible resistance to imposed change.

Being a unique group of adult learners, FE teachers facilitate an environment of learning for others while also having a personal learning need. Showers and Joyce (1996), in their extensive studies on the evolution of peer coaching, identified that staff development must be included in a drive for organisational change. This, of course, assumes that the organisation and the individuals want to change in the first place and that they are not just reacting to externally- set criteria without really buying into the needs. If the change is moving towards a learning organisation then staff development and the inclusion of peer coaching and related support mechanisms seem logical needs. Showers and Joyce (1996) identified that this causes a radical change in the relationship between teachers as a group in that

they need to relate to each other's personal needs and support each other in personal development. There is a need for the development to be structured and related to the organisation's needs coupled with a change management environment.

The fast development and increased use of learning technology has, therefore, created a drive externally, and at an organisational level for teachers personally to develop and work together in order to achieve true adoption of the technology in their teaching practice. The development of technology has also assisted in the development of student - centred learning and the emergence of concepts such as personalised and individual learning. This has therefore also changed the potential relationship between teacher and learner. Whether the development of individual or personal learning is as a direct result of the development of learning technology is debateable but there is certainly an argument that the technology and emergence of virtual learning environments and the Internet have supported and accelerated this process. Blatchford (2003) is also suggesting that learners are no longer customers but stakeholders. As a result, environments

will need to be arranged for individual interactions between teachers, with learners no longer being happy to spend large amounts of time in a passive mode listening to teachers. It may be an issue that people think the technology is the cause of the change rather than stakeholder demand; managers may also harbour the misconception that it is an opportunity to reduce staffing costs. If such effects are related to technology, this could be a reason for anxiety and suspicion concerning the technology itself and the drive for its introduction.

In relation to the drive for individual learning, it is logical that teachers are aware of all the options available when it comes to using technology or supporting learners to use it, assuming they have accepted its potential use in facilitating learning. However, it is, of course, more complicated than just putting what was a range of old transparencies onto PowerPoint. Instead, teachers need to be aware of the range of technology available to enhance interactive learning and to develop self-directed learning both inside and outside the classroom.

6.4.1 Effects of Age, gender, teaching experience or qualification.

The results from the final questionnaire generated some key indicators and, analysing the responses, showed that gender had no significant association with perceptions or views. This finding runs counter to previous studies carried out by BECTA (2003) and the LSDA (2004) whose results seem to corroborate studies performed earlier by Bradley and Russell (1997). These studies indicated a higher anxiety in females in adopting new technology and in using the Internet. The research indicated that males, especially young males who had been teaching for less than five years were the keenest to exploit new technology. It highlighted that the lack of use may have been due to poor training in the use of the technology and that extensive use of technology was not being seen as a normal part of a teacher's tool kit. While the use of PC's was identified as high for e-mail, the preparation of power points and the creation of notes, the use of specific tools or equipment items such as video conferences and digital mobile devices were low.

One explanation suggested by the research for the poor uptake by female teachers was that they tended to focus on subject areas such as health and key skills, not a particularly inspiring comment towards those subject areas or the teachers themselves as an explanation for their low up take of ILT.

Such results were also reflected in school sector surveys that also indicated that females were less confident in the use of updated technology. (Somekh et al., 2004)

The results of this research do not support these claims and indicate that for FE teachers such gender differences may not exist. Obviously, further in-depth research should take place if this is regarded as an important issue. What is interesting is that the research results agree with the views of the philosopher McKenzie (1977) whose studies indicate that there is no difference between men and women in their readiness to learn. Since the research was focusing on teachers' perceptions of learning ILT rather than their feelings about its effect, then regarding the anxiety issue, it may be that females are more likely to express such feelings as

opposed to this reflecting on their ability to adopt new technology.

Previous studies (e.g. LSDA, 2004) indicated that the age of teachers was not an issue but rather the number of years they had spent in the sector and staff who had been teaching in the sector for less than five years were more likely to use the full range of technology available.

This study did confirm that actual age is not a factor and while no significant patterns emerged concerning the number of years spent teaching in the FE sector; there is an indication that the adoption of change for longer serving staff is an issue. No significant results emerged relating age and responsiveness to change. It may be that people entering the sector are more sensitive and motivated to their development needs in using technology to help their teaching as compared to established teachers who may be less aware of such a need and perceive they are further down the personal development process.

This could also be explained if you recognise that a large number entering FE undertake initial teacher training in-service since the creation of the Institute for Learning (IfL) and the requirement for attainment of Qualified Teacher Learning and Skills (QTLS) or Associate Teacher Learning and Skills (ATLS) status and that there is an expectation for a commitment to lifelong, professional development and attainment of functional skills if not already achieved that include ICT. The Standards Verification UK (SVUK), a subsidiary of Lifelong UK, which is identifying the professional skills for the UK workforce, has set tariffs for the newly developed teacher and associate teacher qualifications (PTLLS, CTLLS, DTLLS) which include level 3 ICT skills. Such ICT attainment does in principle lead to ILT development.

While existing staff that have entered FE recently have to undergo such a routine, long term staff have also been encouraged to join the IfL and hence also obtain teacher status but those already qualified will not necessarily need any further training to register. The teacher training content has had ILT elements, originally

created by FENTO, and now part of SVUK , are integrated into the content so any staff member who is new to FE and in a lot of cases teaching will experience the possibilities of the use of ILT in their teaching as part of their induction into the profession. These include the development of ILT skills and their benefits for teaching and learning, delivering technologies, and how to identify opportunities to use ILT both in implementation and practice. The development of virtual learning environments (VLE) using software such as “Moodle” or “Blackboard” is evidence that the development of learning technology is still a valid as one that is creating a continuous changing environment .

Such a contrast between new teachers and long term practitioners may indicate that the goal of an FE college in becoming a true learning organisation is still to be realised with the inference that it is only new arrivals that take on board personal development needs. This might suggest that personal development linked to the needs of the organisation and external criteria should be linked to a concept of individual learning plans that are coupled to a CPD process. These results also relate to the

work undertaken by Knudson (1979) who, in developing the concepts of "humanology", identified that the personal drive to learn relates more to the needs of individual learners and what stage they are at in their development rather than their actual age.

This can also be linked to the concepts of a fully functioning person, described by Rogers (1969), and Knowles' concept of andragogy and adult education theory, linking it to self-development and self-direction. It may be an issue that new staff perceive themselves in an environment of self-development and have a focused development plan, while staff who have been teaching for more than five years may not feel the same, specifically when it comes to a need to change. Knowles also extended the concept, indicating that andragogy was linked to experiential learning and was self-initiated, even in a formal setting. It is arguable that new teachers are undergoing experiential learning to a high level as they develop their teaching skills while well-established, practising teachers may be reacting to change brought about by the use of new technology in a

different, more resistant manner, feeling it a threat to their existing comfort zone.

As identified, FE teachers constitute a very disparate group, entering the profession with a wide range of experience and qualifications. One issue, therefore, focused on whether entry routes were a significant factor when looking at responsiveness to ILT. This study indicates that there appears to be no significant connection between qualification level on entry into the sector and preferences on how staff development should be offered. This may indicate that teachers have not generally considered their preferred learning style or even had this recently analysed. Confusion seems to exist: teachers express a preference for experiential learning yet seem to like formal, set sessions. While teachers seem not to have considered their preferred learning style and express a view that creating an informal atmosphere is not a waste of time, there is a high mean in the response analysis for the preference for learning by being formally taught. There is an apparent element of contradiction in the idea that teachers like to be informal and experiential in their learning and yet they also

want to increase their skills using formal processes. It gives the impression that teachers have not really thought about this and, when there is a perceived need, either personally or externally, then some form of formal training will be provided. This appears to be a reactionary process; it is not really a cyclic process meeting individual needs as outlined by adult learning theorists.

The study indicates that the notion that teachers will use technology only to save time is not the case, despite some indication in the focus groups that this might be so. (See Fig 25) There is, in fact, no resistance to creating material even for a single event and development of ILT generally appears not to be led by syllabus content. This means that teachers do feel that they are not being led by externally set syllabus content or seem to perceive they are motivated just by the potential time saved. They are happy investing personal time and effort in developing material to use with new technology; this is a general set of views across all levels of personal qualification. The results also indicate that the curriculum specialism of a teacher is not a factor, as there is a specifically strong trend of agreement in vocational subject

areas. (See Fig 24) In short, neither the level of qualification of teachers, the subject they teach their gender nor their age have any bearing on their general perceptions of how ILT will affect their role as a teacher or how they react to related change in their relationship with other teachers or learners.

6.4.2 Perceptions of teachers in relation to adult learning theory

What is apparent from the study in relation to a teacher's subject area is a feeling that specialist subject development is more important than any ICT/ILT development. If time is limited, then teachers prefer to develop a subject specialism rather than generally developing the use of technology in teaching and learning. This could be an adult learner tactic to avoid what is perceived as an area of weakness or actually a genuine feeling that updating specialist subject knowledge is a priority compared to developing ILT skills. It may be the case that, as adult learners, they are prioritising what they regard as more important personal needs rather than using adult learner tactics to resist what they regard as unnecessary, externally directed change.

When Showers and Joyce (1982, 1984) performed extensive studies on the concept of peer coaching, they put forward the idea that the initial development of teachers is based on self motivation and attitude; what is a worry is that an organisation may not support intensive training. Showers and Joyce also identified that, for long- term improvement, staff need constant technical support or assistance in the classroom, as well as specific training using clear processes of skill development, followed up by peer coaching. They also linked this approach to the use of peer observations, coupled with a well- planned staff development programme of a self perpetuating nature; however, the technique is only effective if a whole group or department buys into the process. Such concepts have some similarity with the concept of the learning organisation and the need for staff to develop a culture of reflective continuous learning as an intrinsic characteristic. This means a radical change in the relationship amongst teachers, support staff and management (Joyce and Showers, 1995).

Such studies do seem to agree with general adult education theory in that there is a need for the individual to buy into the process by identifying a personal need for it to work. However, this study identified no evidence that teachers have a personal preferred learning style; this would be a major omission in creating a cyclic development plan with a linked peer process. To utilise peer coaching and support in developing ILT would require a pool of already accomplished practitioners, and the provision of sufficient time and technical support mechanisms. This equates to the JISC attempt to create ILT champions under the Ferl Practitioners' Programme (2002).

Dodgson's (1993) approach links this idea with a need for a learning organisation; this would consist of individual learning being accumulated into organisational memory which would then facilitate change. Whilst ILT development has recognised that there will be a change in the relationship between teacher and learner, it also seems to link the idea of a college being a learning organisation with a very carefully planned staff development

process linked to individual needs, as well as with corporate and externally set criteria.

