How do Management Information Systems (MIS) support learning in Further Education Colleges (FE)?

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DECLARATION

I certify that this work has not been accepted in substance for any degree, and is not concurrently being submitted for any degree other than the Doctorate in Education (EdD) being studied at the University of Greenwich. I also declare that this work is the result of my own investigations except where otherwise identified by references and that I have not plagiarised the work of others.

Student ……. (signature) Date ……..

Supervisor …….. (signature) Date ……..

Supervisor …… (signature) Date ……

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ABSTRACT

This research investigated the ways in which Management Information Systems (MIS) support learning in FE colleges, based on an analysis of data deriving from respondents in three colleges. The study has adopted Weick's (1995) theory of Interpretive Sensemaking (SM) as an underpinning theory to explore teacher and managerial responses to discourses of using data to inform decisions. The study is qualitative in nature and uses interviews, documents, and participant observation data, to understand and explain social phenomena. A case study methodology is used in this study as it provides an opportunity for in depth analysis of the role of MIS using various sources and methods of investigation.

Two methods of data collection are used. The first data collection method used in this study is documentary collation and analysis. The document sources include sets of policy and procedure texts. The documentary analysis also includes the internal reports generated by MIS software or provided by MIS staff on schedule. The second method of data collection employed in the study is interviews. The interviews data collected are from one to one semi structured interviews and focus groups. In total 60 members of staff were interviewed from which 20 participants were interviewed in focus groups.

The study suggests that the main providers of data come from MIS services in colleges. MIS provide tools to make the data available for practitioners to use on a daily basis to support learning. The study suggests that there are some barriers which do not help practitioners to use the data effectively in order to improve learning in FE colleges. This study reveals a number of recommendations for FE colleges to embrace to improve the use of data in decision making and learning: easy access to data, data integration, good communication, professional development, collaboration, motivation to use data, available support in place, purpose to use data, data quality, useful and user friendly software tools, and ownership of data.

Additionally two original frameworks have been evolved, a framework for effective MIS in FE colleges and a framework for steps to improve the effective use of data in support of education and learning. Both frameworks can be adopted and implemented easily in FE colleges and can enable educators to support learning and monitor success and achievements effectively.

CONTENTS

Glossary

Agresso: Agresso Campus solutions for Further Education. Student record MIS system used by many FE colleges

BIS: UK Department for Business, Innovation and Skills

DES: The Department for Education and Science

DS: The Data Service was launched in April 2008 to collect and disseminate information as the first single source of data for the further education system

DCSF: The Department for Children, Schools and Families. Replaced the Department for Education and Skills (DfES) in June 2007 and was replaced by the Department for Education (DfE) in May 2010

DfE: The Department for Education

EBS: Student Record MIS System from Tribal used by many FE colleges.

ECM: Every Child Matters - in the UK

EFA: Education Funding Agency

EMA: Education maintenance allowance. A weekly payment to help with the day to day costs for students who stay on at school, college or a training provider after their GCSEs.

FEFC: Further Education Council

IA: Information Authority

ILR: The Individualised Learner Record (ILR) is a collection of data about learners and their learning that is requested from learning providers in the FE system.

LSC: Learning and Skills Council

LSIS: Learning and Skills Improvement Service

MIS: Management Information System

NCLB: No Child Left Behind in the US

Ofsted: The Office for Standards in Education, Children's Services and Skills

Proachieve: software tool from Compass Computer consultants to measure Success, Retention, Achievement and many other useful statistics

Proobserve: software tool from Compass Computer consultants for Recording and Analysis of Lesson Observations

SFA: The Skills Funding Agency

SRIS: Student Record Information System.

YPLA: The Young People's Learning Agency.

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CHAPTER ONE

INTRODUCTION

Rationale for the study

In the majority of organisations, information/data are clearly recognised as one of the most potent assets that an organisation can possess (Butler group, 2004). Colleges, schools and universities have collected large amounts of student data for years, but these data are rarely put to use effectively (Wayman, Cho, and Johnston, 2007). Data can be used to inform decisions about a broad range of educational challenges. Data also can have a positive impact on the people involved in educational practice. Educational institutions involved in using data to inform decisions have often evolved toward a more professional culture (Feldman et al., 2001). Earl and Katz (2006: 2) stated,

> *"Not so long ago, decisions in education were based on the best judgments of the people in authority, using a combination of privileged and tacit knowledge of the context, political savvy, professional training and logical analysis. Data played almost no part in decisions. Now, there is no escaping data in education. Accountability has become the watchword of education and data hold a central place in large-scale reform."*

According to Ackoff (1989), data, information, and knowledge form a continuum that can be applied to make decisions. Light et al. (2004) constructed a framework of how data are turned into knowledge, based on a sequence of six steps identified by Ackoff (1989). These steps include collecting, organising, summarising, analysing, synthesising, and decision making. Data exist in a raw state. Data do not have meaning in and of themselves, and exist in any usable or non-usable form. Data become information depending on the individual looking at and

understanding the data. Information comprises collections of data that are given meaning when connected to a context. Information is data that are given meaning when connected to a context. Knowledge is built from the collection of information and can be used to guide action. The framework highlights the important role the practitioner plays in the data information knowledge processes in schools and the wealth of practitioner knowledge in that respect and how the data helped them develop a clearer picture of their students (Light et al., 2004).

According to the OFSTED's 'Why Colleges Fail' report (2004), one of the main reasons for failing colleges is due to inadequate management information, with data not used to inform strategy and practice. Rocket and Hull (2004:1) point out:

> *"A good MIS system brings immense and practical benefits to an institution. It provides a practical and very unobtrusive system for managers to monitor and control the processes in the institution perhaps more usefully to see the future. A CMIS is the radar of the institution."*

The constant changes in the FE sector and the accountability measures, require the college staff at all levels, right from the top management to the teachers in the classroom, to use data more effectively and to have the support to turn student data into information. OFSTED's 'Why Colleges Succeed' report (2004) suggests that good and reliable MIS data could help colleges to identify and track learners and courses with poor attendance, punctuality, achievement, incomplete work and performance. Grint (2002) argues that the MIS technology used in colleges can be regarded as the technology of accountability. Measurement is another key aspect of MIS organisational development and is vital to provide the basic information required to enable

leaders to make timely, well informed decisions about all aspects of the organisations and fulfil the requirements of internal demands and external agencies.

Research aims

I intend to examine the use of MIS and the extent to which they are effective in supporting the work of leaders and teachers in FE as regards support for learning. The work of leaders in this context entails addressing the use of college data to produce quality information which supports college management and decision-making processes. This study centres on the role of data and MIS in supporting the learning that takes place in FE colleges. There is a lack of research that describes and analyses the role of MIS within FE. Existing research tends to be centred mainly on the role of data in supporting learning and decision making in schools (Earl and Katz, 2006; Wayman, Cho, and Johnston, 2007; Datnow et. al., 2007; Kirkup et. al, 2005).

The research aims to identify factors that enable leaders and teachers in FE to use data effectively to support learning and decision making. This study adds to the growing body of literature on the effective use of data to support education and learning processes and will focus on the following research question:

How can MIS support learning in FE colleges?

This question will be divided into the following sub-questions which will create a clear view on how to use the data effectively to support leaders and teachers in FE colleges in decision making processes:

- How do managers/ leaders use data to make decisions?
- What practices are effective in teacher use of the MIS tools available?
- How can data be used effectively and can its use improve education?
- What steps can FE colleges take to improve the use of data?
- What software and data tools were most useful to teachers/leaders?

Research will be carried out in three FE colleges, examining the effective use of MIS data and the extent to which they are effective in supporting leaders and teachers in FE colleges. The aim is to understand the ways in which data are thought about and used across multiple levels of the colleges and to further illuminate the strategies and practices that characterise data-driven decision-making.

My research is qualitative and will use Weick's (1995) theory of Interpretive Sensemaking as the underpinning theory to explore teacher and managerial responses to discourses of using data to inform decisions. Qualitative research involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena. Qualitative researchers can be found in many disciplines and fields, using a variety of approaches, methods and techniques. In MIS, there has been a general shift in MIS research

away from technological to managerial and organizational issues, hence an increasing interest in the application of qualitative research methods.

A better understanding of how the data can be used effectively can lead to the design of systems that are supportive of decision-making in such areas and will contribute towards the development of alternative future systems in order to enable leaders in FE to use data effectively to support learning and decision making processes.

Examining the use of MIS and the extent to which they are effective in supporting the work of leaders in FE will increase the body of knowledge among leaders and teachers in FE, enabling them to use the data more professionally as accountability tools and in decision making processes. The gap in data use in FE colleges needs to be closed to help leaders and teachers use the data effectively to support learning and data driven decision making. The increased knowledge of college staff will build a good capacity for learner achievement and success of the colleges overall.

This research is based on the assumption that effective data use is necessary to support learning and decision making. It should be noted that successful data driven decision making must be conducted on a broad foundation of possessions and resources (Datnow et al., 2007). This foundation includes leadership, time, data management system, quality data, and other resources.

The proposed research represents a substantial and significant contribution to knowledge, in three domains. First, it contributes to the knowledge and understanding of the role of MIS and effective use of data, and the extent to which they are effective in supporting the work of leaders and teachers in FE. The work of leaders in this context entails addressing the use of college data to produce quality information, which support management and decision-making processes.

Second, the study aims to identify a range of useful recommendations to FE colleges in order to improve the use of data in decision making and learning. The recommendations from this study can be used by leaders and teachers in FE education, stakeholders and policy makers to change the practice and policy on using data and implementing data driven decision making successfully. Changing both practice and policy can lead to increased student support and also improve achievements. The recommendations may also contribute towards the development of an alternative integrated and user friendly future system. The system can support educators in FE colleges at different levels in using data effectively, on time, and when needed, to support the learning and decision making process.

Third, the study also aims to identify recommendations for future research to conduct on the same topic through the use of different tools and methodology. The recommendations can be used by new researchers in this area to build on the work and findings from this study and to make suggestions for other studies to continue the investigation into developing further

understanding of the role of MIS and effective use of data within education in general and FE in particular. The recommendations can also be used to determine how the role of MIS and effective use of data contributes to the overall success of colleges in improved performance, learning and decision making.

The chapters which form the thesis present the research as follows:

• **Chapter 2 Review of the Literature**

This section discusses the conceptual theory and the literature relating to the role of MIS and data use in educational establishments in support of learning and decision making

• **Chapter 3 Research Methodology**

This section describes the methods employed in the research. These methods are reflected on and reviewed in this section.

• **Chapter 4 Data Collection**

This section describes the data collection employed in the research. The chapter includes a discussion about the ethical issues underpinning the study.

• Chapter 5 Data Analysis and Discussion

This section deals with the data analysis and discussion of the data collected from individual and focus group interviews. A key objective of the study is to examine and identify factors that enable leaders and teachers in FE to use MIS data effectively to support learning and decision

making. This section also describes the key findings of the study in relation to existing literature and the research questions.

• **Chapter 6 Conclusion and Implications**

In this section, the outcomes of the study are concluded and presented in relation to the research questions.

CHAPTER TWO

Literature review

Introduction

The chapter begins with a discussion of the literature relating to the data and data use in educational establishments. The review then moves on to consider the role of effective use of data in improving educational achievement and decision making. The review also describes the constant changes in UK FE colleges and impact of these changes on the data use and role of MIS in supporting the work of educators in FE colleges in decision making and improving learning.

The journey of collecting the literature for this study began by examining all the documents, journals and books related to the researcher's area of professional work. The researcher has been working in the FE sector for fifteen years, mainly in MIS department in different roles as analyst programmer, MIS Manager and Head of MIS in a large FE college in London. The researcher's educational and professional background in information management and information systems was regularly updated in terms of knowledge and understanding of new developments and research related to the above topics. The researcher had access to many e-journals, paper journals and daily/weekly web alerts related to IT, Information Systems and MIS. The following journals were the starting point in finding articles or citing articles related to this thesis:

MIS Quarterly; Information Systems Research; Journal of MIS; Decision Sciences; Information and Management; Journal of Global Information Technology Management (JGITM); Journal of

Computing in Teacher Education and Information Management Daily. http://www.information-management.com.

The search did not identify many articles related directly to my study although I have found many references cited in the articles of these journals which are related to MIS, the role of MIS and the effective use of data to support decision making processes. These journals were very useful in terms of being a gateway to topics, articles and research information related to my topic of study.

Within researcher's role in an FE college and as an MIS researcher, it was the intention to examine the use of MIS and the extent to which they are effective in supporting the work of leaders and educators in FE. The work of leaders in this context entails addressing the use of college data to produce quality information which supports the learning, management and decision-making processes.

The second journey of reviewing the literature was through the internet and Google scholar search engine. The journey began by searching for terms and words and embraced a search for articles, journals, topics and books using the following words and terms:

Data

- Data use

- Effective use of data in education
- Data driven decision making
- Data, information and knowledge
- Data usage to drive learning improvement

Management

- Role of Management Information in education and FE
- Knowledge management
- Accountability
- MIS technology
- Business intelligence
- Leadership and leadership in education
- Performance management
- Audit and control management

Education and Learning

- Education, post compulsory and further education
- Learning support
- Improve learning
- Many other terms and words related to data and effective of data in supporting learning, and decision making processes.

By searching for the above terms and words, an extensive list of books, journals articles, topics and studies related to MIS, business and performance management or related in one way or another to this study were found. Additionally in reading through the topics, extra links cited by these authors and researchers were emerged. The literature review continued even during and after data analysis and writing of the discussion chapter.

FE Context

FE colleges are increasingly characterized by a need to construct accounts, and make oneself, other members of staff and the college accountable to a variety of internal and external audiences. This accountabilities work draws upon a wide range of techniques, systems and technologies to ensure its practical accomplishment as leadership work. MIS and its everyday use provides a standardized record of work, documenting the activities of both students and staff. Looking at how such MIS data is collected and used, this study makes clear that everyday leadership work involves making, monitoring, checking and evaluating decisions. Technology plays an important role in this work, providing a significant resource for leadership, for the presentation and representation of data. A study of this kind of leadership work involves an appreciation of the careful, and skilled, consideration and calculation of management information.

According to the ERIC development team (1997), in any organisation, those who possess information typically exercise a degree of power or control over those who do not. Educational leaders, managers and teachers use of data in colleges require strong leadership which supports

the data use to inform decisions and improve practice. Data can be used to judge people's performance and take punitive action against underachievers, or they can be used to diagnose problems and determine the efficacy of relevant and wise decisions.

FE colleges have traditionally welcomed second chance students who have experienced little educational or vocational success. Due to the constant changes in funding and planning in FE colleges there is a requirement for there to be a systematic use of data to fulfil requirements by government agencies, and improve students' retention, achievement, and success rates. In the former Learning and Skills Councils (LSCs) there was a change in the structure and delivery. Both colleges and local authorities needed to develop an understanding of how information would be used to inform dialogue and decision-making. The LSC was sponsored by the Department for Business, Innovation and Skills (BIS) and the Department for Children, Schools and Families (DCSF). The LSC was replaced by the Skills Funding Agency (SFA) and the Young People's Learning Agency (YPLA) in March 2010 (SFA, 2010; SFA, 2011; YPLA, 2010; IA, 2008).

The data on student numbers and achievement provides a basis for on-going discussion on funding, leading to a jointly agreed adjustment to the plan for the college where appropriate. Colleges also have to produce a Self-Assessment Report (SAR):which assesses aspects of their provision and Performance Indicators (PI). PI are produced on the basis of the data to create numerical standards that show how key aims and objectives are achieved. SAR and PI heavily

rely on the availability, accessibility, reliability and the quality of the data which are mainly available on the colleges' MIS.

Under the Learning and Skills Act 2000, the LSC was established in April 2001 and replaced the Training and Enterprise Councils, the National Committee for the Education and Training Targets (NACETT) and the Further Education and Funding Council (FEFC). The LSC was the largest nongovernmental body in the country. It had one central office which was supported by 47 regional LSCs. Until June 2007, the LSC was sponsored by the former Department for Education and Skills (LSC, 2006). The LSC was in charge of funding and planning of post 16 non-university education and government supported training in England. The LSC was also responsible for FE, sixth form schools and colleges, work-based learning for young people, workforce development and adult learning.

When the LSC was disbanded, funding responsibilities for 16–19 year old learners transferred to local education authorities and the new SFA distributed funding for adult learners in FE colleges. The YPLA and the SFA began to report to The Department for Children, Schools and Families (DCSF) and The Department for Business, Innovation and Skills (BIS) respectively (SFA, 2010; SFA, 2011, YPLA, 2010, IA, 2008). LSC's work split into the SFA and the YPLA. The SFA have responsibility for 19+ provision and are overseen by the BIS while the YPLA have responsibility for 14-19 provision and report to the DCSF. The YPLA is a Non-Departmental Public Body (NDPB) which supports Local Authorities (LAs) in the discharge of their planning

and commissioning functions and to ensure funding control: this differs from SFA. From April 2009, the YPLA set a financial framework but the delivery of funding was delegated to LAs (SFA, 2010; SFA, 2011; YPLA, 2010; IA, 2008).

The Government White Paper (2006) 'Raising Skills, Improving Life Chances' identified a need to bring together the information needs of all the organisations that request information from the FE system and to agree what will be required from all providers. Based on common standards, data are to be collected once and used for a variety of purposes. The intent is to ensure that only priority information is collected and that reports are presented in a standard format to avoid duplicates of data collection and ensure that they do not place a burden on colleges. This has led to the establishment of the Information Authority (IA), as a single mechanism, for setting information standards and data and reporting requirements the aim of which is to provide relevant information to a variety of users, i.e. government departments, funding agencies, awarding bodies, parents, students and so on (DfES, 2006).

The government white paper (2006) 'Raising Skills, Improving Life Chances' and the Foster Report (2005) recommended the creation of the IA. The IA was set up in October 2006 to set data standards and govern data collection and use for FE and training provision in England. The IA has a decision-making board. This is headed by an independent chair and made up of representatives from across the education and training system. The IA works with the independent Data Service (DS), which collects, monitors, handles and disseminates information,

to improve the quality and use of data, reduce bureaucracy and increase accountability to users and sponsors.

The DS was launched in April 2008 to collect and disseminate information as the first single source of data for the FE system. The Individualised Learner Record (ILR) is a collection of data about learners and their learning that is requested from learning providers in the FE system. The data collected are used by organisations in the FE system to ensure that public money distributed through the SFA and the YPLA is being spent in line with government targets for quality and value-for-money, for future planning, and to make the case for the sector in seeking further funding (IA-ILR Spec, 2010; IA-ILR Spec, 2011).

The FE system in England uses the ILR to collect data about learners in the system and the learning undertaken by them. The ILR Specification defines the data to be collected for each academic year from 1 August to 31 July. The data standards and specification of the ILR are owned and governed by the IA, and any changes to the data collected in the ILR or collection arrangements must be approved by the IA board.(IA-ILR Spec, 2010; IA-ILR Spec, 2011). ILR data are collected from providers that are in receipt of any of the following types of funding from the SFA and the YPLA: 16-18 Learner Responsive (LR) funding, Adult LR, Employer Responsive (ER) or Adult Safeguarded Learning (ASL) funding and from providers funded by co-financed European Social Funds (ESF) (IA-ILR Spec, 2010; IA-ILR Spec, 2011).

Despite all the changes in the FE system for the last two decades, FE colleges have to submit their funding returns data (ILR) to the government funding agency, currently Data Services (DS). ILR data are analysed and reports produced from it are used by OFSTED, SAR, Auditors, Exam boards, LEA and other government agencies. OFSTED uses trends of retention, achievement and success rates upon inspection of colleges. Staff colleges at different levels have to use data regularly to monitor attendance, punctuality, retention, achievement and success rates as this is the basis for internal and external monitoring of the performance of the colleges. Figure 2.1 shows how the data flows in FE colleges.

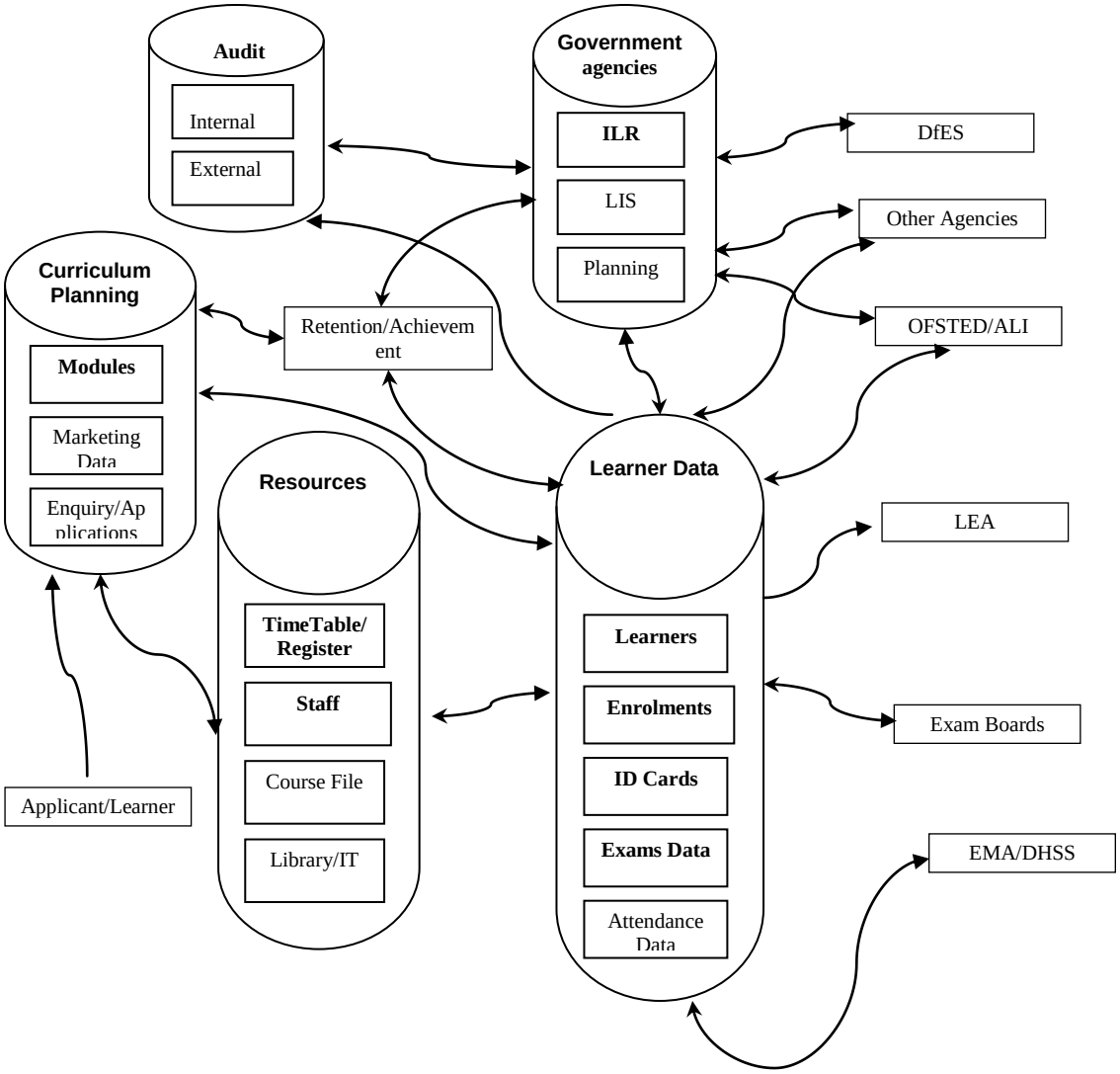

Figure 2.1: Data flow in FE Colleges (Mamand (2005) presented at University of Greenwich Weekend School)

All FE MIS systems perform repetitive functions that are able to record, generate, make transactions, generate reports and produce ILR to meet the business needs of the colleges. MIS records the course file, including the national qualifications aim which is recognised by the funding bodies. In an integrated MIS system, the timetable, registers and examination registrations are also included in the system. Every course is based on the actual guided learning

hours of delivery, therefore where the College places a lecturer in front of a class for a given length of time, this can attract funding.

Not all types of qualifications are fundable and in order to be funded, a qualification must meet the governments' funding objectives. Qualifications are weighted according to the costs of delivery, i.e. through guided learning hours (GLH). Each qualification has a unique reference (learner aim code) on the Learning Aim Reference Application (LARA). Providers choose the qualifications to teach in their institutions according to their business plan, their need to meet local needs and the funding rates available. There are two types of qualifications on LARA: namely, listed (with fixed rates) and load banded (depends on the guided learning hours) of teaching. Availability and rates of qualifications can be varied according to student age group and type of funding. Course records on MIS are used to record a significant amount of information about the provision such as: start date; end date; number of weeks' duration and the hours per week; College site or campus; the College school and programme area responsible for the delivery of the provision, and so forth. Student registrations (enrolments), qualification aims, examinations, timetables and fee information are also linked to each record level of a course. Enrolment data are validated by register attendance, examination entries and results and timetabling. MIS systems use all the information recorded on students to produce an ILR file to be used by funding bodies and other internal and external users. Figure 2.2 shows the process of generating the ILR on an FE MIS system.

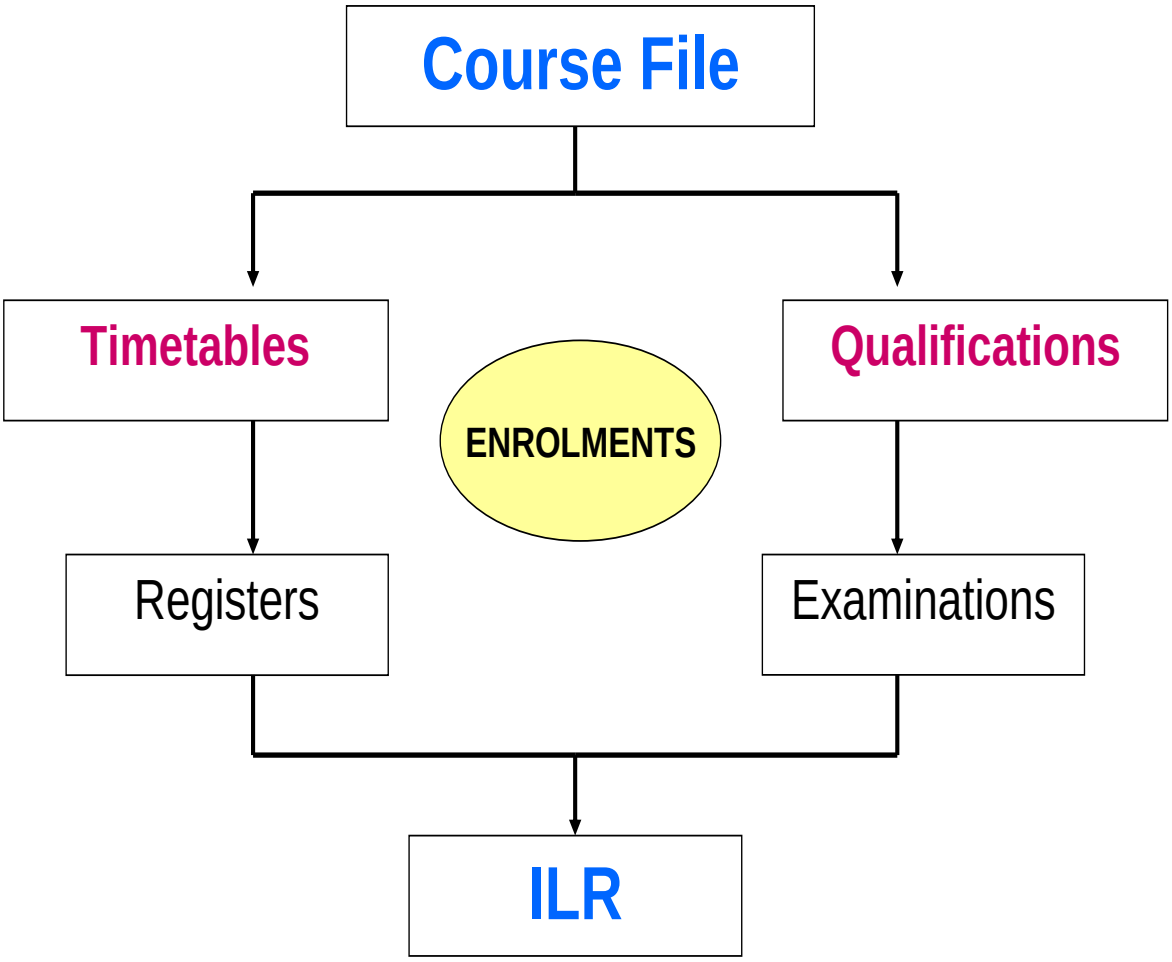

Figure 2.2 the process of creating an ILR (Mamand, 2010)

Data Context

In any organization, data serves as the most basic element for all decision, judgment and action. In the past several decades, a great deal has changed. There has been an exponential increase in data, information and knowledge, and the technology has been made available to provide data in

raw form and in other different unprocessed forms in a range of media. Educators, like others in society trying to use this unfiltered data, find ways to change it into meaningful information in order to transform it into knowledge for decision making and constructive and wise action. For years, colleges, schools and other educational entities have collected data on school/college processes and student learning. Educational institutions had stored these vast amounts of data for years but recorded them in ways that were not easily accessible to most practitioners to use the data as useful information to deliver better education and improve instruction to achieve learning. The availability of new computer data system tools with additional important features have helped educational institutions to have data systems available with user friendly interfaces that allow the users to access the data and turn the data into usable information to improve instruction and decision making. Wayman (2005:2) stated that:

> "*Although schools have been "data rich" for years, they were also "information poor" because the vast amounts of available data they had were often stored in ways that were inaccessible to most practitioners "* (Wayman, 2005:2).