In order for the process to be of a self-perpetuating nature, the concepts of adult education theory and individual needs should be integral parts of the structure. This reflects the views of Joyce (1990) and Argyris and Schon (1974) who all advocated the needs of individuals, as well as those of the organisation. There is also a potential relevance to the “theory in use” of Argyris and Schon (1974) in those responses given in the study which may be an allegiance to the “espoused theory”: i.e. teachers are responding to the questions and noting the way that they perceive they behave or are expected to behave. In reality, however, they are behaving in a way that is governed by theory in use. This might be identified as responding by trying to bypass the issue. It could be argued that teachers who respond by saying they are happy to trial a one-off use of technology when they are not led by syllabus content or because they prefer experiential learning, illustrate the espoused theory. In reality, however, they expect formal training, and their inclination to prioritise the individual development of

their specialist subject area is actually an avoidance of ILT. Unless as individuals they truly identify the need to enhance the use of learning technology in their delivery they might be demonstrating evasive adult learner characteristics. This could explain the observation that it is not an age, gender or qualification issue but more a resistance to the change in the relationship between teacher and learner that they regard as a threat and that they fear technology is de-skilling them as teachers. As the theory recognises, this may be a complex defence mechanism which is really related to people wanting individual means of control. Thus, there needs to be a link to between staff development and ILT needs as part of an individualised learning plan rather than as a formal set of prescribed sessions that must be attended.

6.4.3 The concept of FE Colleges becoming learning organisations.

Argyris and Schon (1982) also identified that such a perceived clash between what individuals perceive they need or feel threatened by, and what an organisation identifies as its needs,

even as a response to externally applied criteria, can cause conflict and an increased feeling of being threatened if it is communicated as an instructional need. The DELG report states that use of learning technology should be regarded as the norm and an increased of emphasis on an approach of individual concepts could be adding fuel to teachers feeling they are losing control (LSC, 2002).

Argyris' (1982) Model II could be offered as a mechanism to ensure that teachers are making informed choices; this enhances personal commitment and allows individuals to evaluate the effectiveness of their development. This approach is similar to the peer coaching methodology in that the essential element is deciding to be involved by free choice with teachers relating to each other as a team or group with peer characteristics. There may be still need for elements of a need to know (Model I) approach for clearly identified ICT skills needs (e.g. use of an interactive whiteboard or a piece of new software) but the main emphasis needs to be that the individual has bought into ILT and the department or curriculum team as a group has also bought

into the process of developing it, together with the changes in the relationships between themselves and learners as part of the process. This also helps in the use of a wide range of interpretations that Huber (1994) identified as key factors related to learning organisations; it also reflects adult education theory by using an andragogy approach.

Moreover, this relates to the views of Nevis et al. (1993) that an organisation needs to identify an individual's needs and to create the appropriate environments in which he/she can learn, identify gaps in performance, skills and knowledge gaps within the individual and his/her learning orientations, Dodgson (1993) also relates to adult learning theory and the characteristics identified by people such as Argyris, Schon and Dodgson in forming a true learning organisation.

These views also introduce the concept of having to develop the ability of an organisation to unlearn items as the use of traditional teaching techniques such as dictation will probably be removed from the classroom for a lot of learners. Such methods could be

more difficult to remove than at first thought, as teachers may be delivering in a way they were taught or learnt, thinking this is the correct way.

Having to have a teacher qualification should remove such notions on the part of newly appointed teachers but they may be still an issue with well - established teachers unless the organisation has individual learning processes for staff and ensures that, as individuals, they feel they have been bought into the process rather than it being imposed.

The effect of ILT has highlighted such issues and the ILT standards originally set by FENTO, which are now part of the content of teaching training courses, have reinforced the changes that technology has made and will make. In order for teachers continually to develop it will be more of a customised learning experience rather than a personalised one. There will always be external criteria and an expected skill set demanded by government concerning what a qualified teacher should possess. There will also be criteria set by the organisation that is employing

the teacher and therefore it is not a free choice situation as it is in some adult education scenarios. Instead, there will be more customising of the route individuals will take to develop their skills to the required standard. Included in this process has to be some mechanism to react to an individual's preferred learning style and the development of at least an understanding of the range of styles available and how other learners can use them. This is a unique situation in that the teacher is an adult learner who may have preferred learning routes. It is also a part of the skill portfolio that they will have to be able to use the full range of available technology for the learners they will support. This relates to the use of technology enabling a full range of learner - centred situations to be facilitated.

6.4.4. FE teachers identifying and evaluating their ILT needs and preferred learning routes or styles.

The teacher therefore is an individual learner who is entering the FE sector with a wide range of experiences and personal preferences regarding how he/she learns. Teachers will therefore need to develop a wide range of skills, including life skills, which enable them to cope with constant change. They will have a

range of different relationships with learners from 14-21 full-time learners, 16-25 part-time, work-based apprentices, and adult learners requiring vocational skills across a range of levels. This will include the use of technology to enhance the learning experience and help learners develop study skills for them to become individual, self-directed learners for the future in a life-long learning economy. It has been discussed in this paper that FE is composed of a complex group of learners and that effectively FE colleges as organisations will have to practise what they preach when it comes to staff development. If colleges cannot develop their staff using the range of techniques available to create a true learning organisation, with each staff member experiencing a customised development plan, then it seems logical to question if they are equipped to provide a similar service to their customers.

The recent work of Coffield et al. (2004) on learning styles challenges the validity of the range of styles created, highlighting that the real issue is achieving a qualification. However, the fact that there are different ways of learning, whatever their description is assumed even if the techniques being afforded to

identify them could need further investigation or justification. An interesting element of Coffield's study is that he raised the issue of whether FE colleges are really centres of learning for all their staff but are instead, in some cases, potential barriers to certain groups of staff being able to learn. Such comments reflect the findings of this study in that confusion over a preferred learning route seems still to exist. It is as if someone identifies a training need or skill requirement and the wheels of staff training react by organising yet more formal sessions for attendance. This is an adult just- in- time model but with no real integration into the customised approach of an individual learning plan the learning plan becomes a log of training that has been created without the individuals needs being predominant.

The responses from teachers showed that they regarded their vocational specialist knowledge as a priority so if there was a situation of choice this might not agree with the organisational need. Therefore, what is the priority for staff development has to be a combination of what the FE sector and the specific college identifies is a need, together with individual's preferred learning

route and with distance travelled being recognised with a cyclic element of review and evaluation.

Priorities for the FE sector were set by government following the Leitch Report (2006) which puts forward a need to transform the sector into demand- led provision, delivering skills to achieve better jobs and lives for learners. The report sets out a range of targets for 16-18 full-time learners but also adult numeracy, literacy and level 2 and 3 attainments. This is having an effect on the role of teachers in FE and, combined with the development of technology, will in some cases drastically change the relationship with the learner, engaging with work- based learners (both apprentices and adults), distance learning and an element of learners paying for services. Thus, this will include elements of human capital investment and a need for close collaboration with employers. Such changes in relationships will add to the need for staff to cope with constant change and to be able constantly to be vocationally relevant. They will need to be aware of the types of support needed for the wide range of modes of study as well as an individual's personal needs.

Staff will therefore need to be up-to-date and aware of their own personal continual professional development. Relating this to the concepts of double loop learning, it identifies the need for an organisation to be aware of the necessary changes and broadly to meet adult learning theory needs to allow the teachers to use previous experiences obtained from outside as well as within the sector. This will influence the way they learn relating to concepts of andragogy and an element of self - directed learning relating to the work of Knowles (1980) and Jarvis (1985). This needs to be related to the concepts of what makes a learning organisation which creates a suitable environment for creativity to thrive. However, it may be that teachers do not need to practice what they preach if they are only driven by success rates for pre-set qualifications. This, though, would make such an organisation very static and unable to be truly reflective and flexible to the changing needs of society.

Taking all these issues into account, the conclusion has to be that the staff development process is a key factor in the continuation

of the FE sector as a viable element of the educational system.

Unless colleges can become learning organisations then their role and contribution to post 16 and adult learning needs will be limited.

Within this context staff need to create customised individual learning plans that have a continuous cyclic element and colleges will have to provide the environment for a range of learning routes. They will also need to facilitate interaction between teachers, both individually and as peer groups, with coaching elements in order for them to be able to cope with constant change. Having identified that staff development is a major element of a college's ability to deal with change and to be a learning organisation; individual needs are considered not only in terms of content and pace, but also in terms of the learning styles that are available. It can be argued that a true profession is one that is self - regulating and the recent creation of ILT standards for teachers is a move towards setting standards as part of this process. There is a need to create a system that enables continued staff development as an inclusion in any CPD system.

For this to be effective the individual teacher needs to be brought into the process and the team or group of teachers need to communicate with each other and generate peer coaching and support mechanisms.

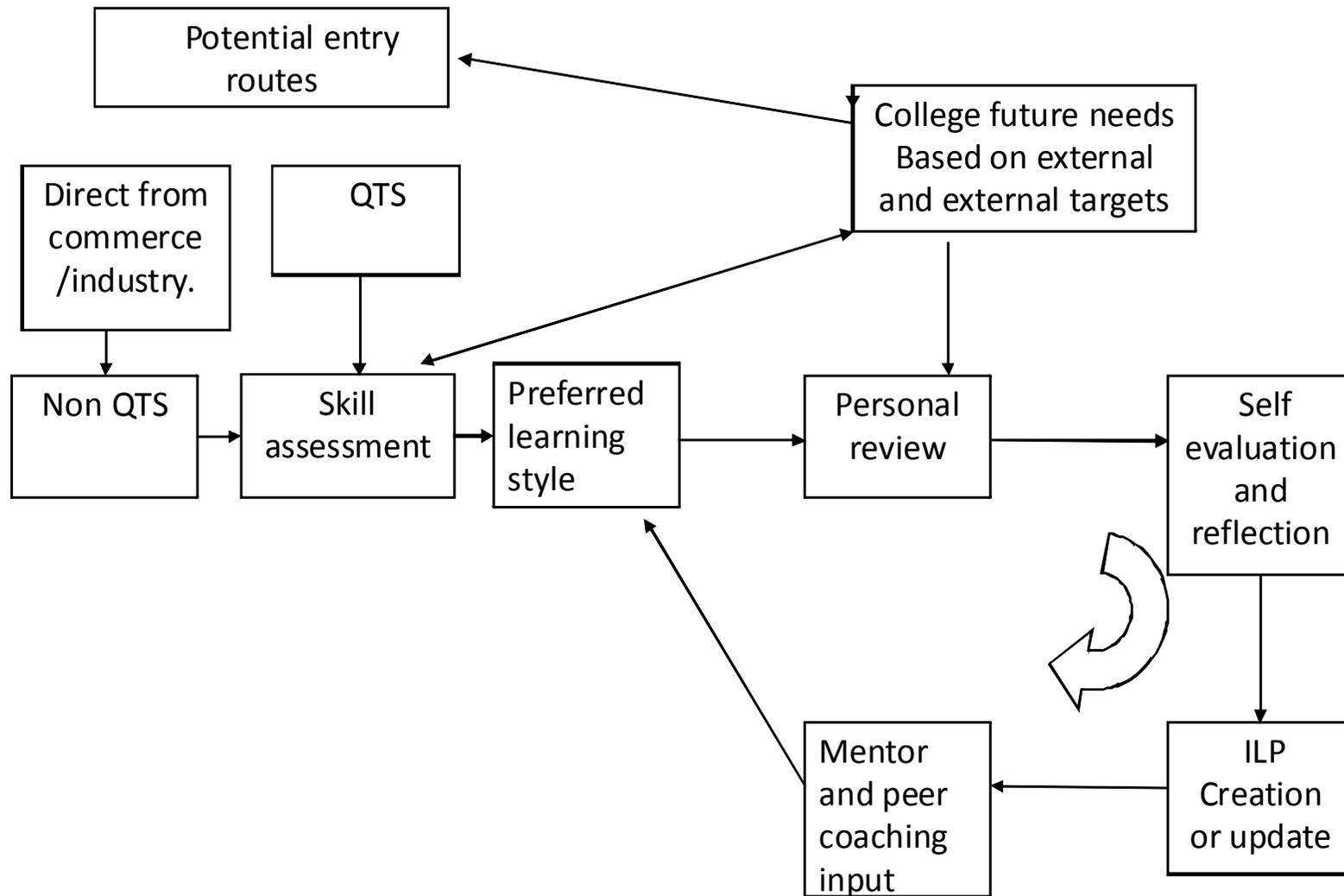
The college they work in needs to provide an environment of constant learning and supportive processes to enable study to develop; an individual's corporate or governmental goals need to be updated.

If we approach these tasks from the point of view that the staff are adult learners using andragogy techniques then the inclusion of the individuals' previous experience, controlling the pace and rate of learning so they feel they are in control of the decisions, seems logical. If they feel in control of what and how they learn then their development will be more effective.

As there seems to be no direct connection between age, gender and vocational subject, then a conceptual model of a cyclic process that includes self - evaluation and an element of assessing

a preferred learning style is a potentially effective solution. The model includes elements of skills assessment and self evaluation and identifies that continual change will need to be planned in relation to a college's future staffing needs. The core of the process is a continual cyclic learning experience with an individual learning plan linked to self - evaluation and appraisal. The rate of the cycle would depend on the progress of the individual but it does need to be a regular experience and related to the pace of the organisations management of change.

Obviously, such a model is not just focused on ILT/ICT development but on the full skill and knowledge set perceived to be required with prioritised targets and also with an element of personal need and individual learning routes. The personal review or appraisal element enables the organisation to manage the overall process and, if needed, to introduce competence - based management techniques. It seems logical as part of the development of technology use that such a scheme is electronic in format and encourages the concept of being reflective and responsible as the learner for progress.



Chapter Seven

Conclusion and Recommendations

The research results have been discussed in depth in chapter 6 and the following is a general conclusion and related recommendations for future research options.

The study does not confirm previous research when analysing the links between age and gender with regard to perceptions of ILT. The results indicate that there is no correlation between these biographical factors with no gender based issues on accepting new technology in evidence. There is some indication that females seem more likely to be willing to prepare for single events but this could be a reaction to the questionnaire rather than actual practice in action.

The entry level qualification into the FE sector of teaching staff does not seem to be a dominant factor or a correlation when compared to their expressed preferred methods of delivery or learning route when undergoing training or personal development when being faced with a need to adopt new learning technology or skill update needs.

There appears to be a clash or friction between time available to update specialist subject area and that needed for updating ICT/ILT skills. The majority of teachers are updating specialist subjects as a priority and only allocate personal development time to ILT issues if they have spare capacity after updating their specific curriculum specialism.

Related to this issue of teachers perceptions or expressed priorities of personal development is the majority of them feel they have acceptable ICT skill levels to meet the needs of their students.

There is confusion amongst teachers of when analysing the responses of their perceptions of what is their preferred learning style or method of training. Results indicates that such an issue has not been considered by teachers when considering their own personal development. Putting aside the continual discussions on whether such a concept of what learning style is or if actually to all learners it seems evident that while colleges and FE teachers spend a lot of energy identifying and developing their students learning styles a similar process seems weak considering their own personal development. If teachers are creating individual learning plans for their

students then it seems logical that a similar process is employed within teachers CPD schemes.

A final conclusive fact is it is evident that the use of e-mail is high but at the time of the research the comparable use of technology in actual delivery was low.

Although this research has its limitations it has identified issues that need further study and consideration. In relation to staff training there was confusion over the preferred learning style and related issue of prioritizing specialist subject training if time pressures existed. The FE sector may not yet have developed a true learning organisation structure and there is as yet no real regular evidence that technology is being taken into classrooms as a norm. The sector seems to have a reactionary culture in terms of teachers' skills development; reacting to external targets and standards rather than setting, as an organisation, what it requires as an element of their strategy. Teachers perceive that they are trained to meet preset needs rather than being part of a learning culture and use a reflective cyclic process.

Formal methods are still being used and preferred even though teachers seem to prefer trial and error. It may be that a mixture of setting the scene initially and then supporting staff during delivery is needed, with the set standards being used for evaluation (i.e. introduce a culture of continual learning and using a blended learning approach).

Studying the results of the research and comparing with previous research the recommendations are that any CPD process or training plan should have a mandatory element for ICT/ILT training to prevent specialist subject training needs taking all the time available. This should not just be a concentration of personal ICT skills but the use of learning technology in facilitating learning both in the classroom and the development of material through virtual learning environments. When developing the CPD process there should be analysis and inclusion of the support mechanisms required for informal learning processes to take place and the development of the related evaluation methods.

To support the requirement of a mandatory element for ICT/ILT development in a CPD plan there needs to be a set of minimum standards for resources and support for ICT/ILT both inside and outside the classroom as part of the teaching and learning strategy of a college.

There is a need to introduce a process of identifying teacher's preferred learning style and relate this to the training routes offered and to formulate an ILP for teachers that include elements of mentoring, peer coaching, self-reflection. Such a plan should also include a regular cyclic review process and that blends the concept of managing change with staff development and organisation learning needs and develops a "romantic curriculum" model for training staff.

The recommendations for future research is to perform specific research into what would make a FE College a learning organisation and identify if colleges meet the criteria e.g. structure, environment, culture and strategy and to expand the research undertaken in this thesis to a larger sample to see if the results have stronger statistical significance.

APPENDICES

APPENDIX I

Initial Questionnaire

INFORMATION LEARNING TECHNOLOGY (ILT) INITIAL STAFF SURVEY

Please spend 2 minutes to complete this survey.

This survey provides information that will help me, to help you. Once completed can you return this form to your team leader, who will return the forms to me.

Your name (optional)	
Full time / part time / sessional	
Team	

Please tick the relevant box in the following grid to indicate how often (if at all) that you use the following ILT tools.

	Daily	Weekly	Monthly	Never	Don't know what it is
College email					
PowerPoint in your lessons					
College intranet					
The Internet to get information to help with your teaching					
The Internet as part of your teaching (i.e. students use internet to retrieve information)					
Educational CD-ROMS					
Videos on the Networks					
Other (please state)					

Have you used the following as part of your teaching in the last 12 months?		
	Yes	No
On line learning (Learnspace, Net G etc.)		
A shared electronic administration tool (joint drives, shared calendar)		
Hot Potatoes		
Video Conferencing		
FENC materials		
Other (please state)		

Would you be prepared to sit on an ILT focus group?	Yes	No	Possibly

APPENDIX II

A) The un-randomised questionnaire including the factor set column.

B) Final randomised questionnaire with factors removed

A) The un-randomised questionnaire in including the factor set column.

Details

Sex

 Male

 Female

Age

Less than 26
26-34
35-44
45-54
Greater than 54

Your Qualifications

Select the highest qualification you currently hold
Teaching and Subject

Teaching

730 / 740 Stage 1

730 / 740 Stage 2

PGCE

BEd

MEd

Please give year
teaching
qualifications were
achieved

Subject

GCSE / O Level

A Level / BTEC NC/ND

BTEC HNC/HND / NVQ
4/5

Degree

Masters

PhD

Professional or other
(Please State)

Your Teaching

Which of the following
describes your current
teaching employment status?

Full time

More than 15
hours

11-15 hours

6-10 hours

Less than 5
hours

Which of these best indicates
the age of students you mainly
teach?

14-16

16-19

Over 19

Your Subject Area

Please indicate which category would BEST describe the subject, which you MAINLY teach (tick one only).

Science and mathematics	<input type="checkbox"/>	Hairdressing and beauty therapy	<input type="checkbox"/>
Land-based provision	<input type="checkbox"/>	Visual arts, performing arts and media	<input type="checkbox"/>
Construction	<input type="checkbox"/>	Health, social care and public services	<input type="checkbox"/>
Engineering, technology and manufacturing	<input type="checkbox"/>	English, languages and communication	<input type="checkbox"/>
Business administration, management + professional	<input type="checkbox"/>	English for speakers of other languages	<input type="checkbox"/>
Information and communication technology	<input type="checkbox"/>	Learners with learning difficulties and/or disabilities	<input type="checkbox"/>
Humanities	<input type="checkbox"/>	Literacy and Numeracy	<input type="checkbox"/>
Hospitality, sports, leisure and travel	<input type="checkbox"/>	Other (please specify below)	<input type="checkbox"/>

Level of Teaching

Please indicate the type of qualification that would BEST describe the course on which you MAINLY teach (tick one only)

Basic Skills and or Key Skills	<input type="checkbox"/>	Higher Education (HNC, HND, Foundation Degree)	<input type="checkbox"/>
General academic (GCSE, A Level)	<input type="checkbox"/>	Professional Qualifications (AAT, CIM, IOSH, etc.)	<input type="checkbox"/>
General vocational (GNVQ, AVCE, Foundation Diploma)	<input type="checkbox"/>	Other (please specify below)	<input type="checkbox"/>
Vocational Occupational (NVQ)	<input type="checkbox"/>		

Teaching Experience

Please indicate how many years of teaching experience you have

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Please indicate how many years of teaching experience you have in FE

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Terminology

For the following questions please use these definitions for information on ILT and ICT terminology.

Information and Communication Technologies (ICT):

The combination of computing and communication (including computer networks and telephone systems) that connects and enables some of today's most exciting systems e. g. The Internet.

Information and Learning Technologies (ILT):

This is used, in Further Education, to refer to the use of information and communication technologies to support the core business of college: the delivery and management of learning.