In the UK, FE colleges collect large amounts of data which are not used effectively to monitor performance and decision making, as stated in the Foster Report (2005:69):

> *"We have been struck by the amount of data that is collected in FE colleges but find that it is poorly used. We need much more clarity around what data is collected and for what monitoring and other purposes it is used. The data used by colleges to manage their business should be the same data that funding, planning, regulatory and other bodies use." (*Foster, 2005: 69*)*

Recent accountability policies such as No Child Left Behind (NCLB) in the US (NCLB, 2002) and Every Child Matters (ECM) (DfES, 2003) in the UK have brought increased attention to these data, increased the amount of data collected, and tied funding to certain characteristics of these data. Practitioners react to reporting and data needs requirements while struggling with better ways to understand and efficiently use these data internally for improving practice and decision making (Wayman, 2007).

There was a time in education when data played no part in any decision making. Practitioners and educational leaders made decisions about students' retention, achievements, success and about the overall performance of their institutions based on their best knowledge and professional experience. In fact, there was not much relevant and reliable information available about their institutions and their students. Educational leaders relied on their tacit knowledge to formulate and execute plans (Earl, 2005). Earl (2005: 6) pointed out that:

> *"Accountability and data are the heart of contemporary reform efforts worldwide. Accountability has become the watchword of education, with data holding a central place in the current wave of large scale reform."* (Earl, 2005:6)

Policy makers are demanding that schools focus on achieving high standards for all students and they are requiring evidence of progress and improvement from schools that is conceived explicitly in a form of data (Fullan, 1999; Earl et al., 1997; Earl, 2005). While accountability policies do not stress teacher/educator involvement in data informed decision making, it is reasonable to assume that practitioner contribution can play a key factor in a fully successful data

use plan. Sound and strong leadership in institutions can facilitate successful participation (Copland, 2003; Murphy, 2002).

Data Driven Decision Making

According to Ackoff (1989), data, information and knowledge form a continuum that can be applied to make decisions. Light et al., (2004) adapted a simplified version of Ackoff's framework that links data, information and knowledge. They constructed a sequence of six steps. These steps include collecting, organising, summarising, analysing, synthesising, and decision making. Data exist in any form, whether are usable or not. Data can be turned into usable information by individuals looking at and understanding the data. Knowledge is constructed from the collection of information and can be guided or used to inform decisions and wise action. Light et al. (2004: 4) describe the process of turning data to knowledge:

> *"The transformation entails collecting and organizing data, along with summarizing, analyzing, and synthesizing information prior to acting (decision-making). Through this process, raw data are made meaningful, by being related to the context or situation that produced it; consequently, human action underlies all decision-making. This sequential process, therefore, forms the basis of our understanding of how teachers interact with data"* (Light et al., 2004:4).

Wilson (2002: 2) defined knowledge in the following way:

> *"Knowledge is defined as what we know: knowledge involves the mental processes of comprehension, understanding and learning that go on in the mind and only in the mind, however much they involve interaction with the world outside the mind, and interaction with others. Whenever we wish to express what we know, we can only do so by uttering messages of one kind or another - oral, written, graphic, gestural or even through 'body language'"* (Wilson, 2002: 2).

Normally, in any organisation data and information are stored in a data repository. Information serves as the basic requisite for understanding and enriching knowledge. Without the information, knowledge does not have any existence. Knowledge is a mental activity and resides only to what occurs inside the human brain. Everything outside the mind that can be manipulated in any way can be defined as data. Data and information resources can be managed but knowledge can only be managed imperfectly by an individual knower who possesses knowledge. People, normally managers from organisations, from their acquired knowledge and wisdom, use the available information for taking some appropriate decision or action. Data are converted to information and information is converted to knowledge. Knowledge is created through a sensemaking process. Knowledge is simply useful to form good and wise judgments to drive an appropriate action when required.

Earl and Fullan (2003) emphasise the use of the data in schools by educational leaders to inform decisions based on acquired knowledge from the school data:

> *"Using data wisely for decisions in schools is much more than gathering data and turning them into numbers. A process of human interpretation and creating meaning has to happen to change data into information and ultimately into workable knowledge. Leaders are aware that they need to become expert at moving from data to information to knowledge but they are not at all confident that they know enough to be able to do it well"(Earl and Fullan, 2003: 7)*

In many parts of the world institutions have implemented large-scale assessment systems, established indicators of effectiveness, set targets, created inspection and review programmes, joined achievements and performance (Whitty et al., 1998; Leithwood et al., 1999). Large-scale

assessment was a tool for decision-making about students. This has now changed to being the lever for holding schools accountable for the achievements, improvements and overall performance of the institutions (Firestone et al., 1998). The public demands that educational practitioners demonstrate their progress, achievement, performance and success rate. Educational practitioners are being judged internally and externally in schools. They are expected to use data to evaluate and monitor their decisions, measure performance and set up appropriate strategic plans and implementation action plans (Herman and Gribbons, 2001). School leaders are faced with difficult challenges which do not provide one single and simple answer. They constantly have to predict the future and make changes to their instructional practices in order to keep up to date and be quick to respond to the situation. Research studies, investigations and data analysis offer methods for improvement and planning and appropriate actions in schools. Viewed from this point, data are not readily available. They are, and should be, an important part of an ongoing process of analysis, insights, new learning and changes in practice in all schools and districts (Earl and Fullan, 2003).

Previous studies suggest that effective use of data in education in decision making has the potential to improve student performance and achievement (McIntire, 2002; Alwin, 2002; Doyle, 2003; Lafee, 2002). When practitioners become more knowledgeable about their data use, they can use data effectively to identify strengths and weaknesses and put appropriate plans for improvement into place (Earl and Katz, 2006). Educational leaders, teachers and institutions that possess analysed information and actionable knowledge can exercise a degree of power in comparison with those with a lack of data, information and knowledge. Foucault (1998)

describes the operation of power. In his observations power is everywhere and comes from everywhere. Power and knowledge are mutually constitutive. Foucault sees power (1983) as pervasive in everyday life, embedded in our language and practices. The micro processes of power are practised through its effects on people's actions and decisions. Foucault pointed out that power can be positive and not always negative. Power can be productive, necessary and can make a positive contribution to society:

> *"We must cease once and for all to describe the effects of power in negative terms: it 'excludes', it 'represses', it 'censors', it 'abstracts', it 'masks', it 'conceals'. In fact power produces; it produces reality; it produces domains of objects and rituals of truth. The individual and the knowledge that may be gained of him belong to this production"* (Foucault 1991: 192).

The power of obtaining data and information which some institutions or practitioners possess enable them to prepare their business plans effectively and improve education and learning. Weber (1968) defined power as the chance that an individual in a social relationship has to achieve his or her own will, even against the resistance of others. The issue of power and manifestation of power is also noted by Frost (1987), who states:

> *"The capacity of an actor in that relationship to prevent the emergence of, for discussion and decision making, of anything other than "safe", uncontroversial issues"* (Frost, 1987: 506)

Schools and educational establishments have a collection of a variety of data that can be used to inform decisions to support learning but this data is not often used successfully (Wayman and Stringfield, 2006). Data provides tools for the investigation necessary to plan appropriate and

focused improvement strategies. Organising data in different ways stimulates suggestion and inference about the nature of the difficulty under consideration. Over time, this process gives rise to justifiable plans for changes. Earl (2005: 2) stated that:

> *"School leaders are the ones who are accountable for the work of the school. High-stakes accountability systems can create a sense of urgency and provide 'pressure' for change. However, real accountability is much more than accounting. It is a moral and professional responsibility to be knowledgeable and fair in teaching and in interactions with students and their parents. It engenders respect, trust, shared understanding, and mutual support."* (Earl, 2005:2).

Feldman and Tung (2001) observed that schools involved in using data systems to improve learning often evolved toward a more professional culture. Educators in their study became more collaborative during the data/decision process. Earl and Katz (2002) note that educational leaders involved in data use often develop a mindset of being in charge of their own destiny, as they feel increasingly able to find and use information to inform their school improvement.

The leaders and teachers in FE colleges require using data more often to meet the constant demands from the government funding bodies and as result of the continuous changes in the funding and policy in the FE sector. Educators need to access relevant data to turn into usable information to enable them to identify students at risk of non-achievement. According to the national Audit Office study (NAO, 2001:20):

> *" Good monitoring also relies on the relevant staff having access to attendance information. Personal tutors told us that access to data is important because it enables them to identify patterns in attendance that may help them to identify students at risk of non-completion"*

Good monitoring requires timely and accurate data on learners' attendance and progression. The benefits of an effective register system include the provision of powerful information that can be used in student guidance and management (AOC, 2000). According to the OFSTED report (2004), one of the main reasons for failing colleges is due to inadequate management information, with data not used to inform strategy and practice. Rocket and Hull (2004: 9) point out that:

> *"Information is a vital institutional resource. This sets the institution's face against the 'it's only figures' mentally. It puts information on a par with furniture, finances and fine art – worth protecting. It confirms information as a proper subject for care, concern and effort. It should be backed with examples such as: exam results and local credibility; ILR and funding; retention and respect"*

In the majority of organisations, information is clearly recognised as one of the most potent assets that an organisation can possess (Butler Group, 2004). According to the Butler Group (2004:12):

> *"information is such as a pervasive element of operational processes, in public as well as private sector organisation, and is generated, used and disposed of across every department"*

In the world's current knowledge based economy, information and knowledge in organisations are being counted in new ways as 'intangible assets'. Knowledge, know-how, human capital, informational data, organisational practices are examples of intangible assets. They are intangible, meaning they cannot be touched; they cannot be grasped like material assets and they cannot be straightforwardly counted and quantified in the same way as tangible assets. (Andriessen, 2004) The value of companies/organisations nowadays is not generated only by

traditional assets such as labour, capital, machines and buildings, it is mostly also now generated by intangible assets such as information, knowledge and practice. Often knowledge and information are inappropriately equated together, as the following theorists argue:

> *"Knowledge is often equated with information because both assets are intangible. Information, however, can be written down or outlined in a patent or process, making it easy to reproduce. Pieces of writing, artwork, music, movies, and datasets are information because they can be reproduced with the click of a button or the exchange of a CD. By contrast, the knowledge used to produce information is harder to codify or summarize on a piece of paper. Knowledge evolves and continuously combines varying pieces of information to meet changing needs. ..For example, the information architects create in the form of blueprints can be easily reproduced, but the knowledge used to create them is difficult to replicate as it is embedded in the education, experience, and ingenuity of the architect"* (Henderson and Abraham, 2004:72).

Knowledge can be classified as in Pierre Bourdieu's concept of symbolic capital. Bourdieu designates this as the wealth which a group or an individual has accumulated in symbolic form and not from money or industrial wealth or economic capital. Symbolic capital can be readily convertible into the traditional form of economic capital. An individual or group possessing such symbolic capital can be estimated or appraised for their symbolic capital. (Bourdieu, 1985; Bourdieu, 1986) Bourdieu identifies three dimensions of capital, each with its own relationship to class: economic, cultural and social capital. These resources become socially effective, and their ownership is legitimized through the mediation of symbolic capital. From the Bourdieuan perspective, social capital becomes a resource in the social struggles that are carried out in different social fields. (Bourdieu, 1985; Bourdieu, 1986)

The development and usage of college information systems has been a recurrent theme of reports in further education. In UK education institutions, CMIS have come a long way since they become widely available to institutions in 1980s. CMIS stands for 'computerised management information systems' and the performance indicators referred to by the DES at that time were students' completion and success rates, students' destinations and unit costs. In 1987, the Department for Education and Science (DES) published the findings of a joint efficiency study which recommended that:

> *"All colleges should operate comprehensive integrated CMIS able to cater for the performance indicators identified in the report …. within five years"* (FEFC, 2001: 6)

For many decades FE and training providers in England had to collect and analyse data on courses, students and their performance to fulfil demands from many government agencies and variety of users. The government required institutions to have these data without a common standard set of data. The government white paper (2006) 'Raising Skills, Improving Life Chances' and the Foster Report (2005) made recommendations to simplify and improve to the collection, supply and use of data in the FE sector. These reports recommended the government to set up a data system that reduced the burden of data collection upon FE institutions and training providers to improve the quality of the data and the use of the data to inform decisions and improve the performance of institutions. Based on the above recommendations, the IA was set up in 2006 to standardise and govern data collection for FE and training provision in England. The IA was formed by the former DfES and the former LSC to operate as a single gatekeeper for information standards and data reporting requirements across the further education sector to support strategic planning and improve performance. The IA is responsible to government

Ministers and all organisations across the sector to specify data requirements by providers to run their businesses and reduce the quantity and variations of data and reporting requests to FE and training institutions (DfES, 2006; IA-ILR Spec, 2010; IA-ILR Spec, 2011).

The IA works closely with the DS, which was set up as the first single source of data for FE provision. The IA uses the collected data from providers derived from many organisations to make sure that the public money spent by SFA and YPLA is in line with government targets for quality and value-for-money, for future planning. The IA's aims are to standardise and improve the use of data across the FE sector to support strategic planning and improve the performance as stated in the IA's website (IA, 2012):

> *"The information authority, working in tandem with the Data Service, will improve the quality and use of data; reduce bureaucracy and increase accountability to users and sponsors. The authority's creation supports recommendations contained in the FE White Paper, the Learning and Skills Council's agenda for change programme of reforms, and the Foster Report.*
>
> *The authority will:*
>
> - *Improve the regulation of data – establish clear and stable data definitions.*
> - *Reduce bureaucracy – implement the approach of 'collect once, use many times, use by all'.*
> - *Improve the timeliness of information for all – implement an effective data collection and dissemination timetable that balances the needs of data users against the burden placed upon data providers.*
> - *Improve the consistency of reporting – implement standard methods for calculating derived variables and reporting upon data."* (IA, 2012).

Local authorities have lost control of the 16-19 funding that was briefly channelled through them by the YPLA. The YPLA is to be replaced by the Education Funding Agency (EFA). In the

2012 letter to recipients of education and training funding from the Department for Education (DfE), the DfE has written a letter about the closure of Partnerships for Schools (PfS), the dissolution of the YPLA and creation of the EFA. As from April 2012, the YPLA and PfS cease their activities. Their responsibilities and staff move to EFA. The EFA now funds the education system for 3-19 year olds or up to age 25 for people with disability including free schools, academies, maintained schools and sixth form colleges (DfE, 2012; LSIS, 2011).

The FE system in England uses the ILR to collect data about learners in the system and the learning undertaken by each of them. The ILR Specification defines what data is collected for each academic year from 1 August to 31 July. The data standards and specification of the ILR are owned and governed by the information authority, and any changes to the data collected in the ILR, ILR specification or any alteration to collection arrangements must be approved by the IA board(IA-ILR Spec, 2009; IA-ILR Spec, 2010; IA-ILR Spec, 2011).

The DS is a single source of FE data and is responsible for collection and storage of FE sector data and sector related data. The DS provides extensive reporting capability using relevant tools and technology to quality assure, store, publish and disseminate sector data. The DS also provides the software packages to help sector providers with ILR data collection, funding, auditing and other data reporting analysis (IA-ILR Spec, 2010; IA-ILR Spec, 2011):

- Learning Aim Reference Application (LARA): Providers use this tool to select or identify the approved and fundable qualification with payment rates. Availability and rates of qualifications can be varied according to student age group and type of funding.
- Learner Information Suite (LIS): Providers import the ILR file to calculate funding and assist them with planning.
- Online Data Collections (OLDC): Providers upload ILR files regularly as per the data submission timetable. Colleges have to make monthly returns to the DS and therefore the timeliness of data as well as changes to data already submitted to the DS are visible and quantifiable by the DS, the IA, funding bodies and auditors.
- Disadvantaged Uplift: The Disadvantage Uplift is a funding uplift available for eligible learners who are considered to be disadvantaged. There are two types of disadvantage uplift: postcode and category.
- Data Self Assessment Toolkit (PDSAT): Auditors use DSAT reports to calculate over claims in the ILR. Auditors and providers run DSAT reports to identify and quantify the degree of over claims in the ILR. FE colleges are required to keep evidence of periodic use of DSAT reports and actions taken by them in response to "data issues" identified by DSAT reports.

Despite all the changes in the FE system for the last two decades, FE colleges have to submit their funding returns data (ILR) to the government funding agency, currently the DS. ILR data are analysed and the reports produced from it are used by OFSTED, SAR, Auditors, Examination boards, LEA and other government agencies. Ofsted (2005) identified that the FE colleges with

inadequate leadership and management lack the capability and capacity to undertake adequate self assessment (SAR), where they have no relevant and meaningful data on their students' retention, abilities and achievements. The SAR heavily relies on data and reports produced from MIS system. These colleges are judged as incapable of self-diagnosis, as they are seen to lack any sufficient basis on which to plan their own improvement.

In OFSTED's document (2008: 8) 'How Colleges improve', emphasis is given to the importance of systematic use of MIS data to analyse performance and minimise the risk of failure regarding students' achievements:

> *"The better colleges had embedded a culture of accountability based on universally understood indicators of success. The systematic use of good, accessible and reliable data to analyse performance at all levels and identify areas for improvement was embedded throughout the organisation. All staff understood what the data told them and how they could be used to measure success. Ambitious and yet realistic targets were set on retention, attendance and pass rates across curriculum areas and there was rigorous monitoring to ensure that these were achieved. (OFSTED, 2008:8)*

OFSTED uses trends of retention, achievement and success rates upon inspection of colleges. Staff colleges at different levels have to use data regularly to monitor attendance, punctuality, retention, achievement and success rates as this is the basis for internal and external monitoring of the performance of the colleges.

The history of literature on MIS in support of learning in FE colleges

There was a rich literature on MIS in the 1970s, continuing into the 1980s (Davis, 1974; Davis, 1982; Davis and Oslon, 1984). In 1974 Davis gave the earliest definition of information systems and MIS. His concept of the MIS of an organisation is the systems that support organisation processes including systems processing controls, maintaining availability of stocks, coordination and communication in organisations, sharing knowledge and management (Davis, 1974; Davis, 1982). The importance of MIS has meant that some writers continue to provide a deep discussion of the topic (Zwass, 1998; Lucey 1998). Most MIS systems perform repetitive, relatively simple summaries of transactions allied with exception reporting and projection planning. From management perspectives, MIS are necessary and critical to the operational control and decision making of the business. MIS in general can provide and serve the needs of an organisation in strategic planning, controlling and decision making at different levels (Laudon and Laudon, 2005). MIS systems functions vary according to the type and operations of the organisations. Different types of organisations use MIS systems to collect data, analyse data, produce reports, share information and knowledge and assist decision making. MIS cannot be considered without the consideration of the role of management and how management chooses to use such systems. Rocket and Hull (2004: 5) state that:

> *"In every organisation with struggling MIS, people and administrations invent their own systems – some to evade the truth, but most to try to get at it. In a 'MIS is always right' regime when MIS produces a report which lecture Y believes to be tripe then managers do not choose between Y and MIS. Instead, give Y and MIS time to work together to put MIS right or Y right."*

MIS often rely on monitoring data produced by a corporate database. Central to its monitoring and control roles, an MIS unit produces reports. This is mainly what managers perceive about an MIS unit, since these are its tangible outputs. The reports can be differentiated and grouped by content and by schedule.

In the 1980s, understanding and use of information system helped public sector workers in Malaysia to understand what was going on in their areas. Farmers used MIS to access detailed information on livestock and agricultural products. MIS enabled them to make better use of available resources (Tottle, 1986). Measurement is a key aspect of MIS organisational development and is essential to provide all the basic information required to enable staff to make timely, well informed decisions about all aspects of organisations. Laudon and Laudon, (1995) describing the sales of Mrs Fields Cookies, state:

> *"Financial accounting does not making the company money. What makes the money is getting the information from the field as fast as possible and changing to meet market demands" (* Laudon and Laudon, 1995).

MIS technology used in colleges can be regarded a 'technology of accountability' (Suchman, 1993). The record of dealing with students, their progress through attendance, recruitment, retention, achievement and success rates, besides being an important aspect of leadership, also provides an account of and visible commentary on the efficiency and propriety of the work of various institutional members (White, Kelly and Rouncefield, 2005). The technology and, more importantly, its everyday use, provide a standardised record of work, documenting the activities of both students and practitioners.

Studies in Further Education (FE) suggest that good and reliable Management Information System (MIS) data could help colleges to identify and track learners and courses with poor attendance, punctuality, incomplete work and performance. According to the National Audit Office study (NAO, 2001:20):

> *"All the colleges we visited told us that poor attendance at classes, particularly among younger students, is often followed by the student leaving the course. Also, persistent poor attendance or lateness have a detrimental effect on students' chances of achieving their qualification aims. Many colleges specify minimum attendance requirements for individual courses and have disciplinary procedures if students fall behind. However these are only successful if attendance is monitored closely and there is a clear commitment to good attendance, together with prompt follow-up of unexplained absences."* (NAO, 2001)

Good monitoring requires timely and accurate data on learners' attendance, punctuality, achievement and progression.

The MIS system is also essential for colleges to comply with the FE audit regime. The FE audit regime has been identified as contributing to a significant element of college time and efforts (KPMG, 2010). The MIS system plays the main role in coping with the rigours of the audit regime by providing the essential management information data upon which to base decisions and in which both the audit regime and the government funding agencies can have confidence. The inability to understand and make effective use of MIS systems in colleges has been identified by KPMG as the major problem that can be generated and validated by the audit regime. MIS systems are fundamental to college procedures and processes (KPMG, 2010:58):

> *"Management Information Systems (MIS) are fundamental to college processes and there are major opportunities for efficiency in this area. However, there is no uniform MIS across FE – this adds to the cost and complexity of collaboration. Good MIS and good Systems integration within a single institution, (which can be seen as achieving internal*

shared services) is a critical prerequisite to a shared services agenda, for instance" (KPMG, 2010:58).

MIS in colleges assist improvement needs, strategy planning and management. Many practitioners suggest that MIS should be designed to meet the college's own information requirements first and then satisfy the needs of government funding agencies, auditors and inspectors. Once internal information needs have been achieved, information and data can become a main factor in supporting quality improvement strategies and decision making (Martinez, 2001).

Data use in Education

Proactive uses of school data are very valuable in developing teachers' attitudes towards educational practice and students' progression. Data use motivates staff to generate new ideas and developments. Their knowledge and communication are increased by using data and this helps them to identify school weaknesses and the underperformance of certain groups (Massell, 2001). The introduction of data analysis tools and the use of these tools in schools facilitates teachers in recognising the needs of at-risk students and noting positive changes in the potential progress of previously underperforming students (Massell,2001; Armstrong and Anthes, 2001). With the advent of new technology and the introduction of information data systems in schools, more opportunities were provided for teachers, leaders and administrators in schools to have access to large amounts of student data to assist them in informed decision making and in improving overall school performance (Wayman et al., 2004). Studies of data use in schools suggest that teachers can see improvement through participation in data use plans and training

(Chen et al. 2005; Lachat and Smith 2005; Murnane, Sharkey, and Boudett 2005). Studies also suggest that ongoing data use in schools can help practitioners in encouraging them to move toward more professional, collaborative and supportive cultures (Chen et al., 2005; Young, 2006). Further, it has been suggested that the proper and comprehensive use of user-friendly data systems and tools can support data use at all levels, including the classroom level, to improve practice and instructions (Lachat and Smith, 2005; Wayman and Stringfield, 2006). Historically, the issues of access to relevant data have held back practitioners from using them to support education and learning. Educational institutions historically have produced a plethora of data, but these data have typically been stored in ways that render them inaccessible to most practitioners (Kerr et al., 2006; Stringfield et al., 2001; Supovitz and Klein 2003). Evidence suggests that practitioners support data use planning and initiatives when they are soundly implemented and respond to the learning needs of their students, even though they are often critical of accountability data (Chen, Heritage, and Lee 2005; Lachat and Smith 2005; Massell 2001).

Access to clear information on the benefits of learning is very important to drive an informed system. Information about the curriculum, quality and the value of different learning opportunities will enable learners to be better informed in making choices about where and what to learn. The benefits of learning achieved mean that learners are more likely to be employed over the course of their lifetime. These benefits are not only for students registering and achieving qualifications but may include benefits for their employers and other employees. This may include increased gains or competiveness of the employers and improved transparent knowledge, which may result in rising benefits for other employers and increased benefits for

other businesses through increased productivity of other employees. The issue of access to FE data which produce the right information is also reported in the BIS documents (BIS, 2010; BIS, 2011) when data are not accessible by students and employers:

> *"The information students and employers say they need to make informed choices is in most cases already available but it is not accessible enough. Many students and employers turn to local sources, including provider websites for information, but the variety of formats of data does not make comparisons about the quality of different providers easy"* (BIS, 2011:26).

Access to data is not just about being given permission to the system or given access rights to different parts of the system; it is about promoting and providing an effective system to support users to obtain relevant information (Wayman et al., 2011:13):

> *"The problem of access is not merely about adopting systems and providing permissions. It is also about promoting access by offering effective systems that give users value. One important aspect is to provide systems that offer robust information, while remaining intuitive and easy to use. Using data systems should feel worthwhile and beneficial, not frustrating or discouraging.* (Wayman et al., 2011:13)

The advent of new computer software systems, new and efficient education information systems with user friendly access and interfaces that allow rapid, easy access to student data has changed the situation regarding MIS provision for teachers and other educational professionals (Wayman, Stringfield and Yakimowski, 2004).

Effective use of data requires that educational institutions provide data integration systems in order to make the best use of data for educational improvement and can support teachers and students' learning (Lachat and Smith 2005; Supovitz and Klein 2003; Wayman et al. 2004). With the advent of new technology, new student data systems have been developed that offer unprecedented, efficient, flexible data access along with user-friendly interfaces that support all types of educators in real time (Wayman et al., 2004). These data system are necessary for sustainable school/college data use plans, but these systems must be supplemented with professional support and leadership that helps educators turn student data into usable information that can inform classroom practice (Wayman et al., 2007). Integration of systems; easy access to quality data; access to data at the student level; and personal access to data are the common responses from Wayman et al.'s (2007) study and emphasise the importance of data integration:

> *"Many of the reasons for system integration involved connecting specific systems that allowed users to connect the system they used most often with data from another type of system."* (Wayman et al., 2007:32)

Chrispeels et al. (2000) demonstrated that proper use of data can be a strong predictor of the efficiency of institution improvement teams. Streifer and Schumann (2005) reported precise predictions of student achievement using complex data-mining tools where these tools can aggregate data from various sources and tables to produce useful and complex reports but in a simple format that can interpreted easily by educators.

Data uses have been investigated as a valuable support at different levels and for a variety of roles in many educational institutions. Successful data use also has a positive effect on individuals and educational processes (Chen et al., 2005; Coburn and Talbert, 2006; Datnow et al., 2007; Wayman and Stringfield, 2006; Lachat and Smith 2005; Young, 2006. Earl and Katz (2002) noted that educational leaders involved in successful use of data often consider themselves to be in charge of their own destiny, increasingly able to find and use information to inform their school's improvement, progression and success. Using data on students, delivery of programmes and institutions can be useful in changing practitioner views and attitudes toward educational practice and students needs (Armstrong and Anthes, 2001; Massell, 2001).

Practitioners have consistent contact with students and their learning, and therefore are an integral component of effective data use. Research has shown that data use can help teachers in a variety of ways. Teachers may use data to identify the strengths and weaknesses of students, groups, and classes, and set up appropriate actions to meet their needs (Chen et al., 2005; Lachat and Smith, 2005; Wayman and Stringfield, 2006).

Computer systems such as an MIS system in educational institutions are becoming recognised as integral components of educational data use. MIS data systems are important in helping to distribute information and share knowledge among institutions and educators (Alavi and Leidner, 2001; Swan, 2009). Traditionally data have been stored in ways which were difficult to access by practitioners. However, the advent of user friendly MIS systems has made it much easier to

access relevant data on time, in a simple format which can be easily interpreted, and can be turned into knowledge to make wise decisions (Mieles and Foley, 2006; Wayman, 2007; Wayman, Stringfield, and Yakimowski, 2004). Within the era of new technology and new data systems and tools, educators use data evidence and research to justify and support their decisions and their professional practice. This provides the educator with more control within the institutions, as an informed professional (Barber, 2002)

In UNESCO's report (2009: 66) 'Regional Contribution to Statistical Information Systems (SIS) Development for Technical and Vocational Education and Training (TVET)', emphasis is given to the importance of stable and integrated information system in place to improve the quality and efficiency of TVET. Recommendations have been produced in this report to initiate the education and training reform processes as stated below:

> *Establish an institutional and legislative framework for the creation of an integrated SIS with one official source of information coordinated by the relevant entity designated in the Ministry in charge of TVET. This measure will contribute to improved communication and data sharing among the respective directorates in the Ministry charged with TVET* (UNESCO, 2009: 66)

Using data does not have to be a mechanical or technical process that denigrates practitioners' intuition, teaching philosophy and personal experience. In fact, using data wisely is a human thinking activity that draws on personal views but also on capturing and organising ideas in some systematic ways, turning the information into meaningful actions and making the analysis transparent (Senge, 1990). Having data is a beginning, but it is not enough. Schools need to move from being data-rich to being information-rich and knowledge-rich as well. Effective

educational leaders convert information into actionable knowledge by using their judgment to prioritize information and identify appropriate possible actions. The acquired knowledge can be used to support different types of informed decisions that might include the provision of extra resources, setting and assessing progress towards main targets, recognising individual learning support or group needs, evaluating effectiveness of lesson plans and teaching practice, or reviewing implemented processes to improve learning processes and achievements.

Information becomes knowledge when it is shaped, organised and embedded in a context that gives it meaning and connectedness. The use of data is not separate from planning and from routine decisions in educational institutions. Instead, data are a necessary part of an ongoing process of analysis, insight, new learning and changes in practice. Synthesising data in different ways stimulates reflection about the nature of the problem under consideration and provides the vehicle for planning focused progress strategies. The implications for educational leaders are vast. If data are to become part of the foundation of institution improvement, however, practitioners in schools must become active players in the data-rich situation that surrounds them (Earl et al., 1997).

In 2005, The National Foundation for Educational Research (NFER) was commissioned by the DfES to conduct a study of primary, secondary and special maintained schools in England to assess the use of data in teaching and learning. Schools in England have access to an increasingly wide range of educational statistics, including school performance and value-added

measures, background variables of pupils and schools, inspection reports, benchmarking data and detailed information relating to performance in the statutory national curriculum tests. In addition to data published by DfES, OFSTED and the Qualifications and Curriculum Authority (QCA), schools may use alternative sources of data or analysis, such as the Fischer Family Trust analyses, and Local Education Authority (LEA) systems (NFER, 2005).

The study was carried out by Kirkup, Sizmur, Sturman and Lewis, in all types of schools, found that data were perceived to promote teaching and learning by facilitating: more effective allocation of staff and resources; performance management; monitoring the effectiveness of initiatives and strategies; evidence-based discussions with OFSTED, LEAs, governors, etc; challenging expectations of staff, pupils and parents, among others. Also transitions and transfers, particularly transitions between key stages within schools; identification of pupils' achievements and setting of targets. 'Good practice' emerged from the use to which the data was put rather than specific systems or tools. A recurrent theme was that data only become effective if they stimulate questions about the actual learning that is taking place and how it can be developed further.

According to Kirkup et al. (2005:2):

> *"Schools reported that effective use of data resulted from meaningful dialogue between staff, and was supported by user-friendly systems. Useful discussions of data amongst staff tended to occur in schools where one person took a proactive role in using data to move learning forward, either by focussing on specific areas or supporting colleagues in the interpretation of outcomes."* (Kirkup et al. (2005)

Rather than closed data analysis packages, school-devised systems and Excel spreadsheets were the most popular data management tools because they tracked individual pupils and allowed schools the flexibility to input internally generated data such as interim assessments and targets; i.e. such tools were easier to customise to the school and its particular needs and circumstances (NFER, 2005).

NFER (2005) researchers have pointed out that the effective use of data can be employed for performance measurement and then measurement usage can be extended further to improve learning and education. Crawford et al. (2008: 3) supported the above statement as stated below:

> *"In our view, large-scale assessment data are valuable indicators for administrators, policymakers, and the general public because they provide important feedback information to schools about their performance that can be used in improvement efforts."* (Crawford et al., 2008:3)

Availability and accessibility of suitable data are very important for educators to improve instruction and decision making processes. These data can be used for diagnosis regarding individual and class learning needs. Crawford et al. (2008: 3) support the above statement, as follows, saying:

> *"We argue here that classroom-level instructional decision-making requires classroom-level data suitable for diagnostic, real-time decisions regarding student learning and instruction."* (Crawford et al., 2008)

The greatest challenge to the effective use of data for primary and secondary schools in the NFER study was finding time to update and analyse the data. The key challenges for special

schools were finding data systems that enabled them to monitor pupil progress in sufficient detail, and obtaining reliable comparable data by which they could evaluate their school performance and progression (NFER, 2005).

The NFER (2005:6) report made a number of recommendations for schools, LEAs and policy makers, as follows:

- *Raise awareness of data systems and their potential capabilities and availability*
- *Encourage the use of linkable or compatible systems – to prevent difficulties with the input or transfer of data.*
- *Promote training and support in the use of data -not only software training but also how to use the outcomes from data analysis and how to share such outcomes with colleagues.*
- *Review demands on schools (Workforce Reform) to ensure staff have sufficient time to analyse data at a meaningful level.*
- *Encourage the sharing of good practice, e.g. through networks/ clusters of schools/workshops.*
- *Encourage the appointment of dedicated co-ordinators to drive the process of interpretation and action (not just the input of data).*
- *Provide a means of comparing the performance of very low attaining pupils with special educational needs (e.g. moderation of the P scales).*
- *Recommendations for the Pupil Achievement Tracker*
- *Make PAT easier to use, particularly the input of data.*
- *Clarify instructions and provide an 'At a Glance' Guide.*
- *Offer more information, training and support.*

A quote from a participant in the research carried out by Kelly et al. (2010: 37) demonstrates the positive attitudes of some educators on the use of data to improve learning by identifying the individual needs of students as quoted below:

> *"I think using pupil data in teaching is all positive: obviously it improves the results of my students [and] it improves where my focus is in my lessons. If I know that students are underachieving I can give them extra homework. I can make sure I'm on top of them. I can set them accurate targets to get them back on track to where they should be. I feel it's helping my teaching to a great extent. I don't understand how it could be negative. Data informs teaching."* Kelly et al. (2010:37)

There are many steps towards using data successfully in educational institutions. The development and implementation of data-driven decision making tools is only one of the necessary steps toward effective use. Several barriers to the effective use of data by practitioners have also been identified (Lim, 2003) including access issues, technical expertise, and ongoing training (Choppin, 2002; Cromey, 2000; Wayman, 2005).

The lack of relevant and ongoing training for practitioners in how to use data to improve student performance has posed a long-term problem (Wise, Lukin and Roos, 1991). It is unusual to find schools in which teachers routinely engage in thinking critically about the relationship between instructional practices and student outcomes (Confrey and Makar,2005; Hammerman and Rubin, 2002; Kearns and Harvey, 2000). Researchers know very little about the cognitive strategies practitioners employ to turn data into useable and relevant information and wise action (Cizek, 2001; Herman and Gribbons, 2001). The lack of substantial and appropriate staff training and development has been a barrier to many data use plans involving educational changes (Newman, King and Youngs, 2000). Earl and Fullan (2003: 388) found that educational leaders require further training to build capacity to understand and interpret data and make sense of the information to inform decisions and wise actions, as cited below:

> *"School leaders in all three sites were very forthright in their anxieties about using data. Even when they were positively disposed to looking at data as part of their decision-making, they expressed insecurity about their skill in gathering, interpreting and making sense of the information about their school. Many of them indicated that they had not had training or experience in research, data collection, data management or data interpretation.*
>
> *Although they were charged with the responsibility for communicating the information to other staff, parents and the community at large, preparing for this task was something they had to do for themselves (*Earl and Fullan, 2003:388).

Wu (2009:22) noted the important of data format, data system integration, easy access and ease of understanding with a minimal training as recommended below:

> *"The tools needed to disaggregate data well and provide data in a format that was easily to read and understand. The data processing also needed the capability of linking several different data systems in a timely manner. The staff also needed to be able to access the data easily with minimal training."*(Wu, 2009:22).

Other researchers also noted the importance of sharing knowledge and collaboration among educators to use data in decision making where educators work and share their understanding and ownerships of the issues and concerns together. Educators need to collect and analyse data to make informed decisions about student needs. They also need to analyse data on curriculum, examinations, progression and performance to enable them to understand in depth the reasons and factors related to student learning achievements (Love, 2000).

Previous studies also emphasise the importance of collaboration among staff to share knowledge and learn from each other in order to improve the use of data in decision making and support the learning process, as noted below:

> *"The school systems we studied also supported their schools by establishing time for teachers to learn from one another. One administrator observed that the key to making data relevant was developing working relationships between staff, because "without collaboration and collegiality, data is impossible." Teachers relied heavily on one another for support, new instructional strategies, and discussions about data"* (Datnow et al., 2007:46).

Knowledge sharing involves processes through which knowledge is channelled between a source and a recipient. The MIS system in an FE College may be, alternatively, a knowledge source, a knowledge recipient, or an MIS manager or a leader of knowledge between a source and a recipient. Regardless of the system's role, the objective of any knowledge-sharing process is to transfer source knowledge successfully to a recipient. The success of knowledge sharing depends on the degree to which the knowledge is re-created in the recipient. Knowledge can be seen as knowledge packages embedded in the people and their skills, the technical tools and systems used by an organisation (Cummings, 2003; Davenport et al., 2000).

Strong leadership makes big differences in communicating with practitioners to facilitate or foresee the impending use of available data tools (Ellen et al., 2006). Ellen et al. (2006) point out that the available data for decision making do not provide detailed data on specific students to help teachers to inform their decisions, as noted here:

> *"The kinds of data-driven decision making tools that are proliferating in schools do not provide the kind of detailed data on individual students that could help teachers gather systematic evidence about the effectiveness of particular instructional strategies."* (Ellen et al. (2006:5).

Confrey and Makar (2002) find that teachers need to know what to look at as they tend to focus on data from individual students, mean scores, and passing rates, while ignoring distributions. The ability to examine a distribution as an aggregate, taking in the shape of the entire distribution rather than focusing on individual students is a critical skill. But while looking at an aggregate measure such as a mean is more representative of the entire distribution, it runs the risk of

ignoring that some students doing poorly are balanced by others doing well, given that the mean is not an indication of variability. Confrey, Makar, and Kazak (2004) found that reporting only means and percentage passing of high-stakes tests can lead to stereotyping of disaggregated subgroups. Thus, there is a need to understand the concepts of variation and distribution. When people look at data from a number of different groups all together, they can miss differences among the groups. Understanding what constitutes a significant difference among groups and how to interpret interactions are also critical skills.

Studies in using data in education found that data can be used to identify individual students' needs, as this allows the teacher to put some support in place to help the students to achieve, as stated by Wayman et al. (2007:23):

> "*Activities to explore these data commonly involved working with individual teachers to identify specific interventions for individual students and periodic meetings that focused on individual students. In some cases, principals served on a committee that met with every student in the school to review academic progress."* (Wayman et al., 2007:23)

Data-driven decision making processes require trained educators to understand concepts of reports and statistical information to support their judgement. Secada (2001) notes that data should be used to inform educators' judgements and actions, not to replace them, and that this process requires experience, time and effort. Educators must have specific uses in mind when examining data, and the decisions they make must be important, strategic and on time. It is important for educators to have the knowledge and share the knowledge with others of understanding how data should be used, the interpretations that can be made from those data, and how such interpretations can be used to guide various decisions. For school personnel, a central component in this process is asking good questions about the data, analysing the data accurately,

and then applying the results appropriately (Mason, 2001). Massell and Goertz (2002: 60) point out that to:

> *"Turn data into a meaningful exercise for instructional improvement will require a long-term agenda that reaches deeply into the training received by teachers and other school staff."*

The use of data in meaningful ways assumes at least some level of facility with and knowledge about assessment information. While teachers and administrators need not be experts in complex data analysis as these data systems should provide such support, they must have some knowledge of general data use concepts. Fullan (2000) argues that teachers must become assessment literate, and that focusing on student work through assessment is a trait of a good school.

The potential power in data system-driven tools becomes all the more important for supporting practitioners to collect, analyse, and interrogate data in more efficient ways. Kerr et al. (2006: 514) emphasise the importance of timely data available to inform instructions, as stated below:

> *"Many teachers and principals in these three districts felt that state assessment data were not ideal for analyzing student performance and driving instructional decisions. School staff reported that state assessment data are not timely or adequately aligned with daily instruction to be particularly useful, are limited in subject and content coverage and often in the grade levels tested, and have a significant time lag before results are released."* Kerr et al. (2006:514)

According to *Data Informed Leadership in Education* (Knapp et al., 2006), at least five phases of activity connect data to learning improvement: (i) Focusing and (re)framing problems for inquiry. Theories of action help leaders focus attention on problems and frame them to invite inquiry; (ii) Accessing or searching for data and evidence. Leaders either use available data or generate data using inquiry or action research. In ideal conditions, leaders have easily accessible web-based data; (iii)Making sense of data and its implications for action. With data in hand, leaders create occasions for making collective sense of the data and probing the data for possible

action implications; (iv) Taking action and communicating the action in different arenas. Informed by the sense they make of the data, leaders take action and communicate what the data say to stakeholders; (v) Data become an integral part of the leaders' actions and communications, and so a central part of the leaders' work is "making it public" in ways that are respectful and politically astute.

Armstrong and Anthes (2001) and Massell (2001) both reported that strong leadership and a supportive culture were characteristics of the schools in their studies that were most involved in using data successfully to improve practice. According to Marsh et al. (2006: 10):

> *"Data are used to make decisions related to: Setting and assessing progress toward goals; Addressing individual or group needs; evaluating the effectiveness of practices; Assessing whether client needs are being met; Reallocating resources based on outcomes; Enhancing processes to improve outcomes.*
>
> *Data are used when: Data are readily accessible; When education leaders believe the data accurately reflect student achievement; There is a motivation to use data; The data come in time to make important decisions; Data users have the training and skill to analyse data and make appropriate adjustments; There is strong system or school support to use data and create a culture of data use." (*Marsh et al., 2006:10)

Another aspect of data use in FE institutions to inform decisions is the quality and accuracy of information produced from collected data. Educational leaders, teachers, students and parents can only make accurate decisions when they have access to true, relevant, reliable and good quality information. The aspect of quality of information is clearly stated in Professor Wolf's review of vocational education (2011:8):

> *"We should tell citizens the truth. That means providing people with accurate and useful information, so that they can make decisions accordingly. Good information becomes more critical the more important the decisions. For young people, which vocational course, qualification or institution they choose really can be life- determining. 14-19 education is funded and provided for their sakes, not for the sake of the institutions who*

> *provide it. This may be a truism; but it is one which policy too often seems to ignore"* (Wolf, 2011:8).

Educational institutions need to develop an understanding among their staff members about how data can be used successfully, and about how they can make sense of and turn to information and knowledge to improve performance, increase student achievement and learning. This effort will require strong and sound leadership, time, patience and significant professional development, as Mason (2002:7) suggested:

> *Strong leadership that supports the local use of data is conducive to creating a school culture that not only accepts the use of data, but looks upon data as a source of information that can contribute to problem-solving and knowledge-building. Whether it is key staff members or the school principal who provides the leadership, it is essential for a school to gather support, commitment, resources, and direction to ensure that its data efforts are a success. Building this type of data culture or environment within a school requires that data use be open, inclusive, and transparent to all staff. This may require significant professional development and frequent meetings with staff in which data play a role*."(Mason, 2002:7)

Summary

For many decades, colleges, schools and other educational entities have collected data on school/college processes and student learning. Unfortunately these data were rarely made available for public use by educators or other stakeholders, resulting in institutions that were rich in data but information poor to create knowledge and wise action (Wayman et al., 2007). Recent accountability polices such as NCLB in the US and ECM in the UK have brought increased attention to these data, increased the amount of data collected, and tied funding to certain characteristics of these data. Educators respond to reporting requirements while struggling to

find better ways to understand these data internally for improved practice, to enhance learning and decision making (Wayman, 2007).

This study has been designed to contribute to the growing understanding of the role of MIS and data use in supporting educational leaders and teachers to improve the learning process. The literature existing in this area as gathered together in this study has evidenced the potential that professional development, technology tools, and expert trained staff can have an important impact on data use in decision making and improve learning. These kinds of support and resources are greatly needed by practitioners to use data effectively to make wise decisions (Earl and Fullan, 2003). Currently, the literature presented here has evidenced the lack of effective continuous staff development for many practitioners in educational institutions. The use of technology tools and expert personnel shows promise, but the use of these resources is still inadequate or restricted. The existing literature also presented in this investigation has raised many factors that could help practitioners and leaders in educational institutions in their effective use of data to support learning, namely:

> *"Data are readily accessible; When education leaders believe the data accurately reflect student retention and achievement; There is a motivation to use data; The data come in time to make important decisions; Data users have the training and skill to analyse data and make appropriate adjustments; There is strong system or school support to use data and create a culture of data use"* (Marsh et al. (2006:10)

The study examines in greater depth the literature and other evidence that currently exists on the role of data and MIS in supporting the education and learning processes in educational institutions, in particular, in FE colleges, and what remains to be done to enable educators to use data successfully. There is very little existing literature investigating the use of MIS for data-driven improvements in teaching and learning in FE colleges. In view of this gap in the

literature, in this doctoral research study and thesis I have applied the recommendations from the literature on MIS in schools to my own investigation about the use of MIS in colleges.

This literature review has enabled me to redevelop and refine research questions regarding the nature of the role of MIS and data use in FE colleges.

The next section introduces the theoretical framework within which the research was located. A section which provides an overview of the research methods used in the study follows. Finally, the structure of the remainder of the thesis itself is outlined.

CHAPTER THREE

Research Methodology

Introduction

This section describes the methods employed in the research. These methods are reflected on and critiqued in this section. The research aims to identify factors that enable leaders and teachers in FE to use data effectively to support learning and decision making. This study builds on the research already investigated in the areas of the role of MIS and data in educational institutions and raises suggestions for other studies to continue the study of understanding of the role of MIS within FE and how their role provides support to the overall success of the college and learning processes. This research focused on the following research question:

How can MIS support learning in inner city FE colleges?

This question is divided into the following sub-questions. These sub-questions created a clear view of how to use data effectively to support leaders in FE colleges in decision making processes:

- How do managers/ leaders use data to make decisions?
- What practices are effective in teacher use of the MIS tools available?
- How can data be used effectively and can its use improve education?
- What steps can FE colleges take to improve the use of data?
- What software and data tools were most useful to teachers/leaders?

My own professional experience, career history, my previous role as an MIS manager and current role as a head of MIS in a FE College has influenced my opinion of the study topic and the research questions mentioned above. As I have realised from my professional experience in the field of MIS in FE, there are misunderstandings and a lack of clarity and awareness among curriculum staff, administrators and services staff about the role of MIS in supporting education and learning. It is important to gain some understanding of educator's perceptions of what the role of MIS in FE could be to support education and how it can be developed to improve performance and learning. The participants in this study have a vital role in clarifying these issues from their own personal experience. Their interpretation constitutes the data and the resulting analysis develops conclusions and recommended steps with which to improve these roles that MIS can play in support of education and improved performance.

In order to identify these factors and answer my research questions I have adopted a qualitative (Bryman, 2008) or naturalist (Lincoln and Guba, 1985) research strategy. I have used Weick's (1995) theory of Interpretive Sense Making (SM) as an underpinning theory to explore teacher and managerial responses to discourses of using data to inform decisions. This study used a case study approach in order to gather the data. Qualitative approaches in data collection and analysis have gained popularity over the years. Qualitative data such as interviews, documents and observation data are gathered in a qualitative study in order to understand and explain social phenomena. Normally a qualitative study produces findings and outcomes in the form of descriptive texts and not in any means of quantification. Qualitative studies and qualitative researchers can be found in many areas and fields using different methods and techniques. Traditionally, MIS and information system research studied the technological aspects of this

field. However, there are growing interests in managerial and organisational aspects of the application of qualitative approaches in information systems.

Research can be positivist, interpretivist, or critical. Positivist research is concerned with variables and assumes that the social world can be studied in the same way as the natural sciences. Interpretive researchers emphasise the investigation of text to discover the embedded meanings to define social practice in order to understand people's attitudes and actions (Yin, 1994: May, 2001). Critical approaches emerged as alternatives to interpretive and positivist approaches (Eakin et al., 1996). Such approaches begin with a reflexive position towards obtaining knowledge. Critical approaches differ from interpretive perspectives in the view that everything is relative and nothing is absolute and agree with interpretivist approaches that social science is not value free (Guba et al., 1994). Critical approaches also agree with the interpretivist position on the fact that the social world is characterised by circumstances that require interpretation based on meaning and values. The choice of preferring a specific qualitative research method is independent of the underlying philosophical position adopted. It depends on the researcher's experience, choice, case and the field of the investigation. For example, the case study approach can be positivist (Yin, 1994) or interpretive (Walsham, 1993). This study used qualitative data collection in the form of interviews and documentary analysis. The qualitative approach allowed the study to explore and identify the processes by which MIS data can be used effectively to improve learning and data driven decision making.

Research approach

There are different approaches in conducting any research, namely; qualitative, quantitative or mixed methods. According to Kerlinger (1986), *"There's no such thing as qualitative data. Everything is either 1 or 0"*. On the other hand, Miles et al. (1994) quoted Campbell as defining research in this way: *"all research ultimately has a qualitative grounding"*

Many researchers believe that both qualitative and quantitative approaches need each other more often (Miles et al., 1994). Normally qualitative data involve words, audio, video and text whereas quantitative data involve numbers. Quantitative researchers in the positivist tradition usually require a hypothesis before conducting a study. However, a hypothesis is not required to begin the research in an inductive qualitative research process. Quantitative methods are more often based on statistical analysis of a selected sample of cases, so that predictions and outcomes can be made about the sample of the study (Wallace et al., 2003). Qualitative research uses methods such as participant observation, documentary analysis, or structured/unstructured interviews which can give the researcher a more realistic in-depth view of the areas of investigation in the study. It is unlikely that prior assumptions can be imposed on the study by the researcher in a qualitative inquiry. Qualitative research has an interpretive character, aimed at discovering the meaning that situations have for the participants who experience them and the interpretations of those meanings by the researcher. The researcher in the qualitative approach attempts to observe, describe and interpret settings as they are, maintaining neutrality (Patton, 2002). The qualitative approach is most the appropriate for this study, as there were no prior assumptions to be imposed by the researcher and there were no numerical and scientific analyses required to conduct this study. The study aimed to identify the role of MIS in FE colleges from

the perspective of the staff and what steps and kinds of support were needed to improve the role of MIS in supporting education and learning.

Denzin et al. (2000) described qualitative study in the following way:

> *"Qualitative research is a situated activity that locates the observer in the world. It consists of a set of interpretive, material practices that make the world visible" (*Denzin et al., 2000:3)

It is necessary to understand what the assumptions are that underpin the investigation in conducting or evaluating a qualitative study. The most important philosophical assumptions are those which relate to the principal epistemology which guides the study. Epistemology refers to assumptions about how to obtain knowledge. Orlikowski and Baroudi (1991) suggested three approaches, based on the underlying research epistemology, namely, positivist, interpretive and critical. These three research approaches are philosophically distinct, but in the actual practice of social study these distinctions are not always so obvious. Myers (2004) defines positivists as those who generally assume that reality is objectively knowable and can be described by quantifiable measurable entities which are independent of the researcher and his or her data collection tools and analysis. Positivist studies generally accept the possibilities of straightforward objective and factual accounts of phenomena. Normally in the positivist approach, data analysis methods and data collection techniques used in the investigation include sample surveys, controlled experiments and inferential statistics (Myers, 2004).

Interpretive research entails understanding the phenomenon subjectively. An interpretive study begins with the assumption that access to reality is only through social constructions (Myers, 2004). Normally the intention of the research in the interpretive approach is to increase

understanding of the phenomenon and to obtain knowledge within cultural and contextual situations without imposing researchers' prior understanding on the situation (Orlikowski and Baroudi, 1991). Interpretive researchers avoid externally defined categories of phenomena and do not predefine variables as the situation emerges. Usually interpretive researchers do not provide enough data for generalisations to be made. They are able to establish the existence of a phenomenon through in depth analysis as defined by the research questions. Interpretive research claims to be the most appropriate approach to IS and MIS studies in organisations and cultural contexts, as this approach provides detailed and in depth interpretations of the situation to obtain knowledge, mainly using case studies research design (Orlikowski and Boroudi, 1991).

In describing critical researchers, Myers (2004: 3) says that:

> *"Critical researchers assume that social reality is historically constituted and that it is produced and reproduced by people. Although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination" (*Myers, 2004).

The critical approach sees the social world in terms of its historical situation and reflexivity. Reflexivity refers to the capacity to locate one's study within the same or a similar and reasonably acceptable framework to be used in the course of a research practice (Eakin et al., 1996). Critical researchers critically analyse how social and cultural history form their study phenomenon. Critical studies mainly focus on conflicts and contradictions in modern society. Jurgen Habermas is regarded by many as one of the leading critical philosophers.