Please tick the appropriate box to indicate how you feel about the following statements:

SA=Strongly agree A=Agree D=Disagree
SD=Strongly disagree

No.	Factor	Questions	SA	A	D	SD
1	Learning style +	I gain new skills more effectively by personal experimentation.	SA	A	D	SD
2	Learning style -	I pick up new skills by being formally taught.	SA	A	D	SD
3	Learning style +	The College provides me with a suitable environment to learn.	SA	A	D	SD
4	Learning style -	It is difficult to learn while in the workplace.	SA	A	D	SD
5	Learning style +	I prefer an informal process when learning.	SA	A	D	SD
6	Learning style -	An informal atmosphere when undergoing training wastes time.	SA	A	D	SD
7	Learning style -	A formal, organised training programme is the best way to learn.	SA	A	D	SD
8	Learning style +	Training in a formal environment does not bring the best out of me.	SA	A	D	SD
9	Staff needs +	I aim, to be prepared for students needs when it comes to my ICT skills.	SA	A	D	SD
10	Staff needs -	I tend not to explore a new ICT skill until the students demand it.	SA	A	D	SD
11	Staff needs +	I constantly have to increase my ICT skills.	SA	A	D	SD
12	Staff needs -	There is no need for me continually to increase my ICT skills.	SA	A	D	SD
13		It is the College's responsibility to identify the ILT skills I will need.	SA	A	D	SD
14		I see it as my responsibility to	SA	A	D	SD

		constantly identify the ILT skills I need.				
15	Staff needs -	I only become interested in a piece of learning technology when someone brings it to my attention.	SA	A	D	SD
16	Staff needs +	I am constantly looking for new technology to help me teach.	SA	A	D	SD
17	Staff needs +	Increasing my ICT/ILT skills is more important than updating my specialist subject needs.	SA	A	D	SD
18	Staff needs -	Keeping up to date with my specialist subject is more important than increasing my ICT/ILT skills.	SA	A	D	SD
19	Staff needs -	I wait until an ILT issue is identified in the syllabus before I look at it.	SA	A	D	SD
20	Staff needs +	ILT is a general skill issue not one led just by syllabus content.	SA	A	D	SD
21	Staff needs -	I only use learning technology if in the end it saves me time.	SA	A	D	SD
22	Staff needs +	The time invested in learning technology is invaluable.	SA	A	D	SD
23	Staff needs -	I will only use a piece of learning technology if I am confident it will work.	SA	A	D	SD
24	Staff needs +	I do not mind taking risks using a piece of learning technology in a teaching session.	SA	A	D	SD
25	Evaluation -	I use my ILT/ICT skills mainly as a method of reducing the workload	SA	A	D	SD
26	Evaluation +	I use my ICT/ILT skills irrespective of their effect on the workload.	SA	A	D	SD
27	Evaluation -	If the learning technology used does not contribute to evidence of student progress I tend not to use it.	SA	A	D	SD
28	Evaluation	Evidence of student progress is	SA	A	D	SD

	+	not my primary reason for using ILT.				
29	Evaluation -	ILT/ICT is only of value if used by students in assignments.	SA	A	D	SD
30	Evaluation +	Even if the students do not use an ICT/ILT skill in assignments it is still important.	SA	A	D	SD
31	Evaluation +	Developing my ICT/ILT skills is a separate issue from creating teaching resources.	SA	A	D	SD
32	Evaluation -	ILT /ICT are only valuable if they create teaching resources.	SA	A	D	SD
33	Evaluation -	Materials based on ICT/ILT are only valuable if they can be used repeatedly.	SA	A	D	SD
34	Evaluation +	I do not mind using materials based on ILT/ICT for single events.	SA	A	D	SD

**B) Final randomised questionnaire
with factors removed**

Sex

 Male

 Female

Age

Less 26

26-34

35-44

45-54

Greater than 54

Your Qualifications

Select the highest qualification you currently hold
Teaching and Subject

<i>Teaching</i>		<i>Subject</i>	
730 / 740 Stage 1	<input type="checkbox"/>	GCSE / O Level	<input type="checkbox"/>
730 / 740 Stage 2	<input type="checkbox"/>	A Level / BTEC NC/ND	<input type="checkbox"/>
PGCE	<input type="checkbox"/>	BTEC HNC/HND / NVQ 4/5	<input type="checkbox"/>
BEd	<input type="checkbox"/>	Degree	<input type="checkbox"/>
MEd	<input type="checkbox"/>	Masters	<input type="checkbox"/>
		PHD	<input type="checkbox"/>
Please give year teaching qualifications achieved		Professional of other (Please State	
<input style="width: 100%; height: 20px;" type="text"/>		<input style="width: 100%; height: 20px;" type="text"/>	

Your Teaching

Which of the following describes your current teaching employment status?		Which of these best indicates the age of students you mainly teach?	
Full time	<input type="checkbox"/>	14-16	<input type="checkbox"/>
More than 15 hours	<input type="checkbox"/>	16-19	<input type="checkbox"/>
11-15 hours	<input type="checkbox"/>	Over 19	<input type="checkbox"/>
6-10 hours	<input type="checkbox"/>		
Less than 5 hours	<input type="checkbox"/>		

Your Subject Area

Please indicate which category would BEST describe the subject, which you MAINLY teach (tick one only).

Science and mathematics	<input type="checkbox"/>	Hairdressing and beauty therapy	<input type="checkbox"/>
Land-based provision	<input type="checkbox"/>	Visual arts, performing arts and media	<input type="checkbox"/>
Construction	<input type="checkbox"/>	Health, social care and public services	<input type="checkbox"/>
Engineering, technology and manufacturing	<input type="checkbox"/>	English, languages and communication	<input type="checkbox"/>
Business administration, management + professional	<input type="checkbox"/>	English for speakers of other languages	<input type="checkbox"/>
Information and communication technology	<input type="checkbox"/>	Learners with learning difficulties and/or disabilities	<input type="checkbox"/>
Humanities	<input type="checkbox"/>	Literacy and Numeracy	<input type="checkbox"/>
Hospitality, sports, leisure and travel	<input type="checkbox"/>	Other (please specify below)	<input type="checkbox"/>

Level of Teaching

Please indicate the type of qualification that would BEST describe the course on which you MAINLY teach (tick one only)

Basic Skills and or key skills	<input type="checkbox"/>	Higher Education (HNC, HND, Foundation Degree)	<input type="checkbox"/>
General academic (GCSE, A Level)	<input type="checkbox"/>	Professional Qualifications (AAT, CIM, IOSH, etc)	<input type="checkbox"/>
General vocational (GNVQ, AVCE, Foundation Diploma)	<input type="checkbox"/>	Other (please specify below)	<input type="checkbox"/>
Vocational Occupational (NVQ)	<input type="checkbox"/>		

Teaching Experience

Please indicate how many years of teaching experience you have

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Please indicate how many years of teaching experience you have in FE

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Terminology

For the following questions please use these definitions for information on ILT and ICT terminology.

*Information and Communication Technologies (ICT):
The combination of computing and communication (including computer networks and telephone systems) that connects and enables some of today's most exciting systems e. g. The Internet.*

*Information and Learning Technologies (ILT):
This is used, in further education, to refer to the use of information and communication technologies to support the core business of college: the delivery and management of learning.*

Please tick the appropriate box to indicate how you feel about the following statements:

SA=Strongly agree A=Agree D=Disagree
SD=Strongly disagree

No.	Questions	SA	A	D	SD
1	ILT is a general skill issue not one just led by syllabus content	SA	A	D	SD
2	It is difficult to learn while in the workplace.	SA	A	D	SD
3	The time invested in learning technology is invaluable.	SA	A	D	SD
4	There is no need for me to continually increase my ICT skills.	SA	A	D	SD
5	ILT /ICT is only valuable if they create teaching resources.	SA	A	D	SD
6	Increasing my ICT/ILT skills is more important than updating my specialist subject needs.	SA	A	D	SD
7	I gain new skills more effectively by personal experimentation.	SA	A	D	SD
8	I do not mind taking risks using a piece of learning technology in a teaching session.	SA	A	D	SD
9	I aim to be prepared for students needs when it comes to my ICT skills.	SA	A	D	SD
10	Developing my ICT/ILT skills is a separate issue from creating teaching resources.	SA	A	D	SD
11	I only become interested in a piece of learning technology when some one brings it to my attention.	SA	A	D	SD
12	I use my ICT/ILT skills irrespective of it's effect on the workload.	SA	A	D	SD
13	I pick up new skills by being formally taught.	SA	A	D	SD
14	I prefer an informal process when learning.	SA	A	D	SD
15	I will only use a piece of learning technology if I am confident it will work.	SA	A	D	SD
16	ILT/ICT is only of value if used by students in assignments.	SA	A	D	SD
17	I constantly have to increase my ICT skills.	SA	A	D	SD
18	Materials based on ICT/ILT are only valuable if they can be used repeatedly.	SA	A	D	SD

No.	Questions	SA	A	D	SD
19	It is the College's responsibility to identify the ILT skills I will need.	SA	A	D	SD
20	I only use learning technology if in the end it saves me time.	SA	A	D	SD
21	A formal, organised training programme is the best way to learn.	SA	A	D	SD
22	I wait until an ILT issue is identified in the syllabus before I look at it	SA	A	D	SD
23	If the learning technology used does not contribute to evidence of student progress I tend not to use it.	SA	A	D	SD
24	The College provides me with a suitable environment to learn.	SA	A	D	SD
25	I am constantly looking for new technology to help me teach.	SA	A	D	SD
26	Even if the students do not use an ICT/ILT skill in assignments it is still important.	SA	A	D	SD
27	I use my ILT/ICT skills mainly as a method of reducing the workload	SA	A	D	SD
28	An informal atmosphere when undergoing training wastes time.	SA	A	D	SD
29	I tend not to explore a new ICT skill until the students demand it.	SA	A	D	SD
30	Keeping up to date with my specialist subject is more important than increasing my ICT/ILT skills.	SA	A	D	SD
31	Evidence of student progress is not my primary reason for using ILT.	SA	A	D	SD
32	I do not mind using materials based on ILT/ICT for single events.	SA	A	D	SD
33	Training in a formal environment does not bring the best out of me.	SA	A	D	SD
34	I see it as my responsibility to constantly identify the ILT skills I need.	SA	A	D	SD

APPENDIX III

Final Questionnaire Pilot results

Pilot Questionnaire

Details

Sex



Male



Female

Age

Less 26

26-34

35-44

45-54

Greater than 54

Your Qualifications

Select the highest qualification you currently hold
Teaching and Subject

Teaching

730 / 740 Stage 1

730 / 740 Stage 2

PGCE

BEd

MEd

Please give year
teaching
qualifications
achieved

Subject

GCSE / O Level

A Level / BTEC NC/ND

BTEC HNC/HND / NVQ
4/5

Degree

Masters

PHD

Professional of other
(Please State

Your Teaching

Which of the following
describes your current
teaching employment status?

Full time

More than 15
hours

11-15 hours

6-10 hours

Less than 5 hours

Which of these best indicates
the age of students you mainly
teach?

14-16

16-19

Over 19

Your Subject Area

Please indicate which category would BEST describe the subject, which you MAINLY teach (tick one only).

- | | | | |
|--|--------------------------|---|--------------------------|
| Science and mathematics | <input type="checkbox"/> | Hairdressing and beauty therapy | <input type="checkbox"/> |
| Land-based provision | <input type="checkbox"/> | Visual arts, performing arts and media | <input type="checkbox"/> |
| Construction | <input type="checkbox"/> | Health, social care and public services | <input type="checkbox"/> |
| Engineering, technology and manufacturing | <input type="checkbox"/> | English, languages and communication | <input type="checkbox"/> |
| Business administration, management + professional | <input type="checkbox"/> | English for speakers of other languages | <input type="checkbox"/> |
| Information and communication technology | <input type="checkbox"/> | Learners with learning difficulties and/or disabilities | <input type="checkbox"/> |
| Humanities | <input type="checkbox"/> | Literacy and Numeracy | <input type="checkbox"/> |
| Hospitality, sports, leisure and travel | <input type="checkbox"/> | Other (please specify below) | <input type="checkbox"/> |

Level of Teaching

Please indicate the type of qualification that would BEST describe the course on which you MAINLY teach (tick one only)

- | | | | |
|---|--------------------------|---|--------------------------|
| Basic Skills and or key skills | <input type="checkbox"/> | Higher Education (HNC, HND, Foundation Degree) | <input type="checkbox"/> |
| General academic (GCSE, A Level) | <input type="checkbox"/> | Professional Qualifications (AAT, CIM, IOSH, etc) | <input type="checkbox"/> |
| General vocational (GNVQ, AVCE, Foundation Diploma) | <input type="checkbox"/> | Other (please specify below) | <input type="checkbox"/> |
| Vocational Occupational (NVQ) | <input type="checkbox"/> | | |

Teaching Experience

Please indicate how many years of teaching experience you have

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Please indicate how many years of teaching experience you have in FE

2 or less	<input type="checkbox"/>	11-15	<input type="checkbox"/>
3-5	<input type="checkbox"/>	16-20	<input type="checkbox"/>
6-10	<input type="checkbox"/>	More than 20	<input type="checkbox"/>

Terminology

For the following questions please use these definitions for information on ILT and ICT terminology.

*Information and Communication Technologies (ICT):
The combination of computing and communication (including computer networks and telephone systems) that connects and enables some of today's most exciting systems e. g. The Internet.*

*Information and Learning Technologies (ILT):
This is used, in further education, to refer to the use of information and communication technologies to support the core business of college: the delivery and management of learning.*

Please tick the appropriate box to indicate how you feel about the following statements:

SA=Strongly agree A=Agree D=Disagree SD=Strongly disagree

No.	Questions	SA	A	D	SD
1	ILT is a general skill issue not one just led by syllabus content	SA	A	D	SD
2	It is difficult to learn while in the workplace.	SA	A	D	SD
3	The time invested in learning technology is invaluable.	SA	A	D	SD
4	There is no need for me to continually increase my ICT skills.	SA	A	D	SD
5	ILT /ICT is only valuable if they create teaching resources.	SA	A	D	SD
6	Increasing my ICT/ILT skills is more important than updating my specialist subject needs.	SA	A	D	SD
7	I gain new skills more effectively by personal experimentation.	SA	A	D	SD
8	I do not mind taking risks using a piece of learning technology in a teaching session.	SA	A	D	SD
9	I aim to be prepared for students needs when it comes to my ICT skills.	SA	A	D	SD
10	Developing my ICT/ILT skills is a separate issue from creating teaching resources.	SA	A	D	SD
11	I only become interested in a piece of learning technology when some one brings it to my attention.	SA	A	D	SD
12	I use my ICT/ILT skills irrespective of it's effect on the workload.	SA	A	D	SD
13	I pick up new skills by being formally taught.	SA	A	D	SD
14	I prefer an informal process when learning.	SA	A	D	SD
15	I will only use a piece of learning technology if I am confident it will work.	SA	A	D	SD
16	ILT/ICT is only of value if used by students in assignments.	SA	A	D	SD
17	I constantly have to increase my ICT skills.	SA	A	D	SD
18	Materials based on ICT/ILT are only valuable if they can be used repeatedly.	SA	A	D	SD

No.	Questions	SA	A	D	SD
19	It is the College's responsibility to identify the ILT skills I will need.	SA	A	D	SD
20	I only use learning technology if in the end it saves me time.	SA	A	D	SD
21	A formal, organised training programme is the best way to learn.	SA	A	D	SD
22	I wait until an ILT issue is identified in the syllabus before I look at it	SA	A	D	SD
23	If the learning technology used does not contribute to evidence of student progress I tend not to use it.	SA	A	D	SD
24	The College provides me with a suitable environment to learn.	SA	A	D	SD
25	I am constantly looking for new technology to help me teach.	SA	A	D	SD
26	Even if the students do not use an ICT/ILT skill in assignments it is still important.	SA	A	D	SD
27	I use my ILT/ICT skills mainly as a method of reducing the workload	SA	A	D	SD
28	An informal atmosphere when undergoing training wastes time.	SA	A	D	SD
29	I tend not to explore a new ICT skill until the students demand it.	SA	A	D	SD
30	Keeping up to date with my specialist subject is more important than increasing my ICT/ILT skills.	SA	A	D	SD
31	Evidence of student progress is not my primary reason for using ILT.	SA	A	D	SD
32	I do not mind using materials based on ILT/ICT for single events.	SA	A	D	SD
33	Training in a formal environment does not bring the best out of me.	SA	A	D	SD
34	I see it as my responsibility to constantly identify the ILT skills I need.	SA	A	D	SD

Results of the Pilot

Pilot Sample Frequencies Frequency Table

Sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	9	27.3	27.3	27.3
	Female	24	72.7	72.7	100.0
	Total	33	100.0	100.0	

Age in years

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 26	2	6.1	6.3	6.3
	26-34	11	33.3	34.4	40.6
	35-44	14	42.4	43.8	84.4
	45-54	5	15.2	15.6	100.0
	Total	32	97.0	100.0	
Missing	System	1	3.0		
Total		33	100.0		

Highest Teaching Qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	730 / 740 Stage 1	8	24.2	57.1	57.1
	730 / 740 Stage 2	4	12.1	28.6	85.7
	PGCE	2	6.1	14.3	100.0
	Total	14	42.4	100.0	
Missing	System	19	57.6		
Total		33	100.0		

Other teaching qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		30	90.9	90.9	90.9
	7307	1	3.0	3.0	93.9
	ENB 998	1	3.0	3.0	97.0
	Tesol	1	3.0	3.0	100.0
	Total	33	100.0	100.0	

Highest non-teaching qualification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GCSE / O level	1	3.0	3.2	3.2
	A level / BTEC NC / ND	1	3.0	3.2	6.5
	BTEC HNC/HND / NVQ 4/5	5	15.2	16.1	22.6
	Degree	20	60.6	64.5	87.1
	Masters	4	12.1	12.9	100.0
	Total	31	93.9	100.0	
Missing	System	2	6.1		
Total		33	100.0		

Other non-teaching qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	87.9	87.9	87.9
	BA economics and pol	1	3.0	3.0	90.9
	Counselling & Psycho	1	3.0	3.0	93.9
	RNMH	1	3.0	3.0	97.0
	Social Work	1	3.0	3.0	100.0
	Total	33	100.0	100.0	

Teaching employment status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Full time	7	21.2	21.2	21.2
	More than 15 hours	6	18.2	18.2	39.4
	11-15 hours	8	24.2	24.2	63.6
	6-10 hours	4	12.1	12.1	75.8
	Less than 5 hours	8	24.2	24.2	100.0
	Total	33	100.0	100.0	

Age of students taught

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	14-16	1	3.0	3.7	3.7
	16-19	8	24.2	29.6	33.3
	Over 19	18	54.5	66.7	100.0
	Total	27	81.8	100.0	
Missing	System	6	18.2		
Total		33	100.0		

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Literacy and numeracy	33	0	1	.24	.435
Health, social care and public services	33	0	1	.21	.415
English languages and communication	33	0	1	.18	.392
Learners with learning difficulties or disabilities	33	0	1	.15	.364
Visual arts, performing arts and media	33	0	1	.12	.331
Other subject area	33	0	1	.09	.292
Information and communication technology	33	0	1	.09	.292
English for speakers of other languages	33	0	1	.06	.242
Humanities	33	0	1	.03	.174
Business Administration	33	0	1	.03	.174
Hairdressing and beauty therapy	33	0	0	.00	.000
Hospitality, sports, leisure and travel	33	0	0	.00	.000
Engineering, technology and manufacturing	33	0	0	.00	.000
Construction	33	0	0	.00	.000
Land-based provision	33	0	0	.00	.000
Science and Mathematics	33	0	0	.00	.000
Valid N (listwise)	33				

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Other levels taught	33	0	1	.33	.479
Basic skills and key skills	33	0	1	.27	.452
General Academic (GCSE, A level)	33	0	1	.21	.415
Vocational Occupational (NVQ)	33	0	1	.12	.331
Professional Qualifications (AAT, CIM, IOSH etc)	33	0	1	.06	.242
General Vocational (GNVQ, AVCE, Foundation Diploma)	33	0	1	.06	.242
Higher Education (HNC, HND, Foundation Degree)	33	0	0	.00	.000
Valid N (listwise)	33				

Frequencies Frequency Table

Type of other subject area

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	30	90.9	90.9	90.9
Counselling depressi	1	3.0	3.0	93.9
Counselling skills	1	3.0	3.0	97.0
Enterprise learning	1	3.0	3.0	100.0
Total	33	100.0	100.0	

Type of other levels taught

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid	23	69.7	69.7	69.7
BSc	1	3.0	3.0	72.7
BTec National Dip	1	3.0	3.0	75.8
BTEC, Nat Dip in gra	1	3.0	3.0	78.8
Informal learner cen	1	3.0	3.0	81.8
Inservice, Topps	1	3.0	3.0	84.8
Non-accredited	1	3.0	3.0	87.9
OCN	1	3.0	3.0	90.9
prof. Qual Nursing	1	3.0	3.0	93.9
Professional Develop	1	3.0	3.0	97.0
Race, Diversity, Law	1	3.0	3.0	100.0
Total	33	100.0	100.0	

Frequencies Frequency Table

Years of teaching experience

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
2 years or less	16	48.5	48.5	48.5
3-5 years	9	27.3	27.3	75.8
6-10 years	4	12.1	12.1	87.9
11-15 years	1	3.0	3.0	90.9
16-20 years	3	9.1	9.1	100.0
Total	33	100.0	100.0	

Years of teaching experience in FE

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid				
2 years or less	22	66.7	73.3	73.3
3-5 years	5	15.2	16.7	90.0
6-10 years	3	9.1	10.0	100.0
Total	30	90.9	100.0	
Missing				
System	3	9.1		
Total	33	100.0		

Descriptives

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
QUES1	31	2	4	3.19	.477
QUES3	31	2	4	3.16	.523
QUES9	32	2	4	3.13	.554
QUES7	32	2	4	3.03	.595
QUES17	32	2	4	3.00	.718
QUES26	32	1	4	2.97	.647
QUES32	31	1	4	2.94	.629
QUES14	31	2	4	2.90	.700
QUES10	31	1	4	2.81	.910
QUES34	29	1	4	2.79	.819
QUES8	33	2	4	2.79	.545
QUES31	31	1	4	2.77	.717
QUES30	32	1	4	2.75	.803
QUES25	30	1	4	2.73	.828
QUES13	30	1	4	2.70	.651
QUES15	32	1	4	2.66	.865
QUES24	31	1	4	2.55	.768
QUES33	30	1	4	2.47	.776
QUES12	33	1	4	2.45	.754
QUES18	30	1	4	2.40	.675
QUES23	32	1	3	2.38	.660
QUES11	32	1	4	2.31	.780
QUES21	32	1	3	2.22	.659
QUES19	31	1	4	2.16	.860
QUES22	32	1	4	2.16	.628
QUES27	31	1	3	2.13	.499
QUES5	32	1	4	2.03	.897
QUES2	33	1	3	1.97	.637
QUES20	32	1	3	1.97	.538
QUES29	32	1	3	1.94	.564
QUES28	32	1	3	1.84	.448
QUES16	32	1	3	1.69	.535
QUES4	33	1	3	1.64	.653
QUES6	33	1	2	1.64	.489
Valid N (listwise)	22				

Comparison Pilot and Main Crosstabs
INDEXREC * It is difficult to learn while in the
workplace

Crosstab

		It is difficult to learn while in the workplace				Total
		Strongly Disagree	Disagree	Agree	Strongly Agree	
INDEXREC Pilot sample	Count	7	20	6	0	33
	% within INDEXREC	21.2%	60.6%	18.2%	.0%	100.0%
Rest of data	Count	15	46	28	7	96
	% within INDEXREC	15.6%	47.9%	29.2%	7.3%	100.0%
Total	Count	22	66	34	7	129
	% within INDEXREC	17.1%	51.2%	26.4%	5.4%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.753 ^a	3	.191
Likelihood Ratio	6.528	3	.089
Linear-by-Linear Association	3.874	1	.049
N of Valid Cases	129		

a. 1 cells (12.5%) have expected count less than 5. The minimum expected count is 1.79.