Merriam (2002) identifies that the researcher is interested in understanding how participants make meaning of a situation or phenomenon. Data are collected and analysed to identify the common themes as stated below:

> *"In conducting a basic qualitative study, you seek to discover and understand a phenomenon, a process, the perspectives and worldviews of the people involved, or a combination of these. Data are collected through interviews, observations, or document analysis. These data are inductively analyzed to identify the recurring patterns or common themes that cut across the data"* (Merriam (2002:49).

The main aim and focus for this study was obtaining knowledge on the role of MIS in FE and effective use of their data to support education and learning. Traditionally, knowledge has been produced from quantitative or qualitative approaches within the positivistic research method. Dissatisfaction with the approaches for producing scientific knowledge within positivistic research resulted in a growth of interpretive approaches. Interpretive researchers claim that positivistic methodological approaches and claims for objective knowledge have significant theoretical limitations for advancing an interpretive understanding of human and organizational phenomena (Lincoln and Denzin, 2003; Prasad and Prasad, 2002).

For this study, I adopted Weick's (1995) theory of interpretive sensemaking as the underpinning theory to explore and obtain knowledge on the role of MIS and the effective use of its data to support learning and decision making. The adopted approach is discussed in this chapter as the most appropriate approach for this study.

The aim of this qualitative study was to gain insight into the role of MIS and best use of data to help the leaders and teachers in FE to support the learning and decision making. The qualitative approach facilitates such studies of issues in detail and is highly appropriate method (Patton,

2002). This qualitative study used documentary analysis, semi structured and focus group interviews as data collection methods. The study also used qualitative data collection in the form of interviews and documentary analysis in the selected FE colleges.

Sensemaking:

Sensemaking (SM) is a theory and a process of how people reduce uncertainty or ambiguity and socially negotiate meaning during decision-making events. Weick (1995: 50) states that:

> *"Sensemaking refers to how meaning is constructed at both the individual and the group level. Through the accurate construction of meaning, clarity increases and confusion decreases."*

In addition, Klein (1998:169) describes sensemaking in the following way:

> *"Sensemaking as context dependent and localized along the axes of how individuals or groups of decision makers frame and represent knowledge about the context of interest."*

Weick (1995) states that "Sensemaking is what it says it is, namely, making something sensible",by 'sensible', Weick means that something in the environment is actually made sense of, is cognitively noticed by the individual and processed, often into existing schema. Weick saw SM as a process that has seven characteristics. SM is: (i) grounded in identity construction, (ii) retrospective, (iii) enactive of sensible environments, (iv) social, (v) ongoing, (vi) focused on and by extracted cues, and (vii) driven by plausibility rather than accuracy (Weick, 1995).

One of Weick's points is that SM and interpretation are distinct notions because making sense involves actively giving meaning to the world, while interpreting is passive. In the work of contemporary interpretive philosophers like Hans-Georg Gadamer (1996), Paul Ricoeur (1981), and Martin Heidegger (2006), however, interpreting and understanding are one and the same and

they involve meaning-giving or Sensemaking (SM). Knowing is understanding, and understanding is an interpretive, social process in which people attend to the world, actively engaging things and other people in making sense of their situations. Interpreting-understanding is the ground of being-in-the-world (Heidegger 'Being and Time', 2006).

Weick (2001) uses the analogy of cartography to describe the process of SM; there are indefinite numbers of plausible maps that can be constructed to help explain reality. No one map gives a true representation and the role of imagination and need are central to the self's need for fulfilment. SM is also a social activity in which the "maps" of others are compared with our own; thus the terrain keeps changing as we try to "carve out a momentary stability in this continuous flow" (Weick, 2001). Cecez-Kecmanovic and Dalmaris (2000: 3) have stated:

> *"Sensemaking involves processes of perceiving, believing, interpreting, explaining, predicting and acting both individually and collectively in a given organisation."*

People can of course make sense outside of the organisation, but Weick sees organisations as SM systems in which members continually reaffirm to one another the "truth" of reality as they see it and thus the action required. Pugh and Hickson (1996: 182) describe SM in organisations as:

> *"The development of a "generic sensemaking", within which individuals differ yet sufficiently concur, maintains a sense of organisation."*

SM is the most frequently used approach to focusing on information seeking and use in studies in the field of library and information science and has been widely used in both quantitative and qualitative research in a variety of disciplines, including environmental studies (Dervin and Frenette, 2001; Murphy, 1999). In all cases, the applications of SM have focused in some way

on what informants question, think, feel, and/or conclude in particular situations. Using this theory, it is possible to consider whether managers and teachers could make sense of their situation in using data to inform decisions. SM is also the most appropriate approach when the issue of power is considered, as Tourish and Robson (2006:711) have stated:

> *"Sensemaking perspectives are particularly appropriate when the issue of power is considered, as it must be when we address the question of critical upward communication (CUC). Power exists as a key variable on both the surface and deeper structures of organization, while communication plays a vital role in how power relations are developed. However, power itself is a frequently unacknowledged variable in organizational Science"* (Tourish.and Robson, 2006).

Interviews and data collected through interviews are regarded as a primary element of the SM approach. SM interviews allow subjects to report how their actions, attitudes, and feelings changed as their perceptions of reality changed through time-space. According to Dervin (1999):

> *"The SM interview is self consciously focused not on interpretations per se, but on interpretings, those of the researchers-interpreting interpretations of human-being-interpreting interpretations"* (Dervin, 1999:35).

Using an interpretive approach the SM researcher during interviews can deconstruct the world of the participant in the study without imposing his/her prior assumptions onto the participant. SM interview approaches enable the researcher to focus in depth on the world of the participant rather than on the world of the researcher for example, Morrison and Milliken (2000) describe how a SM organizational culture of silence can be a barrier to change and development. Masalin (2003) discusses how SM can be related to continuous learning. Gioia and Thomas (1996) explore SM

during strategic changes in education and learning. Eddy (2003) continues the emphasis on SM and education in "SM on campus: how community college presidents frame change."

Klein et al. (2006b) have developed a theory of SM as a set of processes that are initiated when an individual or organisation recognizes the lack of their current understanding of a situation. When an individual attempts to make sense of events, they begin with some perspective or framework. In their model, they express frames in various meaningful forms, including stories, maps, and organisational diagrams to use them in consequent and parallel processes. Frames change as they obtain data. SM is an active two-way process of fitting data into a frame and fitting a frame around the data. Neither data nor frame comes first; data remind frames and frames select and connect data. When there is no adequate fit, the data may be reconsidered or an existing frame may be revised. Klein et al. (2006b:91) described their concept in the Data/Frame theory:

> *"We relied on the frame concept in the Data/Frame Theory as a metaphor to bootstrap a discussion of how people create, use, and manipulate organizing structures. We do not offer any clear path to a computational theory of how "frame-ish" things are created or manipulated. Our main goal in discussing the Data/Frame Theory is to point to empirical studies of how domain practitioners make decisions in complex, real-world contexts and then to mine these results for ideas that might invigorate and inform work on these fundamental issues"* Klein et al. (2006b).

Sensemaking and Decision Making:

In order to make a right decision or solve a particular problem, all intelligent systems or any decision maker should start with a vital mass of core knowledge. One of the critical challenges of the decision maker (DM) is the ability to reflect on core knowledge, and use this core

knowledge while performing meta-reasoning with the available information on the problem situation. For example, how does the teacher or the manager determine what is not known in the performance of a particular group of students or courses? The reflection on core knowledge means that the DM has core concepts stored in inter-related information. SM is, therefore, the process of discovering this core knowledge in order to provide prior information to the DM. The SM process begins with some knowledge and awareness of the situation to find patterns of possible action that enable the DM to make comparisons and choose the appropriate solution and action among the available options.

The SM process enables the decision maker to predict the expected outcome before taking actions. Information is necessary to get the knowledge and make decisions, SM of the available information plays a great role in the decision making process. The relevant information must be analysed, processed and integrated to make sense of plans before making the best available decision and solution. The SM helps the DM to understand and select the viable actions to take (Leedom, 2004). To reach or gain organisational aim, a collection of understanding and knowledge of a case can lead to execution of appropriate of actions (Weick, 1995). SM needs individuals to seek for answers on how people view things rather than look for systems or structures.

Data are converted to information and information is converted to knowledge. Knowledge acts as an interpreting process to turn data into usable information. Data to one person may be someone else's information. Information is converted to knowledge through a SM process that enables people to take the relevant or wise action/decision. Just as information is critical to

decision making, SM of that information has important value to the decision making process. For example, in the college systems, the available information from MIS will be processed—filtered, correlated, and integrated to make sense of potential plans. The major contribution of SM in this task is the understanding of the capacity for viable solutions and the rationalization of the transformation of a non-linear problem space to its linear equivalent. The decision-making process simply integrates this information into its potential equivalent in terms of judgment and wisdom. SM requires individuals to look for explanations and answers in terms of how people see things rather than in terms of structures or systems (Polanyi, 1996). Unlike the decision-making process that compares many alternatives based on formal metrics, SM asks people to understand the knowledge of results from interactions among people and information generating systems. It also places the burden on the researchers to analyse experience "the know-how" to understand how people solve problems, use information, work with others, and so forth.

At the decision-making level, expertise is used to compare the performance of selected options. The metrics of performance, such as decision error, time, and cost, are well established in decision-making theories. At the SM level, performance metrics are yet to be identified and accepted in the research community since SM involves, for the most part, the innate tendencies of the sense makers.

Knowledge management (KM) is the latest organizational discipline that uses SM as one of its critical foundational approaches (Choo *et al.*, 2004; Choo *et al.*, 2006; Hannabuss, 2000; Lehr and Rice, 2002). In their KM framework, Choo *et al*. (2006) locate SM as the passageway for receiving and interpreting environmental signals. The shared meanings, agendas or purposes, and

identities resulting from SM can inform the structures behind rules for decision-making which are often codified as policies, routines, and procedures. These shared meanings also inform future situational learning when choices are required to guide rule activation. Many researchers have started using SM to understand organisational phenomena and as a tool to know how leaders and decision makers make sense of their surroundings. SM helps the DM with knowledge creation and making decision from knowing organisation to take appropriate actions when required (Orton, 2000; Parry, 2003).

Stories are one of the most commonly known methods of SM and stories are also frequent outcomes or artefacts of SM, and of tacit and cultural knowledge creation (Choo et al., 2004; Choo *et al.*, 2006; Gabriel, 2000; Hannabuss, 2000; Martin, 2002; Weick, 1995). The act of telling or writing the story is one act of SM.

There is a critical paradox characterizing the SM process. A shared experience is often narrated in multiple versions according to the perspectives of the tellers. Storytellers typically believe that they have still experienced a shared meaning even though individually they may "tell" different versions of the same experience or story. All organizations are made up of ongoing individual beliefs about causality, structural outcomes, decision-making processes, and redesign or renewal processes. These beliefs may or may not be explicitly reflected in an organization's mission, values and goals. However, over time, these individual beliefs are typically transformed into a "loose organizational consensus" or a "workable version of reality" that allows the organisation to carry out its business (Orton, 2000). These versions become the organisation's stories of

identity and in this sense they are more archetypal or mythic than the 'official' versions of the organisation's 'stories'. Although they can be less factually accurate than 'official' versions, they are usually no less reliable at the level of SM.

While many organizations are modelled on argumentation, their realities are based on narration. People within organizations trying to make sense, or meaning, find themselves applying narrative models to structures that are based on more theoretical paradigms. Czarniawska (2003) contrasts organizational learning through more traditional formal structures described as "rationality myth(s)" with learning through narrative and storytelling characterized as "endless accounts of organizing as muddling through."

Choo (1998) describes the process of making sense and creating knowledge to make decisions as stated below:

> *"An organization processes information to make sense of its environment, to create new knowledge, and to make decisions."* (Choo, 1998:79).

SM constructs the shared meanings that define the organization's purpose and frame the perception of problems or opportunities that the organization needs to work on. Working with problems and opportunities become occasions for creating knowledge and making decisions. The results of knowledge creation are innovations or extensions of organizational capabilities. Whereas new knowledge represents a potential for action, decision making transforms this potential into a commitment to act. Decision making is structured by rules and routines, and guided by preferences that are based on interpretations of organizational purpose and priorities. Where new capabilities or innovations become available, they introduce new alternatives as well

as new uncertainties. Decision making then selects courses of action that are expected to perform well given the understanding of goals and the conditions of uncertainty.

Making sense of the world is a common activity. It happens when you face a complex or a new problem. At the college, the senior manager asks, can you make presentation on how the student attendances affect the achievement? Or, what is the impact of new funding methodology on the delivery of courses? Or I could say to myself, I need to get up-to-date information on the LSC priorities for London. These kinds of tasks begin a process of collecting and organising data. The information can be organised into a fairly simple structure, one that helps to solve the query. Sometimes the process is iterative and complex: information retrieval, organisation and task re-definition in sometimes-subtle ways. These behaviours lead to the creation of sense that is the process of SM. SM can be a professional task in itself as it is for the designer, researcher, curriculum leader or MIS manager. It arises when we need change our place in the world or when the world changes around us. It arises when new problems, opportunities or tasks present themselves, or when old ones resurface. It involves finding the important structure in an unstructured situation. It is an activity with cognitive and social dimensions and has informational and communicational aspects.

SM extends far beyond an individual making sense of their information spaces. Groups need to work together to understand the larger issues of combining information from different sources and bringing together a synthetic understanding that melds different points of view. For example the curriculum leaders and MIS team could work together to understand the issues surrounding the use of the data to support students.

I use SM in this study because of the mandates it places on the researcher to focus on specific moments of human SM and sense unmaking and to pay attention to the world of the participant as opposed to the world of the researcher. I used a case study approach for interviewing and data collection, data analysis and the formulation of the measures of the assessments of the philosophic roots of uncertainty, epistemological and methodological uncertainty. To answer the research questions, this study required in depth investigation, understanding the views of practitioners in FE colleges and explanation of the role of data, their use and MIS in supporting education and learning. Therefore the case study approach was the most appropriate method to use in this investigation. Denscombe, (2007: 38) described the circumstances in which a case study approach is appropriate to a research study:

> *"The case study approach works best when the researcher wants to investigate an issue in depth and provide an explanation that can cope with the complexity and subtlety of real life situations. In particular, it lends itself to the processes and relationships within a setting. The use of more than one research method sits comfortably with the case study approach although, in practice, the use of case study approach has been aligned with qualitative research far more than it has been with quantitative research"* (Denscombe, 2007).

This study builds upon a preliminary investigation which provided some foundation data in relation to the effective use of data to support the learning and decision making process (Mamand 2006, Mamand 2007).

Case studies are increasingly used as a research strategy (Yin, 1994), and they have long been a significant part of management research (Hitt, Harrison, Ireland, and Best, 1998). Case studies have a capacity to facilitate understanding of complex phenomena especially when the researcher's focus is on 'how' questions and on 'why' questions. Yin (1994) argues that the

distinctive need for case studies arises out of a quest to understand complex social phenomena such as organizational and managerial processes. In fact, one major advantage of case study research is argued to be its relevance to management practice. Another principle advantage is that in-depth longitudinal examination of a case is likely to provide an opportunity to identify important multivariable patterns (Hitt et al., 1998).

Researchers are faced with a real challenge in case study research as they will face issues of generalisation. It is not possible to talk about generalisation of case studies in a statistical sense and still treat the number of cases examined as sample units. According to Yin (1994), it is possible to make analytic generalisations derived from the case study material where case studies are generalised to theoretical propositions, not to populations. The goal of the researcher conducting case studies is therefore to extend and to generalise theories and not to enumerate frequencies. The number of cases examined becomes a choice, similar to selecting the confidence level in a statistical study. Normally case studies are a labour intensive process and it may take months or years to collect and complete the data analysis to investigate the selected cases. Moreover, this demanding task tends to result in voluminous qualitative data, prompting a challenge as to how the researcher can draw valid meaning from them (Boyatzis, 1998). There is an ever-present danger of data overload for investigators working from case data, the prospect of which in turn raises profound challenges not only while analysing the results of case study research but also while trying to generate theory from case studies, because a hallmark of good theory is parsimony (Eisenhardt, 1989).

It has been stressed that a research strategy involving multiple cases, coupled with a systematic case analysis method, has advantages over research involving one or a very small number of cases (Hitt et al., 1998). It has also been argued that a single case study forfeits the opportunity of cross case pattern analysis that is advantageous for generating theory as well as theoretical generalization (Larsson, 1993) and that a so-called 'grand theory' perhaps requires multiple case studies (Eisenhardt, 1989). Yin (1994) is also of the opinion that multiple case designs, the frequency of which have increased in recent years, have distinct advantages, making the evidence from multiple cases often more compelling. Researchers have argued that the lack of explicit, systematic methods makes the analysis phase one of the least developed and most difficult aspects of doing case studies (Yin, 1994).

The case study approach is one of the most attractive research strategies for understanding life both in and outside organisations. The common nature of the case study is configurational but not all studies that examine organisational configurations can properly be classified as case studies. 'Configurational', meaning that different parts of the whole are understood in relation to one another and in terms of the total picture that they form. Following this rationale, two cases may be similar in most ways, but because they differ on one or more key aspects, their difference may be one of kind, not simply one of degree. Accordingly, a case represents a combination of conditions that collectively give a certain outcome (Fiss, 2008). Fiss (2008) points out the use of case study in educational institutions and supported statements from organisations. Fiss (2008:424) states:

> *"Case studies occupy a central role for in the curricula of most business schools, where cases are used extensively as a pedagogical tool. Case studies are attractive in the classroom because they simulate real world experiences, allowing the students to take on the roles of specific decision makers in actual organizations "*

Fiss (2008) also explained the advantages and disadvantages of the configurational nature of case studies and noticed its disadvantages in relation to the quantitative method. This study uses a qualitative approach, along the lines advocated by Fiss, as stated below:

> *"This configurational nature of the case study presents both an advantage and a challenge vis-à-vis other research strategies, as it raises particular methodological demands. Perhaps most importantly, many of the quantitative methods commonly used to formally examine organizational configurations – such as cluster analysis, interaction effects, and hierarchical linear modeling – are not well suited to grasping the fundamentally configurational nature of the case-study approach."* (Fiss, 2008:425)

Yin (1994) identified five important components of a research design in case studies:

1. A study's questions. The form of the question in terms of "who," "what,", "where," "how," and "why". A study's question provides an important clue regarding the most suitable research approach to be taken. The case study approach is most likely to be more appropriate for "how" and "why" questions

2. A study's propositions. Each proposition directs attention to something that should be investigated within the scope of research. For instance, the current study's research question is: "How MIS supports learning in FE colleges?"

3. Its unit or units of analysis. The unit of analysis is the actual source of information: for example, individual, organisational, and documentary. The main units are always at the same level as the research questions.

This component is related to the fundamental problem of defining what the "case" is about. A "case" can, for example, be an individual or organisation. For instance, within the current study I am considering a "case of MIS in FE colleges". In each situation in the embedded sub-units of

analysis, an individual person is the case being studied, and the individual is the primary unit of analysis.

4. The logic linking the data to the propositions
5. The criteria for interpreting the findings.

Case studies can be single or multiple case study designs. If a study contains more than a single case then a multiple-case study is required. Yin (1994) differentiates between holistic designs and embedded designs as;

1. Holistic designs include a single unit of analysis; if aim is to study the global nature of the phenomenon when no logical sub-units can be determined.
2. Embedded designs include multiple units of analysis; a study may include main and smaller units on different levels.

The case study research design is regarded as the most common or appropriate approach to study in depth everyday experience and facilitate an understanding of complex real-life situations, for its applicability to real-life, contemporary, human situations (Yin, 1994). A well planned and organised set of data in case studies will facilitate the task of analysing the evidence from the data in order to address the research question. A case study database should be planned and set up before data collection and maintained throughout the cycle of the study (Yin (1994). The case study database includes all the data gathered for the study, such as video tapes, audio tapes, documents, field notes, observation records and interviews data. The case study data should be

organised in a way that can be easily accessible to the researcher(s) at any point during or after the study.

Yin (1993) explained the use of case study approach in MIS studies, providing an example of the importance of case study designs in MIS and in educational research:

> *"Case studies of MISs, therefore, provide yet another example of the importance of case study designs. Remember that a good research design should deal specifically with the preceding questions. The research design is a technical plan that attempts to link the beginning and ending of a study."*(Yin, 1993:45)

One of the benefits or the advantage of using case studies in educational research is that case study designs are dynamic, as the original designs can be changed or altered at various stages of the study. This will provide a researcher a great of flexibility to alter the design when it is required, as noted by Yin (1993):

> *"Case study designs are dynamic, in that the original design may have to undergo any number of redesigns. You may even have to change designs after data collection has started. For instance, during data collection, you may realize that the original definitions and objectives are not as relevant as newly discovered items. In such situations, redesign should be seriously considered."* (Yin, 1993:41)

For this study, a single case study with embedded units of analysis was designed. The single case under investigation was the phenomenon embodied in the research question: *'How do Management Information Systems (MIS) support learning in Further Education Colleges (FE)?'*, while the embedded units of analysis were the selected detailed 'sub-cases' of three interviewees, who were chosen to examine the way in which MIS processes actually worked in practice. Interview data were collected from various staff in different roles in the college structures in the targeted FE colleges containing observations of the everyday leadership work in the colleges. The data collection for this study also includes the documentary analysis which shows the role

and effective use of data day- to- day by educators in the targeted colleges. A series of semi-structured interviews and focus group interviews were carried out in order to give expression to the voices of those managers/ educators and their experiences in using data to meet their needs to support the learning process. Normally interviews provide contexts where participants can ask for clarification and explain perspectives in their own words, while the interviewer can use probing to obtain interviewee responses (Yin 2009). Most qualitative studies have relatively small sample sizes when the outcomes of the study are to replicate or generalise (Bryman, 2008). The wider sample in this study includes senior managers, heads of services, head of schools and curriculum managers from different directorates/ curriculum areas. The embedded units of analysis, or sub-cases, comprised the in-depth sample selected from this wider group, to investigate in more detail specific situations of how MIS operated in particular instances. Morrison (1993) highlighted the importance of the sampling in research:

> *"The quality of a piece of research not only stands or falls by the appropriateness of methodology and instrumentation but also by the suitability of the sampling strategy that has been adopted."* (Morrison, 1993:100)

Summary

This section described the methodology employed in the research. These methods are reflected on and critiqued in this chapter. The research aimed to identify factors that enable leaders in FE to use data successfully to support learning and decision making. The chapter provides a reflective discussion which considers the most appropriate research methods to investigate these particular factors within the local situation of FE colleges.

To conclude this chapter after the discussion, analysis and critique of various different approaches within research methodology, it can be observed that the qualitative approach is the most suitable method for this study. Following thorough discussion in this chapter about the most appropriate research methodology, I have adopted Weick's (1995) theory of qualitative interpretive SM. Using SM as underpinning theory in this study enables the researcher to explore leaders and teachers' responses to the issue and role of MIS and data use to aid their decisions. Qualitative research in this investigation involves the use of qualitative data, such as interviews, documents, and participant observation data, to analyse, understand in depth and explain social phenomena.

The case study approach fits best when the investigation requires in depth study, explanation and data analysis (Denscombe, 2007). The case study is appropriate for interviewing, data collection and data analysis for this investigation to answer the research questions and understand in depth the views of practitioners in FE on the role of MIS and data use in support learning and improve practice. The case study approach has a great of flexibility for the researcher to modify the research design at varies stages when it is necessary (Yin, 1993). It is relatively easier to compare and contrast data collected in case study paradigm. This helps the researcher to understand and analyse the views of the participants to the investigation and increases the reliability and validity of the outcomes of the study. It is important for the researcher to select the most appropriate case(s) to aid him or her to achieve the objectives of the investigation. In order to achieve the aims, I adopted mixed methods of qualitative data collection, i.e. documentary

analysis, interviewing and focus group data. Interview data collections from practitioners in the selected FE colleges include semi structured and focus group discussions.

The next chapter will describe the data collection approach applied in this study, including the research sample and population, as well as the study's limitations and ethical considerations.

CHAPTER FOUR

Data Collection

Introduction

This section describes the data collection employed in the research. The sample and population, as well as the study limitations and ethical considerations are described in this chapter. Data collection is an essential component to conducting any research. Data collection can be a very complicated task and a hard part of the study. The researcher should be able to access the necessary data that need to be collected for the research. Data can be gathered from a number of sources including written documents, records, workplaces, the Internet, questionnaires, observations or interviews. The research aimed to identify factors that enable leaders in FE to use data effectively in support of learning and decision making, so, to address this aim, it was necessary to collect data from interview participants, and to carry out a documentary analysis from the selected FE colleges.

Two methods of data collection in qualitative research, namely documentary analysis and interviews are utilised in this study. The retrospective nature of the analysis precluded the use of documents as 'live' original data newly collected for the study. The initial sources of data for this study were the appropriate pre-existing documents. Documents played great roles in the data collection. Pre existing documents very often aid the researcher with the planning and preparation of other data collection required for the investigation such as interviews. Document analysis can also contribute to a process of triangulation in the analysis and the outcomes of the study. In addition to the points made, the documents are important in their own right in any research analysis.

The second method of data collection employed in this study is interview data. The interview data collected for this study are from one to one semi structured interviews and focus group interviews. In total 60 members of staff in the targeted colleges were interviewed, of whom 20 staff were interviewed in focus groups in seven groups. The maximum number of participants in each group in this study was five participants. The rest of the participants, comprising forty staff, I interviewed using a one to one semi-structured interview format. For the study, I collected interview data from eight senior and 22 middle managers, as well as 30 teachers in the targeted FE colleges, including observations of the everyday leadership work in the colleges. From these interviewees, I selected the sub-units for individual in-depth analysis, to inform the wider single case design.

Ethical considerations

In order to conduct the study in the targeted FE colleges, ethical approval was required through acceptance/ approval of the study proposal. Ethical approval for the study was granted by the University of Greenwich Research Ethics Committee prior to the commencement of the research. The research agreements with participant groups were based on the research information sheet and consent form (see APPENDEX C). After receiving University of Greenwich Research Ethics Committee approval, participants were secured; informed consent was obtained from participants prior to any interviews. This ensured that participants understood the nature of the study and voluntarily choose to participate. All participants were informed of their right to withdraw participation at any time. Any concerns the participants had been answered clearly.

The research design was carefully planned to meet rigorous ethical requirements, the most immediate of which were ensuring that genuine informed consent was obtained from all participants to the investigation and guaranteeing confidentiality to the individual informants involved in the study. These are of course quite usual considerations in any study involving human subjects as people are very aware of the need to protect sensitive information, and to preserve their relationships with colleagues.

I let the participants know what would happen with the data; how it would be recorded and analysed; how long an interview would last; reassurances regarding confidentiality and anonymity. All data collected such as digital interviews, interview transcriptions, interview notes, or documents were kept confidential. All interview data were recorded in digital audio files with each file coded to protect confidentiality and anonymity. All interview files, interview transcriptions, interview notes and interview notes are saved in three secure digital folders in three different network locations. The thesis also protects confidentiality, as the names are coded and the sources of the codes are securely stored to protect confidentiality and anonymity. Digital evidence is kept on secured media storage and networks and all paper evidence is being stored together and protected in a secured file cabinet. At all times of study, I adhered to the policies set by the University of Greenwich Research Ethics Committee.