**INDEXREC * Increasing my ICT / ILT skills
is more important than updating my
specialist subject needs.**

Crosstab

			Increasing my ICT / ILT skills is more important than updating my specialist subject needs.			Total
			Strongly Disagree	Disagree	Agree	
INDEXREC	Pilot sample	Count	12	21	0	33
		% within INDEXREC	36.4%	63.6%	.0%	100.0%
	Rest of data	Count	6	76	13	95
		% within INDEXREC	6.3%	80.0%	13.7%	100.0%
Total		Count	18	97	13	128
		% within INDEXREC	14.1%	75.8%	10.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.106 ^a	2	.000
Likelihood Ratio	21.847	2	.000
Linear-by-Linear Association	19.311	1	.000
N of Valid Cases	128		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 3.35.

INDEXREC * I develop my ILT / ICT skills for more than my teaching purposes

Crosstab

			I develop my ILT / ICT skills for more than my teaching purposes				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
INDEXREC Pilot sample	Count		2	10	11	8	31
	% within INDEXREC		6.5%	32.3%	35.5%	25.8%	100.0%
Rest of data	Count		3	12	56	23	94
	% within INDEXREC		3.2%	12.8%	59.6%	24.5%	100.0%
Total	Count		5	22	67	31	125
	% within INDEXREC		4.0%	17.6%	53.6%	24.8%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.193 ^a	3	.042
Likelihood Ratio	7.746	3	.052
Linear-by-Linear Association	2.411	1	.120
N of Valid Cases	125		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.24.

INDEXREC * It is the College's responsibility to identify the ILT skills I will need

Crosstab

			It is the College's responsibility to identify the ILT skills I will need				Total
			Strongly Disagree	Disagree	Agree	Strongly Agree	
INDEXREC Pilot sample	Count		6	17	5	3	31
	% within INDEXREC		19.4%	54.8%	16.1%	9.7%	100.0%
Rest of data	Count		8	68	17	1	94
	% within INDEXREC		8.5%	72.3%	18.1%	1.1%	100.0%
Total	Count		14	85	22	4	125
	% within INDEXREC		11.2%	68.0%	17.6%	3.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.954 ^a	3	.030
Likelihood Ratio	7.761	3	.051
Linear-by-Linear Association	.113	1	.736
N of Valid Cases	125		

a. 3 cells (37.5%) have expected count less than 5. The minimum expected count is .99.

INDEXREC * I use my ILT / ICT skills mainly as a method of reducing the workload.

Crosstab

			I use my ILT / ICT skills mainly as a method of reducing the workload.			Total
			Strongly Disagree	Disagree	Agree	
INDEXREC Pilot sample	Count	2	23	6	31	
	% within INDEXREC	6.5%	74.2%	19.4%	100.0%	
Rest of data	Count	0	64	27	91	
	% within INDEXREC	.0%	70.3%	29.7%	100.0%	
Total	Count	2	87	33	122	
	% within INDEXREC	1.6%	71.3%	27.0%	100.0%	

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.829 ^a	2	.033
Likelihood Ratio	6.506	2	.039
Linear-by-Linear Association	2.900	1	.089
N of Valid Cases	122		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is .51.

INDEXREC * Training in a formal environment does not bring out the best in me.

Crosstab

		Training in a formal environment does not bring out the best in me.				Total
		Strongly Disagree	Disagree	Agree	Strongly Agree	
INDEXREC Pilot sample	Count	3	12	13	2	30
	% within INDEXREC	10.0%	40.0%	43.3%	6.7%	100.0%
Rest of data	Count	1	52	37	2	92
	% within INDEXREC	1.1%	56.5%	40.2%	2.2%	100.0%
Total	Count	4	64	50	4	122
	% within INDEXREC	3.3%	52.5%	41.0%	3.3%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	8.105 ^a	3	.044
Likelihood Ratio	6.981	3	.073
Linear-by-Linear Association	.060	1	.806
N of Valid Cases	122		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .98.

INDEXREC * I see it as my responsibility to constantly identify the ILT skills I need.

Crosstab

		see it as my responsibility to constantly identify the ILT skills I need.				Total
		Strongly Disagree	Disagree	Agree	Strongly Agree	
INDEXREC Pilot sample	Count	1	10	12	6	29
	% within INDEXREC	3.4%	34.5%	41.4%	20.7%	100.0%
Rest of data	Count	1	10	66	14	91
	% within INDEXREC	1.1%	11.0%	72.5%	15.4%	100.0%
Total	Count	2	20	78	20	120
	% within INDEXREC	1.7%	16.7%	65.0%	16.7%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.665 ^a	3	.009
Likelihood Ratio	10.811	3	.013
Linear-by-Linear Association	2.864	1	.091
N of Valid Cases	120		

a. 4 cells (50.0%) have expected count less than 5. The minimum expected count is .48.

APPENDIX IV

Reliability Analysis of the Final Questionnaire

Reliability

***** Method 2 (covariance matrix) will be used for this analysis *****

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RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	QUES1	3.2840	.5965	81.0
2.	QUES3	3.2963	.6791	81.0
3.	QUES4R	3.4568	.5488	81.0
4.	QUES6	2.0864	.4242	81.0
5.	QUES8	2.8519	.7923	81.0
6.	QUES9	3.1481	.6346	81.0
7.	QUES11R	2.6667	.7246	81.0
8.	QUES15R	2.1111	.7416	81.0
9.	QUES17	3.0247	.6119	81.0
10.	QUES20R	2.8889	.5000	81.0
11.	QUES22R	2.8395	.5580	81.0
12.	QUES25	2.7160	.6934	81.0
13.	QUES29R	3.0123	.6421	81.0
14.	QUES30R	2.2469	.5597	81.0

Correlation Matrix

	QUES1	QUES3	QUES4R	QUES6
QUES8				
QUES1	1.0000			
QUES3	.2834	1.0000		
QUES4R	.2861	.2360	1.0000	
QUES6	-.0982	-.0032	.0431	1.0000
QUES8	.4075	.1755	.2725	.1130
1.0000				
QUES9	.2507	.3610	.2698	.0911
.3922				
QUES11R	.1060	.0762	.2619	-.0271
.3048				
QUES15R	.0691	.1076	.2116	-.0309
.3049				
QUES17	.2203	.2830	.2638	.0880
.1623				
QUES20R	.0652	.2086	.1873	.0458
-.0105				
QUES22R	.1762	.1271	.1199	.0065
.0869				
QUES25	.2276	.1013	.1480	.1270
.4457				
QUES29R	.0886	.2208	.2675	-.0040
.2493				
QUES30R	.0120	.0682	.1165	.2249
.1681				

QUES20R	QUES9	QUES11R	QUES15R	QUES17
QUES9	1.0000			
QUES11R	.0272	1.0000		
QUES15R	.1505	.3955	1.0000	
QUES17	.1836	.1598	.0765	1.0000
QUES20R	-.0657	.2070	.2697	.0091
1.0000				
QUES22R	-.0379	.2370	.3457	.2314
.1145				
QUES25	.1252	.3815	.4024	.1346
.0881				
QUES29R	.1488	.4388	.4958	.3174
.1211				
QUES30R	.0717	.2363	.1138	.0915
.0099				

RELIABILITY ANALYSIS - SCALE (ALPHA)

Correlation Matrix

	QUES22R	QUES25	QUES29R	QUES30R
QUES22R	1.0000			
QUES25	.1715	1.0000		
QUES29R	.4591	.2606	1.0000	
QUES30R	.2885	.0219	.2349	1.0000

N of Cases = 81.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	39.6296	18.8111	4.3372	14
Item Means Max/Min	Mean	Minimum	Maximum	Range
	2.8307	2.0864	3.4568	1.3704
	1.6568	.1879		

Item-total Statistics

	Scale Mean Squared Multiple Correlation	Scale Variance if Item Deleted	Corrected Item-Total Correlation
QUES1	36.3457	16.7790	.3430
.3184	.7482		

QUES3	36.3333	16.4500	.3449
.2697	.7485		
QUES4R	36.1728	16.5948	.4283
.2370	.7409		
QUES6	37.5432	18.3262	.0840
.1497	.7661		
QUES8	36.7778	15.0750	.5052
.4337	.7299		
QUES9	36.4815	16.7528	.3187
.3156	.7507		
QUES11R	36.9630	15.6611	.4577
.3602	.7360		
QUES15R	37.5185	15.4778	.4770
.4294	.7337		
QUES17	36.6049	16.7170	.3437
.2198	.7482		
QUES20R	36.7407	17.7444	.1939
.1976	.7600		
QUES22R	36.7901	16.8179	.3674
.3324	.7461		
QUES25	36.9136	15.9049	.4385
.3521	.7383		
QUES29R	36.6173	15.6392	.5433
.4558	.7277		
QUES30R	37.3827	17.3392	.2486
.2095	.7564		

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R E L I A B I L I T Y A N A L Y S I S - S C A L E (A
L P H A)

Reliability Coefficients 14 items

Alpha = .7594 Standardized item alpha = .7474

Reliability

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	QUES2R	2.6747	.8280	83.0
2.	QUES7	2.8916	.6628	83.0
3.	QUES13R	2.4337	.6087	83.0
4.	QUES14	2.8916	.5413	83.0
5.	QUES21R	2.6145	.6407	83.0
6.	QUES24	2.7229	.6683	83.0
7.	QUES28R	3.0361	.4539	83.0
8.	QUES33	2.4699	.5704	83.0

Correlation Matrix

	QUES2R	QUES7	QUES13R	QUES14
QUES21R				
QUES2R	1.0000			
QUES7	.1349	1.0000		
QUES13R	.1382	.1180	1.0000	
QUES14	-.0525	.2048	.1815	1.0000
QUES21R	-.0324	.1014	.3402	.2296
QUES24	.2759	.0965	.1791	.2530
QUES28R	-.0008	-.1895	-.0574	.1154
QUES33	-.0856	.2332	.3191	.3251
	QUES24	QUES28R	QUES33	
QUES24	1.0000			
QUES28R	-.0872	1.0000		
QUES33	.1218	.0278	1.0000	

N of Cases = 83.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	21.7349	5.7825	2.4047	8
Item Means Max/Min	Mean	Minimum	Maximum	Range
1.2475	2.7169	2.4337	3.0361	.6024
.0452				

RELIABILITY ANALYSIS - SCALE (ALPHA)

Item-total Statistics

	Scale Mean Alpha if Item if Item Deleted Deleted	Scale Variance if Item Deleted	Corrected Item- Total Correlation
Squared			
Multiple			
Correlation			
QUES2R	19.0602	4.6671	.1202
.1492	.5439		
QUES7	18.8434	4.7191	.2167
.1456	.4899		
QUES13R	19.3012	4.4569	.3716
.2060	.4321		
QUES14	18.8434	4.6703	.3502
.2174	.4462		
QUES21R	19.1205	4.5707	.2925
.1889	.4605		
QUES24	19.0120	4.5242	.2855
.1724	.4626		
QUES28R	18.6988	5.6765	-.0462
.0872	.5561		
QUES33	19.2651	4.5874	.3560
.2512	.4415		

Reliability Coefficients 8 items

Alpha = .5150 Standardized item alpha = .5196

Reliability

***** Method 2 (covariance matrix) will be used for this analysis *****

RELIABILITY ANALYSIS - SCALE (ALPHA)

		Mean	Std Dev	Cases
1.	QUES5R	2.8625	.7915	80.0
2.	QUES10	3.0625	.7177	80.0
3.	QUES12	2.6125	.6842	80.0
4.	QUES16R	3.2500	.5846	80.0
5.	QUES18R	2.5500	.7098	80.0
6.	QUES23R	2.7375	.6109	80.0
7.	QUES26	3.0625	.4312	80.0
8.	QUES27R	2.7000	.4611	80.0
9.	QUES31	2.7500	.5625	80.0
10.	QUES32	3.0750	.4141	80.0

Correlation Matrix

	QUES5R	QUES10	QUES12	QUES16R
QUES18R				
QUES5R	1.0000			
QUES10	.1936	1.0000		
QUES12	.1107	.4366	1.0000	
QUES16R	.3214	.0830	.0870	1.0000
QUES18R	.0913	-.0932	-.0769	.3051
1.0000				
QUES23R	.3171	.0956	.3289	.3633
.2788				
QUES26	.0997	.0281	.2118	.1381
.0103				
QUES27R	-.0104	-.0191	-.0923	.2817
.1238				
QUES31	.3198	-.1176	-.1562	.1540
.0951				
QUES32	-.1612	.2396	.1485	.1830
.1593				
	QUES23R	QUES26	QUES27R	QUES31
QUES32				
QUES23R	1.0000			
QUES26	.4475	1.0000		
QUES27R	.0764	-.1592	1.0000	
QUES31	-.0092	.1174	-.0488	1.0000
QUES32	.2789	.3278	-.0795	-.1358
1.0000				

RELIABILITY ANALYSIS - SCALE (ALPHA)

N of Cases = 80.0

Statistics for Scale	Mean	Variance	Std Dev	N of Variables
	28.6625	7.6695	2.7694	10
Item Means Max/Min	Mean	Minimum	Maximum	Range
	2.8663	2.5500	3.2500	.7000
1.2745	.0544			

Item-total Statistics

	Scale Mean	Scale Variance	Corrected Item-Total Correlation
QUES5R	25.8000	5.7570	.3386
.3640	.5214		
QUES10	25.6000	6.3949	.2092
.3114	.5621		
QUES12	26.0500	6.3519	.2463
.3189	.5499		
QUES16R	25.4125	5.9669	.4764
.3187	.4890		
QUES18R	26.1125	6.4809	.1895
.1931	.5676		
QUES23R	25.9250	5.7158	.5410
.4592	.4673		
QUES26	25.6000	6.8506	.2804
.3246	.5455		
QUES27R	25.9625	7.3783	.0313
.1661	.5910		
QUES31	25.9125	7.1441	.0695
.2042	.5898		
QUES32	25.5875	7.0302	.2130
.3230	.5580		

Reliability Coefficients 10 items

Alpha = .5729 Standardized item alpha = .5714

References.

Adelman, C., Kemmis, S., Jenjins, D.(1980). Rethinking case study: notes from the second Cambridge conference . Centre for applied research in education, University of East Anglia, 45-61.

Agogino, A.M., Sherry,H., (1995), Learning style based innovations to improve retention of female engineering in synthesis coalition, ASEE/IEEE Frontiers in Education '95: Proceedings, Purdue University.

Albaugh, P. ,(1997), The role of scepticism in preparing teachers for the use of technology, education for community: a town and gown discussion panel, Westerville, OH.

Anstey, P.,(2000), SCAITS, Staff Communication and Information Technology Skills , Final Report, UEA.

Argyris, C., (1982) , Reasoning , Learning and Action: Individual and Organisational, San Francisco- Jossey Bass.

Argyris, C.(1999). On Organisational Learning 2nd Ed, Blackwell.

Argyris, C., Schon, D.A., (1974), Theory in Practice – Increasing Professional Effectiveness , San Francisco Jossey Bass.

Argyris,C. , Schon, D.A.,(1978), Organisational Learning: A theory of action perspective, Addison- Wesley.

Argyris, C., Schon, D.A.,(1996), Organisational Learning II Theory, Method and Practice, Addison- Wesley.

Aslanian, C.B., Bricknell, H.H.,(1980),Americans in Transition: life changes and reasons for adult learning in future directions for a learning society, New York: College Board.

Barnet, R., (1993), Developing Knowledge Base: A Process perspective on Professional Education, Learning for Effect Society for Research in Higher Education, Open University Press.

Becker, T., Kogan, M.(1982) Process and Structure in Higher Education 1st Ed , London , Heinemann Education Books.

Becta (1999), Survey into Information and Learning Technology Provision, Access and Policy in FE College in England. A report to the Further Education ILT Committee, Coventry, Becta

Becta (2000),Further Education In Transition. A report to the Further Education ILT Committee of a survey into the information and learning technology provision, access and policy in FE Colleges in England , Coventry, Becta.

Becta(2001a) The State of ILT in FE College , a report to the Further Education ILT Programme Board on a survey into the information and learning technology(ILT) provision, access and policy in FE Colleges in England, Coventry, Becta.

Becta(2001b)., Producing a College ILT Strategy, Coventry, Becta.

Becta(2003a), What Research Says About Barriers to the use of ILT in Teaching , Coventry, Becta .

Becta(2003b), What Research Says About ILT and Teacher Continuing Professional Development(CPD) , Coventry, Becta.

Becta (2004a) , ILT and e Learning in Further Education : embedded technology , evolving practice . A report to the Learning Skills Council., Coventry, Becta.

Becta(2004b) , (Jones, A.) A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers, a report by Andrew Jones for Becta, Coventry, Becta.

Becta(2004c) , (Srimshaw, P.), Enabling Teachers To Make Successful Use ICT, Report By Peter Srimshaw for Becta, Coventry, Becta.

Becta(2005) , ICT and e – Learning in Further Education, Coventry , Becta.

Beethan, H., Jones, S. (2000), Career Development of Learning Technology Staff: Scoping Study Final Report, jcalt project.

Bell, J.(1999) , Doing Your Research Project, 3rd Ed., Open University Press.

Bell, J., Opie, C. (2002) , Learning From Research , Getting From Your Data., Open University Press.

Blair, A.(1997), Connecting the Learning Society, DfES.

Blatchford, P., (2003), The Class Size Debate; Is Smaller better, Open University Press.

Bradley, G., Russell, G. (1997), Computer experience , school support and computer anxieties. Education Psychology, 17(3), pp 267-284.

Brockett, R.G., Hemstra ,R., (1985), Bridging the Theory-Practice Gap in Self Directed Learning. Self directed learning from theory to practice, San Francisco ; Jessey Bass.

Brookfield, S.D., (1987), *Developing Critical Thinkers. Challenging adults to explore alternative ways of thinking and acting.*, Open University Press.

Brookfield, S.D., (1985), *Self Directed Learning: from theory to practice.* , London, Jossey Bass.

Botkin. J., Elmandjra, M., Malitza, M.,(1979) , *No limits to Learning*, Oxford Pergamon Press.

Boyle, C., (1982), *Reflections on Recurrent Education*, *International Journal of Lifelong Learning* 1(1).

Burnard , P.,(1991) , *Experiential Learning in Action*, Avebury.

Burns, R., (1995), *The Adult at Work , Business and Professional Publishing*, Sydney.

Cantor, L., Roberts, I., Prately, B ., (1995), *A Guide To Further Education In England and Wales*, Cassel.

Cantor, J.A. (1992), *Working With Adult Learners*, Toronto, Wall & Emerson.

Clark, D.(2003), *Pedagogy and e – learning , An Epic White Paper*, Epic Plc.

Coffield, F., Mosley, D., Hall, E., Ecclestone, K., (2004), *Learning Styles and Pedagogy in Post 16 Learning- a Systematic Review*, LSRC, Cromwell Press Ltd.

Cohen, L., Manion, L., Morrison, K., (2000), *Research Methods In Education 5th Ed.* , Routledge Falmer .

Cox, M., Preston, C., Cox C. (1999), *What factors support or prevent teachers from using ICT in the primary classroom.* Paper presented at the Education Research Association annual Conference, Sept 2-5, 1999.

Cronbach, L.J., (1951), Coefficient alpha and the internal structure of tests, *Psychometrika*,16, 297-334

Cuban, L. (1999), The Technology Puzzle. *Education Week*, 18(43).

Cuban, L., Kirkpatrick, H., Peck, C., High access and low use of technologies in high school classrooms: explaining an apparent paradox . *American Educational Research Journal* , 38(4), pp 813-834.

Daines, J., Daines, C., Graham, B., (1993), *Adult Learning Adult Education* , Ed. 3 , Continuing Education Press Nottingham University.

Dawes, L.(2000) , *The National Grid for Learning and the Professional Development of Teachers: outcomes of an opportunity for dialogue*. PhD Thesis.

Delors, J., (1996), *Education : The Necessary Utopia*, UNESCO.

Department For Education And Skills (DfES) (2002), *Success for All, Reforming Further Education and Training* Dfes.

Department For Education And Skills(DfES) (2002), *Get On With IT. The post 16 learning and strategy task force report.*, Dfes.

Department For Trade And Industry , (1998), *Our Competitive Future Building The Knowledge Driven Economy*, HMSO.

Dewey, J., (1916), *Education and Democracy*, New York: the Free Press.

Dodgson, M.,(1993), *Organisation Learning. A review of some literature* , *Organisational Studies* issue 14/3: (375 – 344) .

Donovan, K.(2001) , Evaluation of National Learning Network and its impact on teaching and learning , paper presented at Association for Learning Technology Conference, Edinburgh, 11-14 Sept, 2001.

Dreyfus, HL. , Dreyfus SE.,(1988), Mind Over Machine. The power of the human intuition and expertise in the era of the computer., The Free Press, New York.

Eraut, M.,(1994), Developing Professional Knowledge And Competence, Falmer Press.

Ertmer, PEA.(1999). Examining teachers' beliefs about the role of technology in the elementary classroom. Journal of Research on computing in Education, 32(1), pp 54-72.