In constructing the research proposal it was necessary to consider several ethical principles relating to research involving participants. It is useful to establish connections and build relationships with the participants in the investigation. Trust is essential to promote engagement of participants regarding the issue of who owns the data (Simons, 2009). All participants were

fully informed about the nature and the purpose of the study and of their roles as participants. I gave the consent form and participant information sheet to all participants before conducting interviews. I obtained permission from participants and they were informed that they could withdraw from the study at any time should they wish to do so. All aspects of the study, including the results were strictly confidential and only the researcher will had access to information on participants. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report. All participants will be informed of the findings of the study.

I considered the question of conflict of interest in relation to my professional role and the potential of a clash between this and my work as a researcher. As a head of MIS within a college of Further Education I am very aware of the issues discussed within the study. Awareness of such issues provides some preserve against such distortion but little more. There will be inherent biases; where possible I will draw attention to the potential for these to compromise the findings. As a researcher I was primarily interested in the views, experiences and perceptions of participants and regarded this research as an opportunity for me to gain a better understanding of the role of MIS in the learning processes from those actually engaged in the study.

I assured all participants of my guarantees of confidentiality and about the fact that my interview questions were for research purposes, not for dissemination to their services or curriculum team within the schools and the colleges. I built up trust and a relationship with the participants during and prior to interview sessions. I had received positive comments from my workplace that as I

had always been “helpful” with them as I provided them with the necessary data and report to help them with their work.

Documents/ Reports Data

Documents played three important roles in the collection of data. First, they were an important, identified source of data in their own right, to ensure the necessary ‘thick description’ as suggested by Punch (2005). Second, careful analysis of the appropriate documents was necessary before conducting interviews as this helped to elicit richer data from the interview respondents. Third, the documents contributed to a process of triangulation in the analysis of the data.

For the purpose of data collection, the documents were classified in terms of their source and purpose, in the context of this study. Ian Hodder (1993; 1994; 1995; 2000) argued that material culture can tell narratives:

> "Individual material culture sequences can be discussed in terms of changing and competing narratives and rhetorics. Material culture actions thus have meaning by being placed sequentially in terms of what went before and what comes after"(Hodder, 1993: 280).

Documentary analysis tends to be used less than other data collection methods in case study research. However, documents can be used in case study to enrich the context and contribute to an analysis of issues. Simons (2009: 63) noted the importance of using documents in case study research:

> *“Written documents can be searched for clues to understanding the culture of organisations, the values underlying policies and the beliefs and attitudes of the writer. Visual documents constitute another kind of documentation and there may be photographs and artefacts of various kinds which hold clues to understanding.”* (Simons, 2009)

The first group of sources included sets of policy and procedure texts in addition to other important reports such as the Foster Report (2005), the Leitch Report (2006), the Self Assessment (SAR) report and the Ofsted Reports. Other groups of documents included articles, letters and contributions to relevant publications, teachers who were interview respondents, and personal observations and reflections, such as from diaries, emails or personal letters. The documentary analysis also includes the internal reports generated by MIS software or provided by MIS staff on schedule, i.e. monthly, weekly, every term and so on. These reports are produced to different staff at different level within colleges' structure to inform decisions.

Interview Data

The second method of data collection employed in this study was interviews. Interviews are ways for participants to get involved and talk about their views on the subject. In addition, the interviewees are able to discuss their perception and interpretation in regards to a given topic and situation. The interview data collected for this study were from one to one semi structured interviews and focus group interviews. It was important to use the focus group in addition to the individual interview to identify the issues which needed more discussion and to listen to different views on the effective use of data in supporting learning and decision making. Focus group interviews allow researchers to explore group norms and dynamics around issues and areas of the investigation (May, 2001). Focus groups are also useful to provide a deeper insight into the issues raised in the study. Focus group interviews offer opportunities for direct contact with subjects as stated by Vaughn et al. (1996):

> *"Focus group interviews offer researchers in education and psychology the opportunity to garner qualitative data (gathered in small, interactive groups) regarding the perceptions and opinions of purposively selected individuals. If conducted properly, the researcher can elicit substantive information about participants' thoughts and feelings on*

> *the topic of interest in relatively little time. Focus group interviews have the potential to bring the investigator closer to the research topic through a direct intensive encounter with key individuals."* (Vaughn et al., 1996:16)

In total 60 members of staff in the targeted colleges were interviewed, of whom 20 staff were interviewed in seven focus groups as indicated in table 4.1. The number of participants in each focus group varied between two and six. As in individual interviews, and with the agreement of the participants in the focus groups, the focus group discussions were recorded using a digital recorder and later transcribed in full. In the focus groups, I put together participants who had similar roles within their organisations and those who had diverse views on the role of the data in supporting learning. Examples of the participants in the focus groups were people in the same school/directorate, curriculum managers, and a group of head of services. The rest of the participants, all forty of them, were interviewed using a one to one semi structured interview format. It is not always easy to identify the most appropriate participants for a focus group and it is not easy to prepare and conduct focus group interviews. I had to find the right group and right venue to conduct focus group discussion. I undertook all the necessary steps to make them calm and comfortable during the interviews. I spent a bit of time with participants prior to the interviews and spoke to them about the research and made sure I included everyone in the discussion. I managed to conduct interviews in spacious, clean and quiet rooms with a 'No disruption' note on the doors. I made sure that research information sheets and consent forms were read and signed before the interviews. During focus group discussions, I encouraged everyone to join the conversation and avoided a situation where one person might undermine the others by dominating the conversation. I also minimised the possible influence of one or two participants on the remaining members of the groups.

Staff group	Focus group	Interview	Total
Principal		1	1
Vice principal		3	3
Senior manager	2	8	10
Head of school	2	6	8
Curriculum manager	4	7	11
Senior lecturer/lecturer	9	9	18
Support service	3	6	9
Total	20	40	60

Table 4.1 List of participants

The use of semi-structured interviews was the second method of data collection. The strengths of semi-structured interviews are that the researcher can prompt and probe deeper into the given situation. With this type of interview, interviewers are able to ask more detailed questions about respondents' situations and do not have to adhere only to the interview questions. In addition, the researcher can explain or rephrase the questions if respondents are unclear about the questions.

Some structure to the interviews was required, as there was the need to ascertain different respondents' opinions and interpretations of particular decisions and events. It was the intention in the interviews to obtain a response from particular individuals about particular phenomena, incidents or views that were both in common with and different from theirs.

Once I selected the sample, I contacted the interviewees and explained to them the purpose of this research. After agreeing on the date and the time of the interview, I carried out the interviews using semi-structured questions whilst using prompts and probes techniques when required. Cohen and Manion (2000:278) stated that:

> *"Prompts enable the interviewer to clarify the topics or questions, whilst the probes enable the interviewer to ask the respondents to extend, elaborate, add to, provide detail for, clarify or qualify their response."*

I carried out a series of one to one semi-structured and focus group interviews in order to give expression to the voices of those managers and their experiences in using data to meet their needs and decision making. Oppenheim (1992:112) suggests:

> *"Interviews have a higher response than questionnaires because the respondents become more involved and hence motivated. They enable more to be said about the research than is usually mentioned in a covering letter to a questionnaire, and they are better than questionnaires for handling more difficult and open ended questions."*

Another advantage of using interviews is stated by Cohen and Manion (2000:272):

> *"One advantage of using interviews, for example, is that it allows for greater depth than is the case with other methods of data collection."*

This gave the respondents an opportunity to tell me how they use and access the data. I carefully selected the sample to be representative of the targeted colleges. The sample includes college senior managers, heads of services, heads of schools and curriculum managers from different directorates. Morrison (1993: 100) highlighted the importance of the sampling in research as stated here:

> *"The quality of a piece of research not only stands or falls by the appropriateness of methodology and instrumentation but also by the suitability of the sampling strategy that has been adopted."*

It is necessary for the interviewer to prepare before the actual interview. The interview preparation starts before conducting the actual interview. Once the interview is conducted, the researcher needs to make sure that the participants have all the necessary information about the other participants in the interview/study. Information on the study, such as the purpose of the

study, why he/she has been chosen to participate, procedures for accepting or withdrawing from the study and the duration of the interview are necessary comments to be made to participants prior to beginning the interview proper.

To understand the ways in which data are thought about and used across multiple levels of the targeted colleges and to further illuminate the strategies and practices that characterise data-driven decision-making, I focused on the main research question in collecting the interview data. The research aimed to identify factors that enable leaders in FE to use data effectively to support the learning and decision making. The research question is:

How can MIS support learning in inner city FE colleges (FE)?

This question is divided into the following sub-questions. These sub-questions created a clear view on how to use data effectively to support leaders in FE colleges in decision making processes: During the interviews, I focused on these questions as interview questions and used the probing technique to subdivide the questions:

- How do managers/ leaders use data to make decisions?
- What practices are effective in teacher use of the MIS tools available?
- How can data be used effectively and can its use improve education?
- What steps can FE colleges take to improve the use of data?
- What software and data tools were most useful to teachers/leaders?

I used a digital dictating machine to record the interview responses, allowing me to concentrate on the interview rather than on note taking. For staff concerned about the use of recorded

material, I assured them that the recorded material would only be used in writing up the case study and would only be for this purpose. The length of each interview was between 45 minutes-1 hour and normally involved a brief introduction to the research. At the completion of data collection, I transcribed recordings of the sessions and I examined transcripts of the sessions for common and contrasting themes regarding best practices in using data and MIS systems to enable leaders in FE to use the data effectively to support learning and decision making.

I used voice recognition software in the transcribing process. The software has to be trained to recognise one's voice before it will transcribe the audio file. As the audio files are from different participants with different voices, it was impossible for the software to recognise the voices and transcribe the files. To overcome this problem, I re-recorded all these participants' files with my voice to be recognised by the software for transcribing. Re-recording the interviews helped me in this study in many ways - namely, the speed up in the transcription and identification of the emerging themes in this study. It helped me save time and effort by transcribing the audio files more quickly to a rich text format file. In order to re-record the interview files, I needed to listen to the interview files many times. This helped to identify the themes and grouping while listening to the interviews. While listening to the interviews, I made notes which helped me in the data analysis stage. May (2001: 139) noted the importance of writing up notes and listening to the interview data in assisting the researcher in the data analysis stage:

> *"Writing up notes or transcribing tapes and simply listening to the conversations assists the important analytic stage of becoming familiar with the data. This is further assisted if the technique of 'developmental interviewing' has been employed"* (May, 2001: 139)

The analysis of qualitative data began early in the research and was an ongoing process. Data for the purpose of this research were collected over two years, and data reduction and analysis was

almost simultaneous. The model of data analysis was based on that of Huberman and Miles (1994) which has three main components. These are: data reduction, data displays and drawing conclusions.

Single Case Study

As was stated before, one of the main purposes of this study was to attempt to understand and identify the factors that enabled the educators in FE colleges to use MIS data to support learning. A single case study with embedded units of analysis was designed for this research to answer the research question: *'How do Management Information Systems (MIS) support learning in Further Education Colleges (FE)?*'A single 'case' investigating the way that MIS supported learning was identified, with the boundary of this investigation being 'within FE colleges'. Myers (1994) identified two main research approaches to the 'success' of implementation of information systems (IS), namely, the factor approach and the process approach. The factor approach attempts to identify those factors which have the most influence in the success of implementing IS systems. These factors are available and the researcher was aware of them and addressed these during the implementation (Larsen and Myers, 1999).

Embedded Sub-Units of Analysis (Sub-Cases)

As was stated before, Myers (1994) identified two main research design approaches in dealing with case studies. The factor approach will give a 'thin' description to the investigation. The embedded sub-units are the sub-cases that provide 'thick' descriptions. This brings in the 'people' dimension that I have discussed in terms of sense making. It gives a detailed view from the ground from the actual 'lived' world of the interviewees, in the context of the detailed description

the research provides about them and their situations, based on all of my knowledge as a researcher and MIS manager. At the process level, I have identified the detailed sense-making that interviewees went through to come to terms with their complicated, messy, human situations, and the way that I recorded, analysed and experienced that. The process of MIS actually works in three instances to support learning in FE colleges. These three instances are .cases or sub unit analysis focused in this investigation. The process research approach focuses on the development of a study/ studies on issues such as the relationship between researchers and users and the impact of a system on the organisation (Larsen and Myers, 1999).

EMBEDDED SUB-UNIT: CASE STUDY 1

Interviewee 1: A middle-aged man employed as a senior curriculum manager. He has experience working in different colleges using different MIS systems. He said that that he found the MIS system in the current college difficult to use and he struggled to find information on the system at the right time when he needed. He believes that MIS systems can support educators to improve education and learning but he is frustrated by the limited way in which he can access the data and the time it is necessary to spend to access the relevant information to inform decisions at the right time. He made sense of his situation through humour and also by hoping that the situation would improve. He discussed the need for greater accessibility and ease of use in the MIS system. Interviewee 1 said:

Theme 1: Problem with access, data integration and availability

> "*Nothing in this college ... to be out to extract the right data at the right time ... it's got a long way to go although we are not very good at it and that's a problem ... is too difficult to find the information you need because you need to go to lots of different sources and perhaps it's slow and coming towards non-performing ... looking for its not as good as many other colleges*

In my previous college, we had got the data accessible to us in one place. You can have it located one place at entry or one place in a system which is easy to find and easy to get to and everybody can get access not just a ... if you know where to get to it can be very simple and easy to get to because the key performance indicators are the ones you need to be looking at, not every piece of data from the college is ... no.

It is essential to get easy access to important data you want. The key performance indicators are ... have got to be available all the time in your fingertips like attendance punctuality your numbers of learners in the programme.... looked at the courses are targeting areas the information about tracking of the learners' progress ... all of these things need to be very close at hand so you can be up to ... all of these need to be close at hand as he can have the overview from above very easily and nothing was tightened down on another ... we are moving in a direction already but at the moment my admin has to get a weekly report from MIS members."

EMBEDDED SUB-UNIT: CASE STUDY 2

Interviewee 2: A middle-aged man employed as a senior lecturer in one of the targeted colleges. He worked before in college support services and has had experience working in curriculum and college administration. He uses the MIS data regularly and he is one of the strong believers that everyone must use the data and take responsibility for ownership of the data. He made many suggestions to encourage staff to use data and make them aware where, when and how to access the relevant data to meet their needs to make decisions at the right time. Interviewee 2 said that he found the MIS system data can be used to improve education and learning if staff are knowledgeable and aware of how to interpret data correctly. Interviewee 2 said:

Theme 2: Staff awareness, understanding and use of data

"*Any improvement in education derives from the interpretation of data one way or another. I'll give you an example in that you can only make provisions to improve delivery of certain courses, if you look at the achievement rates, say if you ran a course, say I ran A-level French and the achievement rate is constantly at a low performance then there is something that is not quite right, either that the teaching or the delivery is not good enough, or the assessment of the students is not accurate or perhaps the curriculum, the syllabus is not addressing –IT'S NOT well designed.*

At the end of the day, if you look at pass rates, attendance and so on, the interpretation of the data helps you to make decisions so every time you interpret data one way or another, it's helping education in general. Perhaps you would redesign the course, readdress the quality of teaching, perhaps you - as I said, well, there are different interpretations so we have to look at what is causing the problems and try interpreting the data in which you will inform decisions. If students are not attending a course on a regular basis then what is wrong? Then when you look at your data and your attendance figures, particular courses for attendances is below benchmark, then you have to tell why that is the case. So by interpreting the data you then address the problem. Perhaps you think first of all perhaps the quality of teaching is not that good and that it is an issue.

EMBEDDED SUB-UNIT: CASE STUDY 3

Interviewee 3: A young woman employed as middle manager in the targeted colleges. She is in charge of planning and designing and running the curriculum and managing staff at various levels in her area. She uses the data quite often and she makes sense of the data to plan and organise her courses. She thinks it's the tutors' and curriculum staff responsibility to take ownership of the data and make the data right. She thinks MIS services will alter their data and make the data accessible and in format that can be understandable by staff at various levels. She thinks everyone should attempt and make efforts to make the data right and the data to be used, make sense of it for decision making. She said:

Theme 3: Ownership of data

"What I did this year was get the best to grip by using Pro achieve, because I could use it but I was not using it very well. So what I did was get the Pro achieve and downloaded loads and loads of data about the courses I want… and I brought the data down ……. my school to see how many men are in the school or what's their achievement like and what's their achievement like by age and if there is a particular ethnicity or ethnic group that achieve better than another one. Pulling that data apart was great. The data's all there and it's just a question of working out what you want to know. What I've found useful is, recently I've been planning the courses for the next year. When I've been planning the course file if I said that ... can you find out how many students are on these matching courses because we timetable them really badly

Theme 4: Data in an accessible format to inform decision making

> *I think that over the three years the data has become more and more accessible and I mean in terms of getting hold of it but I also mean in terms of someone getting it and saying huh, I get this, that one bit except for the SMG. It's in a different format and it's understandable in a way because a lot of what you've done in your area is… so if I came along and said would it be a good idea if you could get your course data just for one course, you know for the last three years… Subject area, no one's asked for that yet so it's just coming out in our form where it needs to look different. Having the overview is nice it really doesn't affect decision-making in a way that… and Pro achieve. "*

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Limitations of the study

During the data collection, I noted some limitations which may have had an impact on the analysis of the data. First, I selected three FE colleges with different MIS systems and different experiences. I also found that I had limits in terms of the selection of participants, particularly in those colleges with which I am less familiar. Second, the participants had different levels and knowledge in terms of using the technology and in the use of data to support their needs and decision making. Despite these limitations, I hope the study still can provide some general knowledge to enable educators to use data effectively in support of learning and decision making. Using questionnaire techniques in addition to the other methods of data collection employed in this research may have enriched the collection of data and provided more solid findings.

Summary

Four themes emerged from the single case studies, namely:

1. Problem with access, data integration and availability
2. Staff awareness, understanding and use of data
3. Ownership of data

4. Data in an accessible format to inform decision making.

To conclude this chapter, this section described the data collection method employed in the research. The sample and population as well as the ethical considerations are described in this section. Two methods of data collection in qualitative research, namely interviews and documentary analysis, were utilised in this study. The case study, with its embedded sub-units, was drawn up from the documentary analysis and interview data.

For documentary analysis various important documents and reports were available and used for this study. Government agencies and funding bodies' reports with sets of policy and procedure texts played important role in the data analysis prior and during the interviews. In addition to the external and official reports there were many important internal reports generated from MIS software or provided by MIS offices on schedule, i.e. monthly, weekly, every term, and so on. I carried out a series of individual semi-structured and focus group interviews in order to hear the voices of leaders and teachers and their experiences in using data and their understandings of the role of MIS in meeting their demands and decision making.

The data from leaders and teachers from focus group and individual semi structured interviews form the second and major source of data used and analyses in this research. In comparing this study with other similar studies, the number of participants were very good, as a total 60 members of staff in the targeted colleges were interviewed, of whom 20 were interviewed in seven focus groups.

I used a digital dictating machine to record the interview responses, which allowed me to concentrate on the interview rather than on note taking. However, staff were concerned about the use of recorded material and so I assured them that the recorded material was only used in writing up the case study and would only be for this purpose. The length of each interview was between 45 minutes-1 hour and normally involved a brief introduction to the research. The next section deals with the data analysis and discussion of the data collected from documents, individual and focus group interviews.

CHAPTER FIVE

Data Analysis and Discussion

Introduction

The data within this study comprises of single cases, document analysis and individual interviews/focus groups. Four themes emerged from the single case studies discussed in chapter four namely: Problem with access, data integration and availability, staff awareness, understanding and use of data, ownership of data and data in an accessible format to inform decision making. This section deals with the data analysis and discussion of the data, two main data collection methods were used, namely, documentary analysis and interview data/focus group, following which the single case study with its embedded units of analysis was drawn up. The documents and report collected for this study helped me to define and structure the interview questions which expanded my knowledge on how the educators may and can use the data to improve education and decision making. The first group of sources included sets of policy and procedure texts. Also included were official reports such as the Foster Report (2005), the Leitch Report (2006), the OFSTED Reports and the Self Assessment SAR. The SAR is a rigorous evidence-based self-critical process. The supporting evidence for both Services and Schools in FE colleges is increasingly in the form of "the impact that is observable in terms of the "improved performance" profile including key indicators: recruitment, funding, retention, achievement, success rates, learning and teaching, attendance and punctuality statistics and staff satisfaction- all compared to national benchmarks. Student and employer views are systematically sought and fed into the self-assessment process. Other groups of documents in the data collection included articles, letters and contributions to relevant publications, the internal

reports generated by MIS software or provided by MIS staff on schedule i.e. monthly, weekly, every term and so on.

A key objective of the study was to examine and identify factors that enable leaders and teachers in FE to use the data well to support them in learning and decision making and ongoing basis. This approach is called the ‘factor research’ approach in information systems implementation which provides a ‘thin’ description to a case/cases (see Myers, 1994: 186) and is distinguished from the ‘process research’ approach that provides 'thick' descriptions. This brings in the 'people' dimension that the researcher has talked about in terms of sense making. It gives a detailed view from the ground from the actual 'lived' world of the interviewees, in the context of the detailed description about them and their situations, based on all your knowledge. At the completion of data collection from individual and focus group interviews, I transcribed recordings of the sessions and I examined transcripts of the sessions for common and contrasting themes regarding best practices in using data and MIS systems to enable leaders and teachers in FE to use the data effectively to support the learning and decision making.

To understand the ways in which data are thought about and used across multiple levels of the targeted colleges and to further illuminate the strategies and practices that characterise the data-driven decision-making I focused on the following research questions and used the probing technique to subdivide the questions:

- How do managers/ leaders use data to make decisions?
- What practices are effective in teacher use of the MIS tools available?
- How can data be used effectively and can its use improve education?

- What steps can FE colleges take to improve the use of data?
- What software and data tools were most useful to teachers/leaders?

An increasing number of computer systems are commercially available for the purpose of obtaining data from the core system and presenting student data to practitioners and these systems provide many functions. Unfortunately, no system provides comprehensive access to solutions to educational problems. There are many factors which will have an impact on the implementation of data use in educational institutions. Building on the prior work of others in the information systems implementation research literature (Myers, 1994), I have observed in my professional experience mainly the following factors:

- System support: Data initiatives are more efficient when the college has set up precursory supports.
- Culture of data use: It is important to build a culture to encourage lecturers and managers to use data rather than be used by data.
- Technology: No data initiative is sustainable without efficient and fast access to the student data

Each of these factors is equally important, and each affects the other two. In order to illustrate the analysis contained in this study, I have incorporated a number of narratives which were derived from the one to one and focus group interviews. It is important to bear in mind that the respondent in each case may be focusing on a particular purpose of data use or in general terms of data use and types depend on their level in the college structure. I have included some supporting commentary where I believe this helps to clarify the type and use of data to which the participant is referring. I started the documentary analysis before conducting interviews and I

tried to include my observations on the analysis of the documents that were collected for this study.

Sequence of the research

1 Pilot Study – 2005 to 2006

- Outcomes
  - Confirmation of key questions
  - Clarification of potential research method
  - Selection of participants
  - Clearer idea of timeframe for interviews, focus groups, and data analysis.

2 Documentary Analysis – 2006 to 2009

3 Interviews – 2007 to 2009, 40 participants

4 Focus Groups – 2007 to 2009, 20 participants.

Documentary Analysis

The analysis of document/reports data began early in the research and was an ongoing process during and before conducting interviews. The documents and reports collected for this study helped me to define and structure the interview questions which developed my knowledge on how educators may and can use the data to improve education and decision making.

As institutional insider, I clearly and easily could expect to have access to a great deal of contextual and historical information available to me as a researcher including important documents and other types of shared institutional knowledge which supported me to maximise the likelihood of related themes and contextual information emerging to triangulate the data and enrich the analysis and outcomes of the study. Documents used in this research played many important roles in the data collection and during the data analysis. Documents were necessary and important to plan and prepare for the other sources of data such as interviews as this enriched the interview data from respondents. The documents also contributed to a process of triangulation in the analysis of the data.

For the purpose of data collection, the documents were classified in terms of their source and purpose, in the context of this study (Hodder, 1994). Hodder (1993; 1995) argued that material culture can be considered in terms of the telling of narratives:

> *"Individual material culture sequences can be discussed in terms of changing and competing narratives and rhetorics. Material culture actions thus have meaning by being placed sequentially in terms of what went before and what comes after"*(Hodder, 1994: 398).

Various internal, external and official documents and reports were used in this study as one of the main source of data collection. The documents also included sets of policy and procedure texts. Other groups of documents included articles, letters and contributions to relevant publications, teachers who were interview respondents, and personal observations and reflections, such as from diaries, emails or personal letters. The documentary analysis also includes the internal reports generated by MIS software or provided by MIS staff on schedule i.e. monthly, weekly, every

term and so on. These reports are produced for different staff at different level within colleges' structure for various purposes.

During the observation of these reports and documents, I noted the following points of data used to help educators in support of learning and decision making:

- Data use to monitor and track attendance and punctuality: From the documentary analysis, I have noticed that there are data which are used and can be used to track student attendance and identify the poor attendance for individual students or for a class. This kind of report is very useful for a teacher and personal tutor to put a plan of action together to help these students to achieve. Students with poor attendance can be quickly identified and Additional Learning Support (ALS) or mentors can hold meetings with students or with parents (in case of students under 18 years old) to address attendance problems.

  This report alerts practitioners and administrators to the data on students with low attendance if they reach below the targets set by the college, the school or the class. Table 5.1 shows a sample of an attendance and punctuality report that can be used to monitor attendance. To maintain anonymity, I have changed the names and the course to make sure the group and the students cannot be identified. The attendance and punctuality report is compared with overall college attendance at the time of producing the report.

OVERALL (Whole College)	Attendance	Punctuality
16-18 Learners	82.35%	96.11%
19+ Learners	80.01%	98.69%
ALL	**81.17%**	**97.39%**

Course	Student ID	Name	AGE	PRESENT	TOTAL	POSITIVE	ATT%	PUNCT%
BTEC L3 Dip Applied Scnc Yr1	341827	Charlene Baker	18	151	233	125	64.81%	82.78%
BTEC ND Public Services Yr2 TGpA	294357	Besime Ali	19	232	261	228	88.89%	98.28%
Dip In Child Care Education Yr1 EGpB	381572	Marta Reed	17	266	277	265	96.03%	99.62%
BTEC L3 Ex Dip InfoTech Prctnrs Yr1 EGpB	38388	Zaid Mustafa	18	189	260	184	72.69%	97.35%
OCR L1 NC in Travel &Tourism	30139	Murat Ahmed	20	246	301	243	81.73%	98.78%
ESOL E3A Day TGpB	48213	Gulnur Foster	32	107	117	107	91.45%	100.00%
Cert in Construction (Brickwork) T	320475	Samei Farid	17	196	259	189	75.68%	96.43%
Cert in Construction (Brickwork) T	376009	John Love	16	202	259	193	77.99%	95.54%
BTEC L1 IT TGpA	379076	Makufi Law	17	231	235	230	98.30%	99.57%
BTEC L1 Health&Social Care TGpB	316955	Mohamed Ali	51	167	196	165	85.20%	98.80%
Dip Theatre & Media Make-Up Arts T	37879	Paula Gordon	33	108	183	107	59.02%	99.07%
Access To HE Dip Nursing FT EGpB	38230	Sara Muniri	20	155	226	152	68.58%	98.06%
BTEC L2 Health Pathway EGpB	61690	Joyce Taylor	32	221	222	220	99.55%	99.55%
Access To Social Work EGpC	374517	Sue Deal	29	216	223	216	96.86%	100.00%
BT..EC NC in Health Studies Yr2 EGpB	33971	Brigitte Smith	18	138	194	124	71.13%	89.86%
Access To Biological Science T GpB	82948	Tania Rasul	23	145	267	138	54.31%	95.17%
AAT 3 in Accounting Full Time T	3165	Abdi Rasheed	18	246	249	246	98.80%	100.00%

Table 5.1 Sample of Attendance and Punctuality Report

Data used to monitor attendance and punctuality by course and curriculum areas: This report is produced by the MIS system or MIS staff and is available for directors, heads of schools, curriculum managers and teachers to monitor the attendance and punctuality for a course. The report is used and can be used to compare the attendance and punctuality with other courses or different schools or curriculum areas. This report can also be used to monitor and compare week by week course attendance and punctuality. The report can be used to alert the college leaders in the identification of courses with poor attendance and punctuality, to see whether the problem is related to the subject, the timetable or the tutor. By monitoring class attendance, leaders will have the opportunity to put an early plan of action in train to help the students to improve their achievement. Table 5.2 shows the sample attendance by course and

has been anonymised. This table is an exemplar of MIS system reports related to monitoring attendance which can be used to:

- Compare across courses;
- Compare course differences.