European Commission,(2002), Commission staff working paper: Europe 2002 Benchmarking: Europe Youth in a Digital Age

Every Day Practical Electronic Magazine (2000) , Technology Timelines, May issues, Wimbourne Publishing Ltd.

Fabry, D., Higgs, J.(1997). Barriers to effective use of technology in education. Journal of Education Computing, 17(4), pp385-395.

Freire, P., (1972) , Pedagogy of the Oppressed , Herder and Herder, New York.

Ferl Practitioners Programme (2002), Transforming Teaching and Learning with ILT, Coventry :Ferl Becta.

Field, A.P., (2000) , Discovering statistics using SPSS for Windows: advanced techniques for the beginner, London Sage

Fiol, CM. , Lyles, MA., (1985), Organisational Learning , Academy of Management Review Issue 10/4: 803- 813.

Further Education Funding Council(1996), Report from the Learning and Technology Committee(Higginson Report, FEFC Publications.

Further Education Funding Council Circular 98/09 (1998), University for Industry, FEFC Publications.

Further Education Funding Council Circular 99/18 (1999), Networking Lifelong Learning: An ILT Development Strategy for FE, FEFC Publications.

Further Education Funding Council Circular 99/45 (1999), ILT Implementation Plan, FEFC Publications.

Further Education Funding Council Circular 99/53 (1999), Implementation Plan: Management and Finance, FEFC Publications.

Further Education Funding Council (1998), The Use Of Technology To Support Learning in College. National survey report from the inspectorate. , FEFC Publications.

Further Education Funding Council(1999), Networking Lifelong Learning: An ILT Development Strategy for FE. a consultation report prepared by the FE Information and Learning Technology Committee(FEILT) , FEFC Publications.

Further Education Funding Council (1999) , Networking Lifelong Learning. Making IT Happen, An Implementation Plan presented by the FEILT Committee., FEFC Publications.

Further Education National Training Organisation (FENTO) (2002), Skills Foresight For Further Education, London , Fento.

Further Education National Training Organisation (FENTO), (2002), ILT, Standards for the Application of ICT for Teaching and Supporting Learning and Management in Further Education, Fento, Published by LSDA.

Garrick, J., (1998) , *Informal Learning In The Workplace. Unmasking human resource and development.*, Routledge, London.

Gibson, IW.,(2001). *At the intersection of technology and pedagogy: considering styles of learning and teaching.* *Journal of Information Technology for Teacher Education*, 10(1/2), pp 37- 61.

Giddens, A.(1999), *Runaway World: How Globalisation Is Reshaping Our Lives*, Profile Books.

Glaser, BG., Strauss, A., (1967) , *The Discovery Of Grounded Theory: Strategies for Qualitative Research*, Chicago Aldine.

Guha, S(2000). *Are we all technically prepared? Teachers' perspectives on the causes of comfort and discomfort in using computers at elementary grade teaching.* Paper presented at the Annual Meeting of the National Association for the Education of Young Children , Atlanta, Nov 8-11, 2000

Hammond, M., Collins, R.,(1991), *Self-Directed Learning*, Kogan Page, London.

Hartree, A., (1984), ' *Malcolm Knowles' Theory of Androgogy; ma critique*, *International Journal of Lifelong Learning* 3(3): 203-10.

Hartman, VF.(1995), *Teaching and Learning Style Preferences: transition through technology.* *VCAA Journal* 9, no.2 Summer: 18-20.

Harvey, J., Oliver , M.(2001), *Evaluating the impact of effects on academic staff*, paper presented to the association for Learning Technology Conference , Edinburgh, 11-14 Sept, 2001.

Higginson, G.(1996), Report of the Learning Technology Committee, FEFC. The Higginson Report.

HM Treasury ,(2006), Leitch Review of Skills- Final Report , Prosperities for All in the Global Economy- World Class Skills, HMSO

Huber, G.P.,(1991), Organisational Learning: the contributing processes and the literatures., Organisation Science 2/1: 88-115

Hughes, M., Mayer, C., (2000) , The Skills Agenda: Issues For post 16 Providers, FEDA.

Hustler, J., (1977), The Education of Adults, Studies in Adult Education 9(1), Leicester NIACE.

Jarvis, P., (1985) , The Sociology of Adult and Continuing Education, Cross Helm Ltd.

Jarvis, P., (1995), Adult and Continuing Education : theory and practice 2nd Ed., Routledge.

JISC(2002), Trisst Survey Report, JISC, The Staff Development Officer's Story: FE/HE perspectives of ICT skills.

JISC(2002),Trisst project, JISC, P7-8.

Kerry, T., Tullit-Evans, J., (1992) Teaching In Further Education, Blackwell.

King,R., (1979), All Things Bright and Beautiful, Chichester: John Willey.

Kline, P.,(1999), The Handbook of Psychological Testing (2nd Edition),London Routledge.

Knowles, M.S. ,(1975), Self Directed Learning – A guide to learners and teachers, Assoc Press Follet Publishing Company.

Knowles, M.S. ,(1978), The Adult Learner: A Neglected Species ,Ed.2, Houston Gulf Publishing Co.

Knowles, M.S. ,(1980), The Modern Practice of Adult Education, Chicago, Associate Press.

Knowles, M.S. ,(1989), The Making of an Adult Educator, San Francisco , Jossey Bass.

Knudson, R.S., (1979), Andragogy revisited : Humangogy anyone?, Adult Education 29, Pg 261- 264, Washington DC.

Kolb, D.A., (1984), Experiential Learning – Experience as the source of learning and development, Englewood Cliffs, New Jersey, Prentice.

Krammer- Koehler, P., Tooney, NM., Devendra, PB., (1995), The use of learning style innovations to improve retention, ASEE/IEEE Frontiers in Education'95 :Proceedings. Purdue University.

Label, J., (1978), Beyond Andragogy to Gerogogy, Lifelong Learning: the Adult Years 1.

Laird, D., (1985), Approaches to Training and Development, Addison-Wesley Reading Mass.

Larner, D., Timberlake, L., (1995) , Teachers with limited knowledge :variables affecting use and hints to increase use. The Curry School Education, University of Virginia.

Lave, J., Wenger, E., (1991), Situated Learning – Legitimate peripheral participation, Cambridge University Press.

Lawton, D., (1973), Social Change , Education Theory and Curriculum Planning, Hodder Staughton.

Learning Skills Council, (2002), A Report To The Learning Skills Councils Distributed Learning Group (DELG), LSC Publication.

Lee, D.(1997). Factors influencing the success of computer skills learning among in service teachers. British Journal of Education Technology, 28(2), pp 139-141.

Leitch Review of Skills- see H M Treasury , (2006).

Littlejohn, A., Peacock, S., M^cAteer, E., Juwah, C., Bates, D., Bruce, S.(2001) Enabling Large scale Institutional Implementation of ICT, Elicit.

LSDA (2004), The Developing Impact of ILT: Staff development, LSDA, London.

Mason, RM., (1993), Strategic Information Systems : Use of learning technology in a learning organisation, Proceedings of the twenty sixth Interactive Conference on System Science, IEE Press: 840- 849.

M^cGill, I., Beaty, L., (1985), Action Learning; a guide for professional, management and education development , Ed. 2, Kogan Page, London.

M^cKenzie, L., (1977),The Issues of Andragogy, Adult Education 27, pg 225-220,Washington DC.

Mezirow, J.,(1977), Perspective Transformation, Studies in Adult Education 9(2)

Mezirow, J.,(1981),A Critical Theory OF Adult and Education, Adult Education 32(1), Washington DC.

Mezirow, J.,(1990), Fostering Critical Reflection in Adulthood, San Francisco : Jessey Bass

Mezirow, J., (1991), Transformative Dimensions in Adulthood, Jossey-Bass Wiley.

Morgan, D.L., (1997), Focus Groups as Qualitative Research, London Sage.

National Council for Education Technology(NCET), (1998), Planning for ILT in Further Education, Coventry, NCET.

Ofsted, (2007) ,Handbook for Inspecting Colleges , HMSO.

Open University,(2005), About the OU , History of the OU, www.open.ac.uk

Partlett, M., Hamilton, D., (1972) , Evaluation as Illumination: A New Approach to the Study of Innovatory Programmes .Reader in Education, Macmillan.

Paterson, R.W.K., (1979), Values , Education and the Adult, Routledge and Kogan Paul, London.

Pavey, J., Watson, B.(2001), Summary of ICT skills Audit of all Students and Academic / academic related staff in June 2000, paper presented at the Association of Learning Conference , Edinburgh, 11-14 Sept.

Peters, R.S., (1966), Ethics of Education, Allen Unwin, London.

Prahalad, CK., Hamel, G., (1994), Competing For The Future, MA, Harvard Business School Press.

Pugh, D.S., (1978), Understanding and Managing Organisational Change , London Business School Journal 3 : 29-34.

Reece, I., Walker, S., (1997), Teacher Training and Learning a Practical Guide , Ed. 3 , Business Education Publishers.

Rogers, A., (1996), *Teaching Adults 2nd Ed.*, Open University Press.

Rogers, E.M., (1995), *Diffusion of Innovations*, New York, Free Press.

Rogers, C.R., (1969), *Freedom to Learn*, Columbus Ohio, Charles E. Merrill Publishing Co.

Schon, D.A. , (1983), *The Reflective Practitioner – How professionals think in action*, London, Temple Smith.

Senge, P.M., (1990), *The Leaders New Work: Building a learning organisation*, Sloan Managerial Review, Spring : 7-23.

Showers, B., Joyce, B., (1996), *The Evaluation of Peer Coaching*, Education Leadership

Smith, A.C., (1919), *Adult Education Final Report*, reprint of the '1919 report ', Department of Adult Education, University of Nottingham.

Somekh, B., Underwood, J., Convery , A., Dillon, G, Lewin , C., Saxon, D., (2004) , *Evaluation of the Dfes ICT Test bed project: summary report*, Centre for ICT, Pedagogy and Learning, Manchester Metropolitan University.

Srinivasan, L., (1977), *Perspectives of Non Formal Adult Learning*, New York: World Education.

Strauss, A., Corbin, J., (1998), *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, Sage Publications.

Tennant, M., (1986), *an Evaluation of Knowles' Theory of Learning*, International Journal of Lifelong Education 5(2): 113-22.

Toffler, A., (1980), *Third Wave*, London, Collins.

Tough, A., (1979), *The Adults Learning Projects: A fresh approach to theory and practice in adult learning* 2nd Ed., Ontario Institute for Studies in Education.

Usher, R., Bryant, I., (1989), *Adult Education as Theory, Practice and Research*, London, Routledge.

Walkin, L., (1990), *Teaching and Learning in Further Education*, Stanley Thorne's Publishers.

Wild, M., (1996), Gender difference in teacher computer acceptance. *Journal of Technology and Teacher Education*, 10(3), pp 365-382.

Wiltshire, H., (1976), *the Nature and Uses of Adult Education*, in Rogers A. (Ed) *the Spirit and the Form*, Department of Adult Education, University of Nottingham.

Zuboff, S., (1988), *In Age of The smart Machine: The Future and Power*, New York Press: Basic Books.