Course	Week1	Week2	Week3	Week4	Week5	Week6	Week7	Week8
Cert 2 ITQ ECDL Extra EMISS GpA	0	52.63	52.63	57.89	57.89	0	52.63	78.95
Electrical Installation PTD L2 Yr1	81.63	86	88.79	86.36	79.51	75.19	82.4	82.31
Electrical Installation PTD L2 Yr2 T	76.74	87.5	93.18	80.68	86.36	80.85	81.91	81.91
Electrical Installation FT L2 Yr1 GpA	87.58	93.17	86.96	90.68	88.13	73.72	70.48	69.81
Electrical Installation FT L2 Yr1 GpB	95.88	94.3	95.85	85.13	89.58	55.36	34.01	77.25
Electrical Installation L2 FT Yr2 TGpA	85.28	92.68	84.66	87.2	84.15	89.17	87.26	77.56
Electrical Installation FT L2 Yr2 GpB	82.76	82.86	87.15	85.47	96.74	59.24	50.72	73.37
Cert in Basic Plumbing Studies FT Yr1GpA	91.04	91.44	82.96	93.3	82.97	88.65	85.71	79.4
Cert in Basic Plumbing Studies FT Yr1GpB	84.44	82.96	82.55	77.56	80.15	65.1	83.87	80.8
Cert in Basic Plumbing Studies FT Yr1GpC	75.37	70.15	74.68	77.85	52.94	78.57	84.78	78.05
Cert in Basic Plumbing Studies FT Yr2GpA	76.7	77.17	76.74	57.86	73.33	76.74	82.68	70
Cert in Basic Plumbing Studies FT Yr2GpB	92.99	89.94	93.71	92.5	92.5	72	91.46	89.1
Cert in Basic Plumbing Studies FT Yr2GpC	62.5	84.72	89.19	89.19	64.47	36.84	37.5	59.87
Cert 2 Plumbing WBL GpA	32.94	64.71	73.91	78.38	71.29	84.71	85.85	87.64
Cert 2 Plumbing WBL Y2 GpA	63.27	59.57	81.25	82.69	59.62	87.27	100	78.57
Cert in Basic Plumbing Studies PTDYr1GpA	94.34	91.51	84.8	83.81	91.34	89.76	75.47	90.55
Cert in Basic PlmngStds PTDYr1 (infill)	32.94	64.71	73.91	78.38	71.29	84.71	85.85	87.64
Cert in Basic Plumbing Studies PTDYr2GpA	46.67	81.82	77.36	80.39	96.08	71.7	84.91	81.13
Cert in Basic Plumbing Studies PTDYr2GpB	97.73	100	73.33	53.33	71.11	89.47	73.68	59.09
Electrical Installation PTD L3 GpA	74.07	84.34	91.76	92.94	82.35	89.29	63.1	73.81
Electrical Installation PTD L3 GpB	71.64	77.61	52.94	86.76	83.82	83.82	44.78	57.58
Cert in Plumbing Studies L3 PTD	81.01	84.81	87.34	93.75	96.34	89.87	91.11	94.79
Cert 3 Plumbing WBL GpA	93.26	94.52	85.92	91.43	86.02	83.51	73	77.27
BTEC NA in Construction Grp A	90.57	87.5	90.91	81.82	88	92.86	75.56	75.56
BTEC NC in Construction Grp B	85.71	86	86.67	83.33	90	85	76.67	60
Cert in Basic Construction T	63.64	67.41	68.66	55.3	51.52	51.92	61.31	60
Cert in Basic Construction (ESOL)	80.35	84.71	78.44	76.83	77.12	82.99	78.74	72.41
Diploma in Bricklaying L1 FT GpA	49.45	58.86	68.89	73.33	61.7	76.32	35.87	62.18
Diploma in Bricklaying L1 FT GpB	62.34	79.49	79.11	66.67	74.59	73.81	79.17	72.5
Diploma in Carpentry & Joinery L1 FT GpA	72.03	59.57	80.85	55.38	64.29	50	20.17	33.95

Table 5.2 sample of % of attendance by course

Data used to monitor the quality of teaching and lesson observations. By monitoring the class observation college management will have the opportunity to identify classes with poor quality of teaching and put an early action plan in place to help the staff and the students.

Overall by NVQ Level		Grades in Percentage			Grades in Nos			Total Observations
Notional NVQ Level		1-2 Good/ Better	3 Satisfactory	4 Unsatisfactory	1-2	3	4	
Entry/Level 1		56%	41%	4%	95	70	6	171
Level 1 / 2		63%	25%	13%	5	2	1	8
Level 2		61%	39%	0%	54	35		89
Level 2 / 3		33%	67%	0%	2	4		6
Level 3		58%	42%	0%	45	32		77
Level 4		75%	25%	0%	6	2		8
Level 5		60%	40%	0%	3	2		5
Overall College		58%	40%	2%	211	147	7	365

For Lessons with Additional Learning Support

	Notional NVQ Level	Grades in Percentage			Grades in Nos			Total Observations
		1-2 Good/ Better	3 Satisfactory	4 Unsatisfactory	1-2	3	4	
Addl Learning Support	Entry/Lev 1	55%	40%	4%	26	19	2	47
	Lev 1/2	67%	33%	0%	2	1		3
	Level 2	55%	45%	0%	6	5		11
	Lev 2/3	0%	100%	0%		1		1
	Level 3	33%	67%	0%	1	2		3
	Level 4	100%	0%	0%	1			1
Overall Addl Learning Support		55%	42%	3%	36	28	2	66

Lessons Observation profile for Lessons with ALS vs without ALS

	Grades in Percentage			Grades in Nos			Total Observations
Lesson type	1-2 Good/ Better	3 Satisfactory	4 Unsatisfactory	1-2	3	4	
Lessons with ALS	55%	42%	3%	36	28	2	66
Lessons without ALS	59%	40%	2%	175	119	5	299

Table 5.3 shows the samples of class observations by teaching grades.

- Data used to allocate resources: Normally the report/ documents produced for this purpose are used by senior management teams. Some of these documents come from the government funding agency; the others are produced by MIS staff in consultation with curriculum teams. These reports/documents also are used in the college, curriculum or service business planning. Resources, such as personnel or room allocations, can be predicted from these documents. Table 5.4 and 5.5 are samples of documents that are used or can be used to allocate resources.

ui	uio	uiname	crshrs	CTM
AC3MNSH7	9DA11A	Access to HE Diploma Nursing GpA	576	32B
AC3MMDF7	9DA11A	Access to HE Diploma Midwifery	576	32B
NC3MHLS7	9DA21A	BTEC NC in Health Studies Yr1	540	32B
NC3MHLS7	9DA22A	BTEC NC in Health Studies Yr2	540	32B
FD2MHSC7	9DA11A	BTEC FD Health Pathway GpA	522	32B
CR2MCSK7	9EAS1A	Cert In Intro To Counselling Autumn GpA	50	32B
CR2MCSK7	9EBS1A	Cert In Intro to Counselling Spring GpB	50	32B
CR2MCSK7	9ECS1A	Cert In Intro To Counselling Summer GpA	50	32B
CR2MCNSF	9DA11A	Cert in Counselling Skills Day	162	32B
CR2MCNSF	9EA11A	Cert in Counselling Skills Eve	162	32B
CR2MPCTF	9EA11A	Cert in Person Centred Art Therapy	140	32B
DP2MPCTF	9DA11A	Diploma in Person Centred Art Therapy	140	32B
BA4MCNCH	9DA11A	BA Hons Counselling Yr3	387	32B
FN4MCNCH	9DA21A	FND Degree In Counselling Yr1	450	32B

Table 5.4 shows sample of course allocated hours

Classrooms Report Date

Days	Daily Periods A 9 to 11	B 11 to 13	C 13 to 15	D 15 to 17	Tot Achvd	Tot Available @ 6hrs PrDy	Blnc @ 6hrs PrDy Max
Monday	141	124	123	75	462	488	26
Tuesday	136	128	130	64	458	488	30
Wednesday	139	132	67	30	367	488	121
Thursday	124	131	127	62	444	488	45
Friday	129	129	117	35	409	488	79

Weekly Totals	668	643	563	266	2140	2440	300

utilisation rate	88%

IT Rooms

Days	Daily Periods 9 to 11	11 to 13	13 to 15	15 to 17	Tot Achvd	Tot Available @ 6hrs PrDy	Blnc @ 6hrs PrDy Max
Monday	40	41	38	24	142	150	8
Tuesday	39	36	38	30	143	150	7
Wednesday	39	35	27	12	113	150	37
Thursday	41	37	39	26	142	150	8
Friday	39	36	32	9	116	150	34
Weekly Totals	198	184	174	100	656	750	94

utilisation rate	87%

Specialist Rooms

Days	Daily Periods 9 to 11	11 to 13	13 to 15	15 to 17	Tot Achvd	Tot Available @ 6hrs PrDy	Blnc @ 6hrs PrDy Max
Monday	72	72	65	39	248	255	7
Tuesday	75	73	64	28	239	255	16
Wednesday	67	75	42	13	197	255	58
Thursday	72	66	56	25	219	255	36
Friday	61	68	51	12	192	255	63
Weekly Totals	347	354	278	117	1096	1276	180

utilisation rate	86%

Table 5.5: Sample of Room Utilisation Rates (figures are in hours)

- Student demographic data: These reports are available from college MIS systems or from Proachieve. The available data on these reports are gender, age, ethnicity and other data on student characteristics. These demographic factors are reported in relation to completion, achievement, and student success and student withdrawal.

Equality and Diversity

2006-07	All Ethnic Groups	Asian	Black	Chinese/Other	Mixed	Unknown	White
Enrolments	15456	1223	4962	746	683	783	7059
Completion Rate	93%	97%	91%	92%	90%	94%	94%
Achievement Rate	92%	94%	90%	90%	88%	92%	94%
Success Rate	86%	91%	82%	82%	80%	86%	88%
Withrawal Rate	7%	3%	9%	8%	10%	6%	6%

Table 5.6 shows sample of student demographic data

- Data used to monitor and track student performance: These reports are used or can be used to monitor individual students' achievement and success. These reports are available from college MIS systems or from Proachieve [software tool to compile retention, achievement and success rate data].

- Data used to track course and college performance: These reports/ documents are produced by government agencies i.e. DS or produced by MIS system and MIS staff. These reports also are generated from software such Proachieve to monitor the retention, achievement and success rate. The College Performance Report (CPR) is an example of one of these reports. The reports are used to monitor the performance by college, course, and age group and are used or can be used by different members of staff with different roles within organisations. These reports show the trends of retention, achievement and success rates for years and compare with national benchmark data. SAR report also contains these data. Table 5.7 shows a sample of success rate by Subject Sector Area compared with the national benchmark.

		Long 1		Long 2		Long 3	
Sector Subject Area		**16-18**	**19 +**	**16-18**	**19 +**	**16-18**	**19 +**
Arts, Media and Publishing	Starts No-	43	125	75	43	125	97
Arts, Media and Publishing	Diff %(S-BS)	**2**	**15**	**8**	**-5**	**12**	**13**
Business, Administration and Law	Starts No-	28	22	30	79	68	82
Business, Administration and Law	Diff %(S-BS)	**-1**	**22**	**4**	**19**	**6**	**9**
Construction & Planning	Starts No-	74	46	68	84	9	54
Construction & Planning	Diff %(S-BS)	**10**	**23**	**19**	**40**	**20**	**15**
Education and Training	Starts No-				20		41
Education and Training	Diff %(S-BS)				**21**		**18**
Engineering & Manufacturing Tech	Starts No-		13	36	185	6	124
Engineering & Manufacturing Tech	Diff %(S-BS)		**25**	**-12**	**19**	**17**	**22**
Health, Public Services & Care	Starts No-	43	97	79	230	22	346
Health, Public Services & Care	Diff %(S-BS)	**5**	**-4**	**0**	**9**	**-36**	**3**
History, Philosophy and Theology	Starts No-					32	18
History, Philosophy and Theology	Diff %(S-BS)					**29**	**-10**
Information & Comm. Technology	Starts No-	303	205	165	304	97	35
Information & Comm. Technology	Diff %(S-BS)	**25**	**33**	**26**	**34**	**36**	**38**
Languages, Literature & Culture	Starts No-	18	11	39	37	70	10
Languages, Literature & Culture	Diff %(S-BS)	**19**	**36**	**24**	**36**	**17**	**-1**
Leisure, Travel and Tourism	Starts No-	20	62	24	12		19
Leisure, Travel and Tourism	Diff %(S-BS)	**-4**	**29**	**-22**	**12**		**-24**
Preparation for Life and Work	Starts No-	581	1778	14	112	37	2
Preparation for Life and Work	Diff %(S-BS)	**10**	**12**	**-44**	**-8**	**-9**	**-5**
Retail and Commercial Enterprise	Starts No-	37	61	73	111	12	63
Retail and Commercial Enterprise	Diff %(S-BS)	**5**	**18**	**5**	**-3**	**2**	**15**
Science and Mathematics	Starts No-	20	5	96	54	120	94
Science and Mathematics	Diff %(S-BS)	**29**	**19**	**1**	**6**	**9**	**9**
Social Sciences	Starts No-					79	8
Social Sciences	Diff %(S-BS)					**15**	**51**
Overall College	**Starts No-**	**1167**	**2425**	**699**	**1271**	**677**	**993**
Overall College	**Diff %(S-BS)**	**12**	**16**	**5**	**15**	**2**	**12**

Table 5.7: Difference of 05/06 Success Rate by Sector Subject Area, Learner Age and Level with 04/05 Benchmark

Key: Green-6% or more above BM, Red-6% or more below BM, Blue- within -5% to +5% of BM

S – Success Rate, BS- Benchmark Success Rate

- Data used to monitor student recruitment: There are some documents/ reports that I have observed which are used or can be used to monitor the students/ applicants' recruitment. The recruitment data shows trends of the applicants by year, months, courses, ages and

stages. These allow the admission services and the management team to intervene in case of low recruitment. Table 5.8 shows a sample of an applications report.

Sector Name	1Jan	2Feb	3Mar	4Apr	5May		Total
Construction & Built Environment Sector	60	63	100	94	26		**343**
Health, Care, Science & Early Yrs Sector	94	90	154	181	46		**565**
Creative and Communication Tech. Sector	28	33	53	43	10		**167**
Service Industries Sector	84	83	111	124	40		**442**
Literacy, Numeracy & ICT Skills Sector	8	89	75	213	17		**402**
Learning Support Sector	1	2		1	1		**5**
ESOL for Work Sector	2	2	3	5	2		**14**
Teacher Education (Sector)	29	22	13	16	2		**82**
Total	**306**	**384**	**509**	**677**	**144**	**0**	**2020**
Curriculum Area	**1Jan**	**2Feb**	**3Mar**	**4Apr**	**5May**		**Total**
Plumbing and Electrical	24	40	70	56	14		**204**
Building Crafts	25	16	24	36	12		**113**
Housing	11	7	6	2			**26**
Early Years	20	14	23	30	7		**94**
Health and Counselling	35	41	76	71	11		**234**
Health and Social Care	21	20	25	26	8		**100**
Social Care and Humanities	7	7	19	27	8		**68**
Science	11	8	11	25	12		**67**
Computing	10	6	15	13	5		**49**
Art & Media	11	15	18	22	3		**69**
Music & Performing Arts	7	12	20	8	2		**49**
Sports and Leisure	15	10	14	15	14		**68**
Hair	33	24	35	27	13		**132**
Beauty	18	28	33	30	11		**120**
Business	18	21	29	52	2		**122**
ICT		33	9	50	4		**96**
Literacy	2	38	33	107	9		**189**
Numeracy		16	29	48	2		**95**
Embedded & Community Education	6	2	4	8	2		**22**
Supported Learning	1	2		1	1		**5**
Modern Languages	2	2	3	5	2		**14**
Teacher Education (PA)	29	22	13	16	2		**82**
Total	**306**	**384**	**509**	**677**	**144**	**0**	**2020**

Table 5.8 Applications Report as at ../../2008

Interview data analysis

The analysis of interview data began early in the research and after the document analysis and was an on-going process. Data for the purpose of this research were collected over two years, and data reduction and analysis was almost simultaneous. The interview data were from individual and focus group interviews. Participation in the interview process was voluntary. As noted earlier, these interviews were the second main data sources for the data component of the study, from which the embedded units of analysis for the single case study were drawn up. Normally data analysis software is used to analyse the data collected in qualitative studies similar to this study. Data analysis software such as NVIVO, produced by QSR, has been recommended by many researchers to analyse qualitative data. I have practised and trained myself to use this tool but I have not used it for the current study. I managed to analyse the data manually through listening, note-taking and writing, as I repeatedly listened to the interview files and managed to derive the themes out of the interview data.

I also used my IT and MIS skills to simplify the data analysis for this study. As I have mentioned in the previous chapter, I used voice recognition software to help me with transcribing the audio files from the participants' interviews. I used voice recognition software in the transcribing process. I had to train the software to recognise my voice, then re-record all the audio files with my voice for the software to recognise and transcribe the audio to text. I re-recorded all these interview files with my voice to be recognised by the software for transcribing. Re-recording the interviews helped me to speed up in the transcription and identification of emerging themes in this study. I had to listen to each interview many times while I was re-recording the file with my voice. This helped me to identify many codes even before uploading

the files to voice recognition for transcribing. While listening to the interviews, I also made notes which helped me in the data analysis stage. I loaded all interview files with my voice into the voice recognition software to transcribe them into rich text format. I used my IT and programming skills to develop macro programming to help me with identifying the codes and data analysis. This simple tool helped me to highlight and tag the transcripts as well as sort the data according to the codes identified in the listening stage. I created separate documents with the codes, interview ID and the question number so I can easily find the original transcript if necessary to refer to it. I created reports with headings and subheadings for each research question with the outcomes from the interviews. In the following narrative, I provide results from the data from one to one and focus group interviews in response to the research questions outlined above.

Use data to make/inform decision

Measuring student retention, achievement, success rate and FE college progress in different ways is important. Using these data systematically is critical to diagnose issues, problems and find solutions. It is important that enough information is available for educators to support decisions and instructions. Users are limited when the available information does not answer all their questions. Since a student's education takes place over a number of years, the range of data must also allow for longitudinal presentation over all periods of available data to help the user examine trends of colleges, schools, curriculum areas, classes and students over time. Individuals or institutions that possess information and knowledge can exercise a degree of control or power in

comparison to those who do not. The issue of power and staff awareness to the power of information was raised by a participant in this study;

> "*This is a question of raising staff awareness to the power of data, engaging them in using data to effectively plan their own provision, and reading and understanding data as it applies to the whole college, and in judging performance through self assessment."*(Appendix B II1)

It is essential for educators in colleges to have leadership that supports the data use initiative. This will help to create a culture of data use as source of information and knowledge building for educators to act on it to improve the overall success and decision making. Participants in this study suggest that educators in FE colleges use learner data in different ways, for different reasons at different times and make sense of the information to inform decision and improve education as stated by the participants in the responses below:

- *"For example, leaders look at attendance and punctuality for a group of learners or for a programme area and identify areas for concern and then make necessary arrangements to improve attendance and punctuality for that particular group or programme area.*
- *Managers and leaders use students' registration data and initial assessment reports to identify and assess the volume of additional support required to overcome language or learning difficulty barriers.*
- *Recruitment data are useful for managers and leaders to assess demand for a course/qualification and accordingly plan for the next recruitment cycle.*
- *Students' interim achievement data are useful to managers and leaders to identify whether progress is taking place within given time and accordingly allocate resources so that the maximum success rate can be achieved within time."* (Appendix B II02)

One head of school who participated in this study emphasised the use of MIS data and identified the following theme:

Theme 5: Use of data for Self Assessment Report (SAR)

> *"It is the self assessment reports [SAR] that we are responsible for compiling, we are looking at the data, key data which is retention, attendance, punctuality, achievements and success rates. I am sure you are aware we have government benchmarks for our courses which we go by that data and compare how well we are doing compared to the national average and that informs us in terms of in when we are comparing the data over the succession over three years, we see where we have identified any issues which we need to address: which courses are successful identifies the reasons why and the strategies that we use to help us."*(Appendix B II13)

Successful educational leaders are able to gather, understand, interpret data and use readily accessible information available, and then drew on previous knowledge and experience to make decisions and plan improvements (Earl and Katz, 2002). They chose the wisest course of action to practise. The data they collected was likely to be sufficiently nuanced to carry the power of important informed decisions. Almost all of the participants placed value on data driven decision making and seemed eager to learn how to use data to inform data driven decision making. However, the lack of data in easy access format is a big obstacle. Educators have to look for different places to obtain the required and useful information to help them with their decision making. If the data are organised in a simple way, available in the right format, in the right place, at the right time and integrated into the relevant activity, it will save time and effort in accessing the relevant data:

> *"The biggest support for us would be the data to be entered automatically to course review documentation, SAR etc. At the moment we have to look for many sources of information as those not always marry up. We get attendance and punctuality in one database, retention and achievement in another database and Additional learning support in another database. We need data integration; it would be great at certain times of the year or during SAR review if MIS send the data in course review format or told us where to get it. We need a one stop shop to get these data. As at the moment these data are in different places, when they are produced, are the data up to date?"(*Appendix B II27)

The study suggested that leadership and management of FE colleges at different levels in the college structure use data, make sense of it and use information to make appropriate decisions to support learning and decision making. The decisions range from curriculum design and delivery to finance and resource management and quality improvement. A range of available data and tools are used by leaders and managers as noted by a participant:

> "*Data are used by managers at a range of levels in the college to measure progress against targets which inform finance and resource management, curriculum design and delivery and quality improvement.*
>
> *Data are benchmarked and often given a red, amber, green (RAG) rating to enable managers and users an easy way to identify where attention needs to be given and further progress made to reach targets.*
>
> *Data leads a self assessment process which curriculum managers complete tri-annually. Data are continually monitored and this enables managers/leaders to respond quickly to areas which are at or below benchmark. Trends in data provide further evidence of quality of performance and provision.*
>
> *Ultimately data drives quality of provision, and funding and is reported at regular intervals to the Information Authority. Qualification Success Rate (QSC) Reports are produced and submitted to Ofsted for inspection purposes. Any data which is below national benchmark is of concern as it is flagged as not meeting minimum levels of performance (MLP) – and improvement is required by the College to enable the funding bodies to continue to fund the qualification(s) which fall below MLP."* (Appendix B II01)

The study suggests that staff use data to inform decisions at different levels and for different purposes. Effective uses of data enable practitioners at class group level to identify the special needs or specific weakness of individual learners. It also highlights the weakness or performance

of individual subjects or topics and provides evidence to inform decisions to focus resources and teaching, as one participant stated:

> *"We use data in a whole range of ways, this depends on what are you looking at and at what point you are in the business cycle. We look at learner attendance and punctuality. We also look at whether we have problems with particular subject areas, classes, and students not attending. We look at retention, and whether students sustained in class. We then look at achievement rate and success rate, this leads to a number of things, we will make decisions to see whether provisions should be kept open or not, or whether we should change the provision or close the provision down."(*Appendix B II16)

The literature reviewed for this study agrees with what has been asserted by the participants in the research investigation. For example, Crawford et al. (2008: 6) support the above statement:

> *"These tools will enable teachers to collect data that support instructional decision-making for their current students. Thus, the learning of the students from whom data are collected can be directly affected. Our work attempts to improve the quality of student learning data that can be captured in the classroom; automate data capture, analysis, and representation wherever possible; tie data to classroom learning; and eventually eliminate the time lag between construction of data and analysis, and decision-making with those data."* (Crawford et al., 2008).

As success rates become the main performance indicator used by funding agencies, Ofsted and other government agencies to measure how colleges are performing, it is of major importance that leaders ensure that courses are being monitored regularly and on time. They cannot longer afford for courses not to perform. College leaders have to ensure that course content is being delivered effectively and performance rate above the national benchmark.

It is necessary for curriculum managers and heads of schools to continue to monitor the performance of their courses in their areas to respond as quickly as possible according to which

areas or courses are at risk. The data can help them with their self-assessment report for their area. At curriculum or school level, the data are used and converted to information and knowledge to inform decisions to keep the high performing courses and close down underperforming courses. A focus group participant indicated that:

> *"The details would be for instance looking at a set of' level 3 programmes to see how they compare in terms of performance with that particular set of subject and level with the courses nationally if they are drastically underperforming and obviously you may need to look at a more complex data underneath those performance indicators to be sure and you want to know what exactly the issue is. If those programmes are pulling down the overall performance of the faculty then should the faculty be offering that course or how long has it been underperforming consistently been underperforming when there is something about a radically wrong or are I or want to use a complex issue to explore further off course but ultimately I mean those courses are withdrawn". (*Appendix C FG04)

FE colleges recruit students from different backgrounds with different personal needs and from diverse communities with various abilities. Educators require understanding of their individual students' needs and the strengths and weaknesses of the subject/class to monitor them closely and put necessary actions in place. At class level or at individual learner level, some educators use the data to identify the weakness of a particular subject or identify individual learner support.

> *"When doing the reports when they are planning the courses when they are planning their student workshops for example they need to see it through they need to see if the learners are falling behind in one of the subjects you can see it on the subject results and reports and if the person is falling back then it can be used to plan that to put additional help in place to support the learner."*(Appendix B II15)

Responses from both one to one and focus group participants suggested that the impact of data on teaching and learning operates at different levels, directly by means of interventions targeted at

individual students; and indirectly by means of course, curriculum and college approaches. Data can be used to judge people's performance and to take punitive action against underachievers, or it can be used to diagnose problems and determine the efficacy of solutions. The concept of continuous improvement of using data in making decision should be stressed:

> *"We need a standard formula to make decisions. Some of the business decisions we have to make are based on performance. Data are manipulable we all know that. Head of schools and curriculum managers must not only model use of data, but also establish conditions that support to encourage teachers and support staff to grow in their use of data."* States one respondent (Appendix B II20).

Armstrong and Anthes (2001) and Massell (2001) both reported that strong leadership and a supportive culture were characteristics of the schools in their studies that were most involved in data use. This study suggests that strong leadership and management would lead to effective use of data, as noted below:

> *"First of all the management right from the top should use the data effectively. If they are trying to help, teach the staff how to use the data effectively. In my experience, and I have been in different projects in the college, I have noticed there are a lot of people who don't know or can't access the data Why? Because one problem is they are not informed. They are a bit shy in terms of using the electronic format. I've noticed that some still go through some papers to produce some reports, which is time consuming, and that is a clear example of not being at manager level."(*Appendix B II21)

The study suggests that at the classroom level, data are used effectively to inform decisions to:

- Identify specific weaknesses for individual students
- Identify attendance and punctuality
- Identify weaknesses in the class as a whole

- Provide evidence to support decisions as to where to focus resources and teaching for individual student or whole class.

One participant stated:

> *"Well, decisions on whether to retain a student or to progress a student then you're going straight to punctuality and attendance and if the figure is below a certain amount of we don't want to back next year we are sure to check change of behaviour we have tried to convince you is worthwhile taking this course seriously and you haven't changed so we are not going to progress into next year. Always check all the time continually throughout the year as soon as I get a referral I want to know what the attendance was like and also as a personal tutor I can monitor my own students' attendances for other classes much more easily using electronic data than by paper-based."(*Appendix B II05)

Almost all participants in this study reported that their main source of data came from MIS. The data needs to be accurate, and on time to make or inform accurate decisions. Some users are frustrated at having to go to different places to get the data they need. Data can be used for planning and preparing in advance, as noted here:

> *"The purpose of using the data are to make informed and accurate decisions so if we decide to set up a new course, you don't want to find in September, that you've done it on guess work and to then find that we don't have any students to do the course. If we planned it in advance and if we've got data to show the market then you know, we're putting on, we're not just guessing what we're putting on but we're making sensible decisions based on hard information."(*Appendix B II25)

Interview data from this study suggested that the data are also used to measure and analyse the performance of tutor groups. The data supports the manager in identifying the continuous professional development (CPD) requirements of individual members of staff. The MIS data can be compared with teacher observation outcomes.

*"I use the data sometimes to analyse performance, for instance we have got the success achievement retention data per tutor group so I have matched that data with the teaching observation grades and I have also looked at withdrawals so that it has given me more of an insight of more of an insight on what CPD I need to do on the staff next year. CPD for instance one of my members of staff they seem to have lost have lost more learners over the .... and they seem to have a retention issue yet the grades are very good so I think it's less about of a teaching and learning are as much as it is about tutoring managing behaviour so I think that members of staff require CPD and if it's very hard to argue with them ... arguable ... of staff and so that's what they need just on the basis of observation however if all of that class as they are teaching have a data you have got something to show them to have a sensible distance vision with sensible evidence also you can show senior management ……"(*Appendix B II11)

According to Marsh et al. (2006), data are used when:

- Data are readily accessible
- When educational leaders believe the data accurately reflect student achievement
- There is a motivation to use data
- The data come in time to make important decisions
- Data users have the professional training and skill to analyse data, make sense of data and make appropriate adjustments and actions
- There is a strong system or leadership or management support to use data and create a culture of data use.

According to Marsh et al. (2006), educators need to have confidence in data to act on or inform decisions. They need access to live and accurate data. There are concerns among some respondents that the data are not up-to-date and controlled tightly by MIS and they think there is a wide gap between people knowing and owning the data:

> *"Critically if the data are there all the time in some live or relatively live form it allows managers at whatever level to actually see there are problems with the data. The more people can see that the more they can come back and say I've been checking this and this has not been done or this class is designated wrongly or differently. At the moment there is such a wide gap between people knowing and owning these issues. It is curriculum managers that should do that not MIS and the MIS system which holds onto everything very tightly and doesn't allow people to get involved. The more that that happens in a live way the more that curriculum managers can own the data and they can't then argue that somehow the data cannot reflect the real world because it would have been their responsibility to ensure it's right."* (Appendix C FG06)

Interview data from this study also suggested that the data are also used to measure and analyse the performance of class, course, school and individual students. The data supports the leaders in identifying the problem or weakness of class/students then leads to individual learning plans for students or continuous professional development (CPD) requirements of individual members of staff:

> *"Proachieve data allows setting course/curriculum area benchmarks and identify weak areas, in comparison to the national standards. The electronic registers work effectively, linking the attendance and punctuality data to students' e-ilps. The e-ilp is a tool used equally by the students/ teachers, but also managers to make decisions in regards to disciplinary procedures. The e-registers are a clear evidence of student's attendance and punctuality. Reports can be created to show the whole class, curriculum area or directorate, to see patterns and identify the problematic courses/students. This then can lead to an individual learning plan for students and/or CPD for teachers.* (Appendix B II03)

In order for a student to cope with learning and succeed on the course it is necessary to utilise most of the teaching times dedicated to the course. Therefore it is necessary for a student to attend classes on time and without disruption to the rest of the class. Interview data from this study suggested that the data are also used to measure and analyse the punctuality of individual students. The data supports the teachers in identifying the cause of poor punctuality for

individual students on individual days or times. Identification of poor punctuality leads to teachers making changes to the class timetable to meet individual student needs, as noted below:

> *"We use the senior tutors to come and talk to the students with poor attendance we set up tutorials we set them targets we use the tutorial paper work to action plan to students and say you are going to improve your attendance and then look at the register and then you can see and sometimes the register also enables you to pick up things like .. although there are overall attendances 80 percent say on one particular lesson it's 60 percent and you can see on one page that it's very poor but on another lesson they've come every you can identify what is it about certain days , certain lessons , certain mornings ,afternoons. It could be a childcare problem it could be whatever - all sorts of things. The data could help you to identify but it doesn't necessarily mean we can solve it. From data we can identify the problems; it could be the timetable of the course. We try to be as family friendly as we can but yeah but there are obviously individual students which find that difficult."* (Appendix B II21)

In contrast to the above comments, another participant suggested that the college should support the students in preparing them for the world of work or higher study. The data will identify the cause of poor punctuality for individual students. This will enable educators to find the best solution to support these individuals in helping them to attend on time and to avoid missing lessons. The support should not be the timetable changes as stated below:

> *"One of our key responsibilities to learners is to prepare them for the world of work would have employment world of higher study no employers could accept that you are late ever everyday so we need to empower and enable learners to manage their lives to meet the expectations of the external world and if you constantly say is okay to be late because of childcare is not something an employer was going to say to you it's not something at a higher education establishment is going to say so you are not helping our learners to be achieved by reducing the entitlement to learning by 30 to 60 minutes a day but what would say is going to find a way to enable the learner to attend on time so college nursery doesn't open until other than before 930 that's not meeting the needs of learners we need to change the opening times of the college nursery if it's an external provider which we are funding would be to negotiate that with different start time so we are getting the learner to accept that they are the responsibility for their life for the childcare to meet their demands for you know the 21st-century society and other things that I said to tutors here is because you know there's lots of female attire retires with*

childcare and many of these learners need to make the most of every minute of every class that they can get because they have got one year to achieve a huge number of credits to be to go to university and if you don't set them up to work through an efficient smart way through to hold the hand of the support them will most likely get university on helping by helping them to progress effectively no because we didn't empower them and enable them to work in that environment." (Appendix B II10)

Effective use of data to improve education

Studies by others point out that survey and interview data suggest that individuals will engage in data use if properly supported. For instance, building-level practitioners were searching for ways to improve their understanding of students (Wayman, 2007).

While improvements in student learning and better performance are ultimately the goal of data use, these changes are often preceded by improvement in educational attitude and practice, as one participant stated:

*"The data can be used to improve education if the person using it is wise because the data can be manipulated to present an argument against your case and I think someone who has the genuine benefit of education either for their own class or for the department or the college has to use it wisely. I think the college has a lot of data which I think gets the picture of the quality of teaching and its truest forms can show the strengths and the weakness of the college and if implemented correctly can perhaps continue professional development or a support system which can be raised or share the level of data in quality."(*Appendix B II19)

Due to the rapid and broad access to student data, teachers in FE colleges are able to more quickly focus on student learning problems and make appropriate decisions on changing practice

in classes. The data will enable the teachers to gain more precise knowledge about their students, ensuring that they are more able to respond to the entire student situation, as noted below:

> *"At the end of the day, if you look at pass rates, attendance and so on, the interpretation of the data helps you to make decisions so every time you interpret data one way or another, it's helping education in general. Perhaps you would redesign the course, readdress the quality of teaching, perhaps you as I said well there are different interpretations so we have to look at what is causing the problems and try interpreting the data in which you will inform decisions. If students are not attending a course on a regular basis then what is wrong? Then when you look at your data and your attendance figures, particular courses for attendances is below benchmark, then you have to tell why that is the case. So by interpreting the data you then address the problem. Perhaps you think first of all perhaps the quality of teaching is not that good and that it is an issue."* (Appendix B II07)

Educators can use varieties of data as a tool for focusing professional learning on the improvement of daily practice. Teachers can identify what learners know and can do, and they can help suggest aspects of teaching that need to improve. This can be done through class group assessments to enhance motivation and improve instruction and practice. The data can be used to improve education by monitoring data regularly and on time for early intervention. One senior manager indicated:

> *"Well by monitoring early intervention means you can ensure that students are achieving and attending because if they're not here they can't achieve –it is as simple as that so teaching and learning is nicer difficult so if server should consider a new putting them in front of a good teacher who you will have a good result it is pretty simple everything else apart from that its secondary so if you go into those key points with those and make sure they hit the you'll get the achievements of the learners will be successful so measure of success is based on that happening and if that doesn't happen for whatever reason you got a problem this and monitoring of that is actually happening well throughout the year and they're intervening early when there is a problem and if you only if you intervene early enough you can make a difference therefore get your success rates a lot higher."*(Appendix B II08)

The data indicate what difference has been made for students enrolled on college courses and whether they have achieved or not achieved qualifications. A learner comes to the college - what difference has been made to their life? This is what inspectors are interested in, it is what the public is interested in, and what taxpayers are interested in. The data can be used as a measurable outcome by OFSTED, by the public and taxpayers. Some respondents indicated that they are using data in various ways to improve teaching and learning processes. They use data to identify and evaluate class groups, individual learners or a variety of groups for early intervention. The interventions or plans could be for learners at risk of achieving or for learners with additional learner support or extra support required because of learners' family backgrounds. The following statement is from one respondent who comments on the role of data to improve education:

> *"A learner comes to the college, what difference have you made to their life. For a start they have achieved a qualification, that is a measurable outcome and the data obviously tells you this. The data may also tell you whether someone has had additional support on the way to getting their qualification and you can see whether that's made any difference to them compared to people who didn't have additional learning support. There are various ways of looking at the data which tells you what impact has your work had, so you're interested in impacts and outcome and the theory is you improve the education for the learners if you can look at measurable data to see what difference you've made. Of course data are not the end of the world, it can tell you so much but not beyond. The educational experience of a learner is bigger than that but nevertheless data are critical and vital."(*Appendix B II12)

It is important for leaders and teachers in FE colleges to listen to learners in order to identify their learning issues. Communicating with learners will identify the weakness of delivery of a subject/module, or the whole course as this will help the learners to achieve and improve their experience. The following comments from one of the respondents in the study illuminate the above statement:

> *"If I look at certain learner survey data for example learners are saying the course is boring the teaching and learning is dull and uninspiring I would therefore expect staff to be sitting down with learners and saying right what is it about this particular unit or module that you're not finding interesting and how can we make a more engaging and more interesting I think listening to learners and using the data that they give is really important. If we look at things like who is passing which modules we're tracking individual achievements as it again and again this is some area that learners are in some areas that learners are failing in - they're successful in - we say what this what is it about a unit or module and may be the whole course why all those learners are underachieving so once you have got the data you can look at it and see what's happening look at trends you can sit down and had to be open and transparent and honest and really be trying to get to the bottom of the problem and you can then revise and develop."(*Appendix B II10)

Another participant from this study emphasizes the importance of monitoring attendance and punctuality and the impact of these on improving education and learning, as stated below:

> *"From my understanding of how mangers/leaders use data are that they use data to justify a purpose. Within education this would be based upon:*
>
> *Attendance*
>
> *Achievement*
>
> *Punctuality*
>
> *These three critical pieces of data will show how successful the college has been.*
>
> *The more students that achieve would mean a better image for the overall college, and linked to government funding."* (Appendix B II17)

The access to live and accurate data can help leaders and teachers to monitor the student's progression and achievement as they can intervene at an early stage to avoid students not attending their classes and then eventually withdrawing from their courses. As one middle manager said:

> *"The data to being alerts me to there being a problem whereas before the data come only at the end of the year and looks back over last year I can go at any point and see trends I can see where our attendance is where our punctuality is. I can look into individual groups of students and start saying there's a problem here the trend is showing now at this point start to drop off on the attendance and it allows me to go in immediately to put intervention in and do something there and then so we can get back. Punctualities individual group of students put intervention and do things there and there."(*Appendix B II22)

Wu (2009: 22) stated that:

> *"The tools needed to disaggregate data well and provide data in a format that was easy to read and understand. The data processing also needed the capability of linking several different data systems in a timely manner. The staff also needed to be able to access the data easily with minimal training."(*Wu, 2009)

Almost all the participants in this study agreed on the role of using data to improve education and learning although there are some concerns among some of them on the way the data are presented. The data are presented in a way that would be very difficult if not impossible to act on, as stated from one participant in the one of the focus groups interviews:

> *"Sometimes, for example, the success the data are presented in a particular way to show something to a different audience perhaps it's more audience is more difficult for us to take that and you're meaningfully and draw any meaning from it and I think and therefore is difficult to talk about it what is actually. it doesn't always relate what we are doing I think for us the most logical units of thinking of this thinking of the data are the most logical units are thinking of any data are the class tutorial groups and sometimes we are presented with data which might show that one person is being entered into on to an IT qualification and left pass so it's 100% success but you don't know where that person is come from you don't know which group they belong to you and you don't know how many people in a particular group were entered and have tried and not achieved. Or how many won't put forward to take and achieve qualification and even though there might have been sitting in class so there are lots of confusing things and it's difficult for us to kind of draw up the trends."* (Appendix C FG03)

Summary of key themes

We have seen in chapter 4 and 5 that five key themes emerged from the single case studies which are:

1. Problem with access, data integration and availability
2. Staff awareness, understanding and use of data
3. Ownership of data
4. Data in an accessible format to inform decision making
5. Use of data for Self Assessment Report (SAR).

The following discussion identifies the steps that FE colleges can take to improve the use of data to support educational learning.

Steps FE colleges can take to improve use of data

The accuracy and accessibility of data and the technical support or training can affect practitioners' ability to turn data into valid information and actionable knowledge. Without the availability of high-quality data and perhaps technical assistance, data may become misinformation or lead to invalid knowledge and decisions (Marsh, Pane and Hamilton, 2006).

In order to make more effective use of data, colleges need systems that are simple to use, are well supported and therefore quickly build levels of confidence and familiarity. All colleges in this

study wanted data management systems that are easy to use, produce reports that are easy to interpret, offer comprehensive support, are accurate and available on time and are accessible to staff at different levels.

There were a wide spread of agreements among the participants in this investigation that they use data to inform decisions and improve learning and education. However, the majority of the participants think that they have a long way to go to use the data successfully to improve learning and practice without spending a lot of time to look for or find the relevant data to support educational processes. The following points describe the data analysis from this study regarding the steps FE colleges could take to use data more effectively:

- Access to data: Educators require information which is easily accessible and can be interpreted to help inform teaching and learning. Data access can be more and more time consuming for educators who want to get the relevant data with a push of button and make sense of the information for decision making and improve learning. Lack of easy access to data in an understandable format can be a big obstacle to effective data use to improve education and decision making, as stated by a respondent from the focus group interviews:

> *"Data need to be more easily accessible. For us we are so busy all the time and when we need to get this data we have to find that during on top at the time when we already really busy so if it takes a long time to find this data when you do find it when you do find it and actually need to do your job with the data it doesn't leave you that much time because you spend so much time searching for it so now instead of you saying I'm going to really sit and do this report and do it at the hundred percent at the best of my ability because now you've spent so much time*

*looking for the data or trying to access it you might only have 50% of that have left now because you've got deadlines."(*Appendix C FG02)

Another respondent from a semi structured interview raised her concern about access to the relevant data as stated below:

"Well I think it can be simplified for sure because at the moment you go at two folders and you have got your spread sheets, etc., but a lot of the data which we have at the moment, unless you know what you're looking for you could be trawling through that same data over and over again to find something like the other day I was on Proachieve looking for something and I spend ages going over folder over folder and found something completely different to what I was looking for." (Appendix B II13)

- Data Integration: It is important for educators to have access to one system so that they can have access to useful and relevant information to help them to improve education and decision making. The system should have a facility to drill down and get the required information. The system may provide access to different sources of information in the background, but it is better for the user of the system if they can get the data from one place without logging to many systems. The following comments from one interviewee support the above statement:

"I think there has to be a possible one system which means that all the information you collect will be fed into one system only second there has to be people would understand what they are doing when they input information system and make sure that they accurately look at it and see if the information they have input is actually correct so that is one of the things because most of the frustrations is about when you send information the information is not correctly on the system so it's not updating system." (Appendix B II06)

Other studies confirm the importance of data integration in data use. Many of the reasons for system integration involved connecting specific systems that allowed users to connect the system they used most often with data from another type of system. (Wayman et al., 2007).

- Quality and reliability of data: Practitioners can be frustrated by not having accurate and reliable data as they need to make sense of data to form appropriate judgments related to their course or students. Many educators questioned the validity and accuracy of some data, as stated below by a participant to this study:

> *"I trust data reasonably well now, pretty well, it's much more reliable than it was. I do use it, obviously I check it as well, I mean when we first get achievement data and things like that we have to check it accurately. Well that's not always the fault of MIS, it might be something that hasn't given us……. or it may be incorrect. But once it's been checked what we do by achievement data we check it absolutely student by student we check it. But it seems to be quite reliable."* (Appendix B II25)

Another respondent from a semi structured interview raised her concern about the accuracy and availability of data on time to make judgments and inform decisions, as stated below:

> "*Well, there sometimes is the issue of the data being available like producing a self assessment report and having to produce it by a certain date in September and the assessment making judgments fundamentally mentioned measures as to whether you have been successful , whether the learners have been successful and whether your teachers have been successful and whether you have effective managers over the last year and some of the basic data and did the students stay and were they successful is still actually not necessarily available and then you're*

> *also getting evidence which is right now looking at a set of enrolment data where the stats which were saying that we are significantly short of a number of 16+ and adult learners in a particular area and where when examining the data and when opening the enrolment figure figures will suggest that those figures are entirely incorrect."* (Appendix B II04)

Other studies raised the importance of the quality data that can be trusted for use in education in order to make judgments and inform decisions in support of learning, as stated below by Wu (2009: 44):

> "*Overall, all participants clearly articulated a need to find quality data that could be trusted. However, given the mandated state and district testing, the participants felt restricted in their ability to gather higher quality data. When participants found the data to be of lower quality, the only course of action was to dismiss the data."* (Wu, 2009)

- Motivation to use data: The educators in FE colleges need support and assistance to be motivated to use the data effectively. There is a vital role for leadership and management teams to make staff motivated to use data to improve the achievements and success of students and the college. There are expectations from FE educators to use data to examine the class progression to improve student performance in areas related to attendance, punctuality, retention, achievement and success rates, and to identify areas where further improvement is needed. It is important for staff to be engaged about what data, when, where and what additional data might be needed to evaluate course/ class performance and set improvement targets. FE educators need to have the use of data emphasised for both accountability and to improve achievements. The college data are used by OFSTED inspectors and other government agencies. As FE colleges are public organisations and funded from public money, members of the public and tax payers are

interested in the college data in terms of achievement and value for money. Educators also need to be motivated to use the data by providing time for staff to train, analyse and use data. Leaders and teachers have to use data and make sense of it regularly to monitor progression, retention and success rates. Below is a statement from one of the participants in this study who expressed the challenges of effective use of data:

> *"I have one of the biggest challenges for me and the colleagues are how we use that data effectively at different points of the year so that we are not waiting for the end of the year and saying I will have got a problem here is if in the courses 50% learners have failed." (*Appendix B II10)

- Timeliness of data. It is very important to have the data available for practitioners on time as time delays associated with providing the required data will have a negative impact on educators' ability to use the information for the right decisions at the right time. In contrast, the availability and access to live data enabled educators to use it throughout the year. One senior manager participant to this study suggested that the key data have to be available at all times:

> *"The key performance indicators have got to be available all the time at your fingertips like attendance, punctuality and numbers of learners on the programme. The information about tracking of the learners' progression, retention, achievement and success rate. All of these things need to be very close at hand and up to date. You need all these so you he can have the overview of the above very easily and nothing was tightened."* (Appendix B II08).

Other studies confirm the importance of timeliness and the frequent mismatch between the fast pace of decision making in schools and the lag time involved in receiving results of tests or evaluations (Coburn et al., 2005).

- Staff development or continuous professional development (CPD): Various facets of staff capacity appeared to enable data use in this study, including teachers' levels of preparation and skills, access to professional development to bolster technical and inquiry skills, and support from individuals who were skilled in filtering data to make them more interpretable and usable. Educators need to be trained and prepared to use data effectively to personalise learning. They need to have ability to interpret data to understand student progress, make daily decisions and interventions to meet individual student needs. They should be able to use data systems to inform instructional decisions and differentiate for individual students.

Staff development training courses for using the available software in colleges are often implemented on a large scale, mainly through the schedule of professional development training without expectations of teacher involvement. The lack of substantial and relevant professional development has been a barrier to many initiatives involving educational changes (Newman, King and Youngs, 2000). In this study, managers highlighted the importance of practical staff development in supporting teachers to use the data. One practice is the delivery of the training through an in-house expert where each school selects personnel who are trained in using the system and who then provide data analysis for teachers and help for teachers in their own data use. Using a local in-house expert can be very useful to pass on the knowledge and training to their school and curriculum areas by using their data in the training. There was widespread agreement among all of the respondents on the importance of having local data mentors:

> *"If the manager is comfortable using the system and having access to that data in different forms and is happy and already starts using the data in one way or another, then it's a lot easier for that person to train the staff or make their staff aware of the tools already in place and how they can be used and if the manager feels comfortable with them, he will be in a position to have to relate that information to his or her staff. If the manager is not terribly comfortable with using those tools or doesn't know how to use them very well or is computer shy then of course that person is not going to enforce the use of the data to his staff."(*Appendix B II07)

Professional development about the effective use of the data system is also strongly needed because the system will be the primary point of access for all data (Wayman, 2007). A participant in this study suggested having continuous training for staff so that they were continually aware of the changes in the sector as well as on how to use the data effectively:

> *"I think more staff need to get training about how to get how to use the data. Another thing because LSC changes all the time we don't know sometimes what is important one time it is success rates another time it's SLN's, what is important what do we need to do as a college to do well."* (Appendix B II18)

Basic skills in data awareness and analysis are necessary for teachers to have to make sense of data and analyse data in order to acquire relevant and useful knowledge. Another lecturer suggested that there was a need for teachers to have basic and practical training in order to develop their data awareness and analysis skills in analysing the basic data which shows them a pattern emerging in their class:

> *"I think there needs to be training which is based on very practical elements of what is of benefit to you as a teacher to improve the management of your class because it's about managing your class and the profile of attendance, work pattern, anything which can be*

all sorts of analysing and teachers mostly want to support their students" (Appendix B II19)

- Ownership of data: It is important for staff members to distinguish between curriculum staff who own the data and support staff who look after the system and data. Many curriculum participants raised the issues of accuracy and the validity of the data. Many participants in this study suggested that the tutor and curriculum staff own the data and they should take the responsibility of making the data as accurate as possible. Support staff and mainly MIS staff look after the data and produce accurate reports from up to date data. Curriculum staff can update the data where required in class, such as register data. The other data can be up-dated through requests for changes to MIS staff. It is worth mentioning that in fact that data are sometimes perceived as unreliable or untimely, and that there are inherent difficulties in interpreting it for use to support learning and decision making. The study has sought to explore perceptions around issues of access, interpretability, validity and reliability of data. The issues of data ownership is raised among participants to the study as stated by a member of focus group:

  > *"Tutors should realise that MIS staff look after their data, they don't own the data. MIS produce reports and give them access to their data. Registers marked in class and attendance and punctuality reports can be produced from the system. Curriculum staff can access their data and make requests to MIS staff to update such student withdrawals."*(Appendix C FG01)

- Collaboration: In assessing the research material for effective use of data, this study has examined patterns and levels of collaboration among staff and leaders in FE. The collaboration includes sharing knowledge in team meetings, coaching, or other formal or informal school or directorate meetings, or collaboration between teachers in the same

school, curriculum area, or same directorate. Collaboration can be very useful to share learning and experience of using data in order to produce quality reports such as the SAR which requires different inputs or contributions from team members One senior manager described how collaboration allowed them to share knowledge and best practices:

> *"Positive and negative, during the course team meetings my staff familiar I sent a copy of the business plan, SAR and operational plan so they are all aware of what we said we would do and we are all aware of the standards of which we work in. at the school meetings we have a full management meeting every week, the head of quality comes down to that meeting and goes through issues around data around complaints."*(Appendix B II22)

Other studies raised the importance of collaboration and sharing knowledge among practitioners to motivate the effective use of data in order to make appropriate actions and inform decisions in support of the education and learning process (Datnow et al., 2007).

- Communication: Another vital step towards using the data effectively is good communication among teachers/leaders within the same service/school or different areas and directorate. Good communications enable educators to share their knowledge and struggles in using the data. The need to share knowledge among educators of different types of data to different audiences made communication about data a constant challenge. There is always a need to find and share new ideas in order to encourage engagement of the audience and to help them to deal with different types of data, to improve using data, to make sense of data and use information for decision making and to improve education. A middle manager participant to this study reported on the value of communication and sharing knowledge in effective use of data for decision making:

  > *"Make them aware that something exists, it should be part of their induction and know that it's available and say how it's going to help you, saying what do we*

> *have and what will we get out of this…it's not only promoting this database, it's making sure that people know that it exists and how to use it. You can also use LDMIS to often for instance throughout the year, to arrange some workshops. I have in many instances promoted the use of SRIS, the use of the data and I've actually done some presentations and we will be doing more in the future as people are not sure about what they get out of this too."(*Appendix B II07)

Leadership and management in FE colleges have to offer opportunities to educators to use the data successfully, and to make sense of data in support of learning and decision making. They need to create a culture of data use and staff need to be motivated to use data effectively. The following statement from one senior manager has raised the important points that leaders in FE colleges can take to improve the use of data:

> *"I think there are three things that could make the college improve the use of data. One is absolutely crucially management of the organization at all levels has to be committed to use the data to make decisions. So culturally the organization has to make the commitment to use the data. If you haven't got that commitment you're never going to use it effectively. So there's a kind of pre-requisite and understanding that data are important. From that flows the need to keep it accurate for people to check data. So data accuracy is from a subset of culture saying that, we've got to use data.*
>
> *The second thing is giving people the tools to be able to understand data. Not everybody is intuitively comfortable with the numbers. I think that that is one of the weaknesses in the UK. It is a weakness in Further Education that unless you're in a subject area where the use of numbers is important, people are not comfortable of using numbers. It's amazing how immature some people are in terms of understanding whether a number is significant or not. So if you're confident using numbers, you will know whether that data are important, significant or not. So you have to give people the tools to be able to do this effectively and I think that to expect staff, who don't come from a background where they're comfortable using numbers to be able to.*
>
> *The third is data has to have a purpose; it has to be an outcome. The purpose is not just to have accurate data or a culture of using data. It's not about giving people the tools and being able to put the numbers on the self-assessment report; it has to have an impact on outcome. That is crucial because why do we have to have accurate data? Success rates are really important, retention is very important, attendance is very important because it's about the learner experience. All the numbers are tools and proxies to ensure that we give a good education experience."*(Appendix B II16)

Useful tool and data features

To provide maximum value, data systems that analyse student data must be easily accessible for different levels of FE colleges. It is important that a product offers a user-friendly interface that promotes data access and intuitively provides a set of data analysis tools. With user-friendly programs, teachers are more likely to want to pursue the substantial range of information that is available. One middle manager commented on the usefulness of the data system:

> *"From my point of view the electronic data one of the improvements over the last few years would be the easy access to the data. You got the data you want. I use SRIS extensively, I particularly the new reports so I can monitor the courses and the school. The data all are there and it is just a question of working out what you want to know. We all appreciate format we understand, it's almost in plain English. The data should be available rather than thrown at us."* (Appendix B II20)

Many software tools for recording, updating and progressing learner records or other learner related information abound. Colleges have the choice of buying or implementing these tools which have similar functionalities to support and fulfil internal needs and external bodies, i.e. government funding bodies and exam awarding bodies. Many of these tools are and can be customised to enable the leader to use the data, make sense of the data and use the information and knowledge for decision making processes. It is very difficult to find one system to offer "one-stop shops" for all learner related data such as learner information, including assessment, demographic information, attendance and punctuality and self-assessment reports.

There are two main type of FE college systems which the colleges need to obtain. The first system is the main MIS system or core system which records, amends, and sorts all the records about all student related data such as course files, timetables, student records, registers, examinations and so on. These systems have facilities to produce customised reports and to generate special and generic reports to fulfil internal and external needs. The second type of systems are mainly reporting systems which aggregate data from main college systems, and other data, to produce reports such as retention, achievement and success rates. The reports from these systems are compared with national benchmarks. Examples of these systems include the main learner MIS systems such as EBS and Agresso or systems for monitoring retention and achievement such as Proachieve. Using tools such Proachieve, educators can see how each class/group performed in each school or sector subject area. These performances can be compared with different curriculum areas and with national benchmarks for the same qualification. These performances also can be compared with different directorates and across different years of student retention, achievement and success rates. The reports from this tool can be tailored and customised to any specific need of department and services.

Many participants in this study described the use of software data and tools which helped them to use the data effectively for data driven decision making. The following statement from one senior lecturer who uses data regularly to get reports on students retention, success and attendances but wishes to access all his reports from one integrated system commented on the use of software tools and features to use the data effectively:

> *"Well, any software is useful as long as people know how to use it. The ones we are using, the example the ones like Proachieve* [Software that produces retention, achievement and success rate data]. *For example to me that's quite good because you can drill down and once you are trained and if you keep practising it is quite useful tool to us, to find the data but I think it depends on how much you're going to use it if you feel once the training or twice a training should be fine, this is about Proachieve. We do use EBS* [College MIS system]. *EBS are straightforward I think that as I said it should be integrated into one system."(*Appendix B II15)

The literature suggested that the advent of new computer software systems with user-friendly interfaces allow rapid, easy access to student data for teachers and other educational professionals. Using the new technology enables leaders in education to access useful information to support learning and decision making (Wayman, Stringfield, and Yakimowski, 2004). Despite the advances in software technology, there are still some concerns among the participants about the availability and accuracy of data, similar to the concerns they have had for years, as one participant stated:

> *"I had a meeting with clients this morning and there were similar points that were raised in the meeting this morning which I can remember meetings going back 5-10 years ago about the availability of data the reliability of data and the requirement of actually using data to form judgements which has not changed massively which is in fact interesting as we have had better software updates to better machinery and higher specs of I.T. but sometimes you come back to the same issues as to where the data are or isn't complete or available . You know there is the actual issue or sourcing of data and the time you use the data. But increasing managers are now expected to produce quality reviews which are much more thorough in terms of the breadth of data so not just student success rates and complaints procedures and one aspect is attendance punctuality responses from surveys etc which without their own internal data analysis issues so the idea is that you become more data rich and then you have to analyse the data and then make judgements and decisions so you can only go so far with it"* (Appendix B II04)

It is necessary for FE colleges to have an appropriate integrated tool to be used by staff members effectively and with integrity. With the advent of advanced software technology, there are no

technically challenging issues around having the right tool. The available software tools provide facilities to meet the college's internal and external demands with facilities to customize the reports and data input screens. The data analysis from this study suggests that in order for the MIS data to be used effectively in support of learning, a new model or framework is required for design and implementation in FE colleges. This new framework will enable practitioners at various professional levels to access the relevant data and turn the data into meaningful information and knowledge on which to act in order to make/inform appropriate actions to improve success and achievements. Using my professional experience in this field and listening to the participants from this study, I have developed a new framework as shown in Figure 5.1. This was derived from both the 'factor research' approach at the theoretical single case study level and the in-depth 'process approach' at the more detailed situated level of the embedded sub-units of analysis from the interviewees in their actual daily practices.

This diagram shows how Data Input is used in its various contexts for the support of business aims and the improvement of education and learning. It can be seen that the diagram forms a feedback loop, beginning with the data input. Information flows continuously around the loop and also goes outside the loop to external agencies.

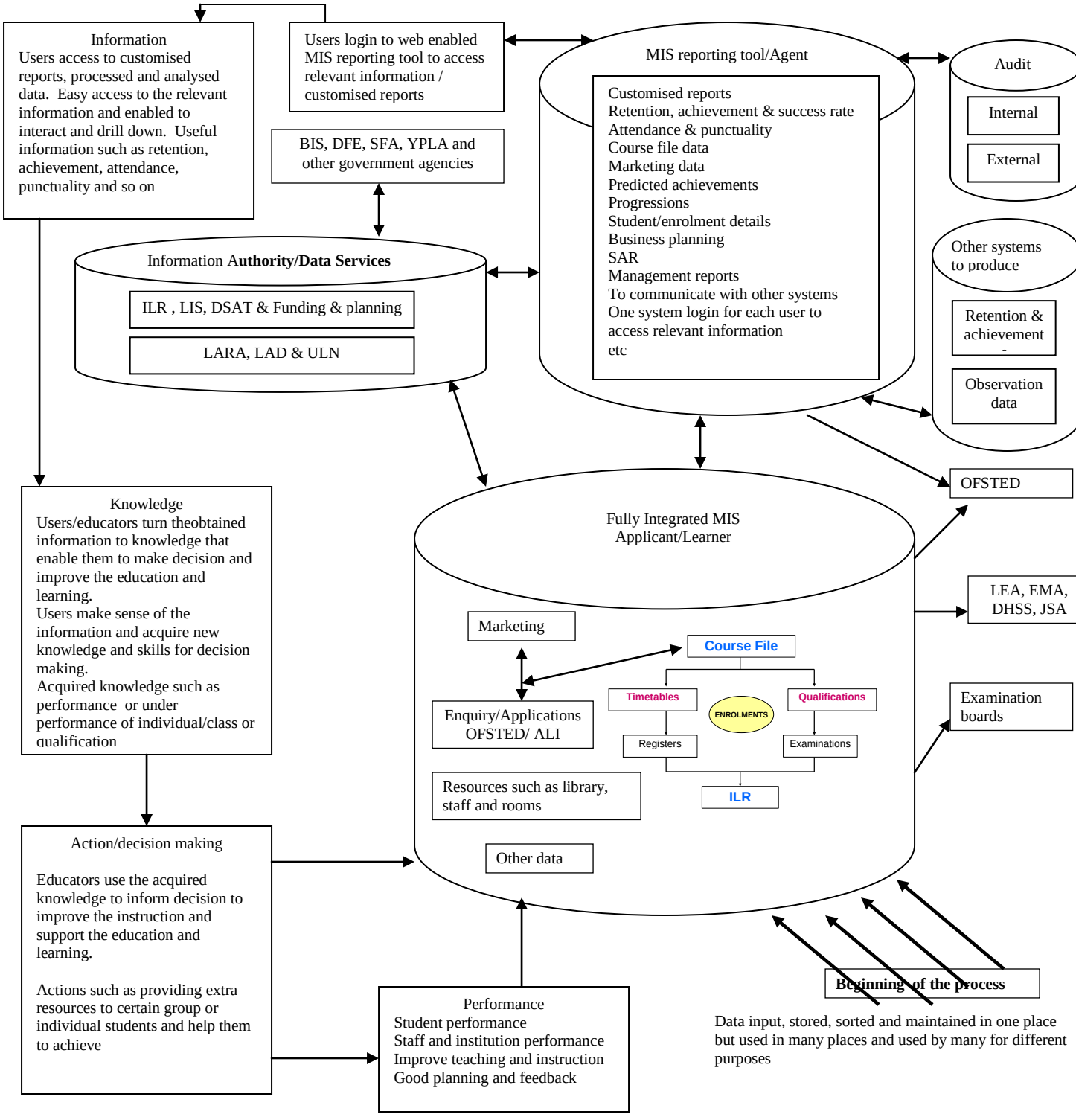

Figure 5.1. MIS framework for FE colleges to support business aims and improve education and learning

The framework which is designed and illustrated in Figure 5.1 is recommended for implementation in FE colleges for improved data usage in support of education and learning. The MIS framework contributes to knowledge on the role of MIS and data use in support of education and learning in FE colleges. The idea of this framework is derived from the analysis of the literature, the responses of participants from this study and from my own professional experience in the field of MIS and the effective use of data in FE to support decision making and the improvement of learning. The suggested framework for an FE MIS system is a fully integrated system where the data input is stored, sorted and maintained in one place but is used in many places and used by many practitioners for different purposes. At the centre of this system is the course file which stores all the required information on the courses offered in the college, including the qualification and the timetables. The electronic register is the electronic view of the timetable and the enrolment, whereas the examination entries are the electronic view of the enrolment, qualification and examination boards' link. In this framework, all examination entries to the exam boards are automatic or semi-automatic and no manual data input or interaction is required. The system is capable of producing funding or other returns. On the top of this system is a web enabled software/reporting tool that supports users in accessing MIS data through it.

The agent/reporting tool produces customised reports and analyses the data in an understandable format for easy access. Users have to login onto one system only to get the required information which may be compiled from many systems and sources. MIS officers and administrators systematically collect and analyse data to help with a range of judgements to improve the success and achievement of students. The collected data are first turned into information via analysis and

then combined with other data expertise to create actionable knowledge. The importance of easy access by staff to obtain the relevant information in one system is also identified by Datnow et. al. (2007):

> "*Many educators across the school systems indicated that they would like to see the various types of data organized in a coherent fashion and managed in one system. When data were not organized well, teachers remarked that they felt like they were spending a lot of time filling out paperwork"* ((Datnow et. al., 2007).

The main issues facing the effective use of the system are the people, not the software. The people need to use the system with integrity and make the data up to data and accurate so that it can produce useful reports to support educators in learning and decision making. A participant from a focus group commented on how the system can be used effectively to produce useful reports that can support learning and decision making:

> *"Tutors need to mark registers in classrooms and on time with integrity, if you don't mark with integrity then you don't have a true picture of attendance and punctuality.*
> *You have to have the right software is a condition. The college need to have the right integrated software. The course file, timetable, register application, exams and enrolments all should be on this integrated system. The issue is not the right tools. Staff have to use the software with integrity so any reports on the attendance and punctuality that come out from the system would be correct and up to date. Equally staff have to withdraw students on in a timely manner so any reports produced will be up to date. MIS staff to run exception reports to capture noncompliance as early as possible to alert the manager to get back to the tutors"* (Appendix C FG01)

The literature suggested that MIS tools cannot be considered without consideration of the role of people, in particular management and how management chooses to use such systems. Rocket and Hull (2004: 1) state:

"All the major software systems are competent. The real challenge for colleges is getting the people system right: organisational culture, management attitude, organisational structure, historical precedent and organisational policies."

Summary

This chapter has described the data analysis and discussed the data collected. For this study two main data collection methods were used, namely documentary analysis and interview data. From this data, the 'factor research' approach at the theoretical single case study level and the 'process research' approach of the embedded sub-units of analysis were developed to inform the design of the new MIS Framework for FE colleges. The documents and reports collected for the study helped me to define and structure the interview questions which developed my knowledge about how educators may and can use data to improve education and decision making. Interview data were collected through individual interviews and focus groups. Individual interviews were conducted using a semi structured protocol that focused discussion on the role of data and MIS in support of learning. Focus groups were conducted using a semi structured protocol similar to that used in individual interviews. In total 60 members of staff in the targeted colleges were interviewed of whom 20 were interviewed in seven focus groups and the rest of them were conducted through individual interviews.

Data from qualitative interviews and documentary analysis were examined to provide insight regarding how data and MIS tools are used or can be used to improve education and decision making. To summarise the analysis of the documents and participant interviews, the data analysis in this section was focused on two main issues around answering the research questions. First is the data analysis regarding the way in which data are used by educators in FE colleges

and the barriers that face them to use data effectively. Second, what steps can be used to improve the use of the data. The following is the summary of the main points that derive from this section in terms of using data in FE colleges:

Data use to inform decisions

During the documentary analysis and analysis of participants' responses, I noted that data are used by educators to inform or make wise decisions. Almost all participants agreed that the data can be used to inform decisions and improve learning if data are available on time, are accurate, reliable, provided in a simple format and are easy to access. There are some concerns among some participants that data may be available but that they do not know whether it is available, where it is and how to access it.

Effective use of data to improve education

Data analysis of this study suggests that data are one of the main factors to be used to improve education. College data on student retention, achievement, success rates, attendance and punctuality can be used and are used by educators to monitor the college, course and students' performance. By using these data, educators at different levels can identify the strengths and weaknesses of a programme, subject or student and this will help educators to put action plans in place in order to help students to achieve.

Useful tool and data features

To provide maximum value, data systems that analyse student data must be easily accessible for different levels of staff within FE colleges. It is important that a product offers a user-friendly interface that promotes data access and intuitively provides a set of tools for data analysis.

Steps that can be used to improve the use of data

Data analysis from the interview data suggests that there are some barriers which do not help educators to use the data to improve learning in FE colleges. Below is the summary of steps that FE colleges could take to improve the use of data:

- Access to data: Educators require information which is easily accessible and can be interpreted to help inform teaching and learning.
- Communication: Another vital step to use the data effectively is good communication among teachers/leaders within the same service/school or different areas and directorates. Good communications enable educators to share their knowledge and struggles in using the data, make sense of it and use the information for decision making.
- Timeliness of data: It is very important to have the data available for educators on time as time delays associated with providing the required data will have a negative impact on educators' ability to make sense of the data and use the information for the right and wise decisions at the right time.

- Data Integration: It is important for educators to have access to one system in which they can obtain useful and relevant information.
- Quality and reliability of data: Data needs to be trusted and reliable for educators to make sense of it and take appropriate decisions.
- Motivation to use data: There is an important role for leadership and management teams to motivate and encourage staff to use data to improve the achievements and success of students and the college. There are expectations from FE educators to use data to examine class progression and thus to improve student performance in areas related to attendance, punctuality, retention, achievement and success rates, and to identify areas where further improvement is needed.
- Data ownership: It is important to distinguish between staff who own data and staff who look after the data.
- Staff development or continuous professional development (CPD): Various facets of staff capacity appeared to enable data use in this study, including teachers' levels of preparation and skills, access to professional development to bolster technical and inquiry skills, and support from individuals who were skilled in filtering data to make them more interpretable and usable.
- Collaboration: In assessing the research material for the effective use of data, this study has examined patterns and levels of collaboration among staff and leaders in FE. The collaboration includes sharing knowledge in team meetings, coaches, or other formal or informal school or directorate meetings. In working together, educators share information, pool expertise, and learn from each other. The success of sharing information and

knowledge depends on the degree to which the knowledge is re-created in the recipient (Cummings, 2003; Davenport et al., 2000).

In my role as an MIS professional and as a result of the data analysis from this study, I have developed a new framework and steps for FE colleges to take to improve the use MIS data to support educators in decision making and in the improvement of learning processes. The developed framework contributes to knowledge regarding the role of MIS to use data to improve learning in FE colleges. The framework when implemented in FE colleges also can help the leaders and teachers to access the useful data on time and gain the relevant knowledge to aid them directly or indirectly with teaching and learning. Figure 5.2 illustrates this new framework and steps to improve the use of MIS data in FE colleges.

Figure 5.2 shows the various steps which can be taken to improve the number of MIS data in FE Colleges. This framework begins with the data culture and ends with action. Between the culture and action there are three other layers of information to be engaged with in order to make effective use of MIS data in support of education and learning. The aspects of availability, knowledge, and information are key elements to understand in this process.

Figure 5.2 Framework for steps to take to improve the use of MIS data in FE colleges

The second framework for steps to take to improve the use of MIS data in FE colleges designed and illustrated above (Figure 5.2) is recommended to be used by leaders and teachers to help them with best use of data to assist them with teaching and learning. As it is illustrated, it is not complex but requires intention and strong leadership to have/change the culture of using data so that all use and own the data. With the data available and the culture of data use, educators will have the useful asset to use the available data and turn into useful information that can be interpreted easily by all. The compiled and relevant information can assist the leaders and teachers to gain the experience and knowledge which aid them to make wise decisions at the right time. Educators can make sense of the obtained knowledge and information and guide them with decision making to take the right actions such as the setup of more courses with high success rates and the closure of low performance courses.

Both frameworks illustrated in Figure 5.1 and 5.2 are related to each other and can support colleges to improve the use of data for their education and learning. First framework is about to have the right system in place so the meaningful and necessary data are available on time within click of button(s). Educators will be frustrated when correct system not in place and cannot access the necessary data/information on time and when required. The second framework is about the people's system where the leadership in colleges to take the steps to use the data and make sense of the data to improve the performance and learning. Having the right MIS system in place is not good enough when there is no intention or no culture of data use exist. On the other hand they can't take the steps to improve the use of data when there is no fully integrated MIS system implemented as described in Figure 5.1. Sensemaking in the analysis of the participants'

data was very important to create and design these two frameworks. Participants' responses data, their experiences of using data and make sense of data enabled me to come up with these frameworks, based on both the single case analysis and the analysis of the embedded sub-units of particular interviewees. The new MIS framework and steps to improve the use of data are quite attainable by efficient and successful institutions. FE leaders and teachers can greatly benefit from best use of data and they want to know more about their students and educate them better.

In the next chapter, the outcomes of the study are concluded and presented in relation to the research questions.

CHAPTER SIX

Conclusion and Implications

This chapter considers the findings from this research in the context of the main goals of the study that emerged from the literature review and the ways in which the study has contributed to this body of knowledge. It also examines the research design and methods used and the effectiveness of the approach to analyse the data collected for the study to generate information on MIS and data use in FE colleges to support learning and decision making. These findings have generated some ideas and recommendations for further research in this area on how further studies may be undertaken. In addition, the chapter also considers how the findings contribute to the growing body of knowledge in the area of data use, knowledge management and decision making in educational institutions in general and FE colleges in particular.

In the world's knowledge based economy, information/data are clearly recognised as one of the most potent assets that an organisation can possess. Educational institutions have collected large amounts of data on students, courses and their performances for years but these data are rarely used efficiently to support the learning of students, and in particular to address their individual learning needs. There is significant interest among practitioners in the use of data to support learning and improve instruction. The world of FE can move and change very quickly therefore leaders, administrators and practitioners in FE colleges are required to use data to support their day to day work and improve learning and education and to meet the current the accountability

measures,. This investigation began with the assumption that effective data use in FE colleges is essential to support learning and decision making, but, within that assumption, the research sought to discover how practitioners felt effective MIS support for learning takes place to improve students' achievements and success.

With the advent of increasingly advanced new technology, many business intelligence (BI) tools have arrived on the markets that provide relevant information to support businesses. These tools offer user friendly interfaces that allow users to analyse data and produce relevant information at the right time. Information obtained from BI then can be converted into knowledge and lead to wise decisions and reasonable actions. MIS in educational institutions in general and FE colleges in particular can be regarded as BI that supports these institutions in strategy planning and decision making. The availability of these MIS systems not only helps with producing reports and data returns required by the DS and government funding agencies. These systems also offer additional and essential features and capabilities. The availability and accessibility of these systems to leaders, administrators and teachers gives them the opportunity to obtain relevant data for relevant people at the right time and to turn these data into useful information to support students' learning and improve achievements.

According to Ackoff (1989), data, information, and knowledge form a continuum that can be applied to make decisions. Light et al. (2004) constructed a framework of how data are turned into knowledge, based on a sequence of six steps identified by Ackoff (1989). These steps include collecting, organising, summarising, analysing, synthesising, and decision making. Data exist in a raw state. They do not have meaning in and of themselves, and therefore can exist in

any form, usable or not. Raw data are always made meaningful by a process of contextualizing data within the situation that produced the data. Whether or not data become information depends on the understanding of the person looking at the data. Information is data that is given meaning when connected to a context. Knowledge is the collection of information deemed useful, and eventually used to guide action.

Good monitoring requires timely and accurate data on learners' attendance and progression. According to the OFSTED report (2004), one of the main reasons for failing colleges is due to inadequate management information, with data not used to inform strategy and practice. With the ongoing changes in the FE education, FE leadership have left with no option but to use data more often for planning, monitoring performance and meet the accountability measures put in place by different government and funding agencies. FE staff at all levels have to take more steps to make improvement in using data to support the education and teaching. Institutions need to set up and implement efficient MIS system that provides the teachers and leaders with the relevant information and on time. FE colleges also have to put proper support in place to assist the educators to access the assets of data to turn them into useful information. Previous researches in FE propose that good and reliable MIS data could help colleges to identify and track learners and courses with poor attendance, punctuality, incomplete work and performance (OFSTED, 2003). Well measured and developed MIS is essential to provide the basic information required to enable leaders and teachers to make timely, well informed decisions about all aspects of the organisation and fulfil the requirement of external agencies.

FE colleges are increasingly characterized by a need to construct accounts and make individuals, other members of staff and the college accountable to a variety of internal and external audiences and government agencies. Accountabilities work draws upon a wide collection of techniques, systems and technologies to ensure its practical accomplishment as leadership work. MIS and its everyday use provides a standardised record of work, documenting the activities of both students and staff. Looking at how such MIS data get collected and used, this study make clear that everyday leadership work involves making, monitoring, checking and evaluating decisions. The MIS tools and technology plays an important role in providing a significant resource for leadership work, for the presentation and representation of data. A study of this kind of leadership practice involves an appreciation of the careful, and skilful, consideration and calculation of management information.

Managers' and teachers' use of data in colleges requires strong leadership which supports planning for data use and make efforts to implement the culture of data use. Data can be used to judge people's performance and take punitive action against underachievers, or they can be used to diagnose problems and determine the efficacy of solutions.

This study aimed to gain a deeper understanding of how educators use data successfully to improve learning and decision making in education. Improving learning requires strong leadership to put in place appropriate strategic plans. The plans include analysis of existing data to determine areas of strength, weakness and improvement, and strategies and measurement aims

for targeted areas of development. The study also aimed to add to the growing body of research surrounding data use, the role of MIS and data driven decision making in FE colleges.

This qualitative study used interview data and documentary analysis as data collection methods to answer the following research questions:

How can (MIS) support learning in FE colleges?

This question was divided onto the following sub-questions. These sub-questions aimed to create a clear view on how to use data effectively to support leaders in FE colleges in decision making processes. The responses to each of these sub questions are indicated in the following pages. To clarify the outcomes of each research sub-question they are each now considered in turn.

1. **How do managers/ leaders use data to make decisions?**

It is important that enough and relevant information is available and accessible to support decisions and instructions. The actions of practitioners and educational leaders are limited when the available information does not answer all their questions and queries (White, Kelly and Rouncefield, 2005). Since students' studies in college take place over a number of years, the range of data must also allow for longitudinal presentation over all periods of available data to help the practitioners examine trends of colleges, schools, curriculum areas, classes and students over time (Martinez, 2001; NAO, 2001; KPMG, 2010). The findings from this study suggest that the MIS data and reports are used in FE colleges to inform decisions.

This study suggests that the main provider of data come from MIS services. MIS provides tools to make the data available for educators to use on a daily basis to support learning. Participants in this study point out that in order to make effective decisions, they need MIS tools which are simple to use, are easy to use, offer comprehensive support and help, produce relevant and accurate reports, integrated with other data systems and are accessible to all staff to meet their needs.

2. What practices are effective in teacher use of the MIS tools available?

The findings from this study suggest the importance of MIS data system integration. It is important for practitioners to access one system that they can confidently expect to have useful and relevant information. The system should have a facility to drill down and get the required information. The system may access different sources of information in the background but for the user of the system one source is important. The existing literature confirms the importance of data system integration in data use (Wayman et al., 2007; Lachat and Smith, 2005).

3. How can data be used effectively and can its use improve education?

FE colleges need to develop and understanding among their staff members about how data can be used effectively, to make sense of and to turn without problem to information and knowledge to improve performance, increase student achievement and learning. This effort will require strong leadership, time, and patience and significant professional development

Earl and Fullan (2003: 392) stated that:

> "*Organisations of all kinds are realising that it is enormously difficult in a world that is rife with data to create visions of the future without sharing and examining what is known. Creating knowledge involves much more than sharing data. Data and*

> *information, on their own, have no meaning. Turning them into knowledge is a human process that involves taking on a 'social life'."*

Armstrong and Anthes (2001) and Massell(2001) both reported that strong leadership and a supportive culture were characteristics of the schools in their studies that were most involved in data use.

Existing literature points out that survey and interview data suggest that individuals will engage in data use if properly supported. For instance, building-level educators were searching for ways to improve their understanding of students and their performances (Wayman, 2007). Data analysis from the qualitative interviews and documentary analysis for this study validate the above existing literature. Educators in FE can make best of use data if they are aware of what can be accessible and properly trained and supported. While improvements in student learning and better performance are ultimately the goal of data use, these changes are often preceded by improvement in educational attitude and practice, as one participant stated:

> *"The data can be used to improve education if the person using it is wise because the data can be manipulated to present an argument against your case and I think someone who has the genuine benefit of education either for their own class or for the department or the college has to use it wisely. I think the college has a lot of data which I think gets the picture of the quality of teaching and its truest forms can show the strengths and the weakness of the college and - if implemented correctly - can perhaps continue professional development or support system which can be raised or share the level of data in quality."(*Appendix B II19)

Wu (2009: 94) found that educational leaders require further training in building capacity to use the data effectively in informing decisions, as noted below:

> *"It is still apparent that more training in data literacy is needed to help school leaders build capacity to implement data driven decision making successfully. This training needs to provide opportunities for school leaders to learn how to create systems for data driven decision making."* (Wu, 2009)

The findings from this study again validate the above existing literature. All college teachers and leaders need to practice and develop their skills for communicating data to all stakeholders. Also, opportunities for staff training need to be provided by college leaders/management. Staff training at small scale levels are most effective to develop practitioners' skills and awareness of data use. This can be achieved in the training of key members of staff in each directorate, school or curriculum area who then cascade down their data use skills to their colleagues in their own areas.

4. What steps can FE colleges take to improve the use of data?

This sub question is addressed in, the MIS framework (Figure 5.1), framework of steps to improve the use of data (Figure 5.2) and recommendations to improve the use of data discussed later in this chapter.

5. What software and data tools were most useful to teachers/leaders?

Many software tools exist for recording, updating and progressing learner records or other learner related information. Colleges have the choice of buying or implementing tools which have similar functionalities to support and fulfil internal needs and the requirements of external bodies, i.e. government funding bodies and exam awarding bodies. Many of these tools are customised to enable leaders to use data for decision making processes. It is very difficult to find a single system to offer "one-stop shops" for all learner related data such as learner information, including

assessment, demographic, attendance and punctuality and self assessment reports. Examples of these systems include main learner MIS system such as EBS and Agresso or systems for monitoring retention and achievement such as Proachieve. This study points out the use of reliable software data and tools to help staff to use the data effectively for data driven decision making and learning at all levels. Software tools exist which allows educators to disaggregate data and generate reports and show the pattern and trends of required information in a simple format to inform decisions. The existing literature validates the importance of the use of these in the context of the findings from this study (Lachat et al., 2006; Holcomb, 1999; Love, 2004; Datnow et al., 2007; Johnson, 2002).

I carried out the research in three FE colleges, examining the effective use of Management Information Systems data and the extent to which they function well in supporting leaders and teachers in FE colleges. I intended to understand the ways in which data are thought about and used across multiple levels of colleges and to further illuminate the strategies and practices that characterise data-driven decision-making.

As discussed in the research methodology chapter, this study adopted Weick's (1995) theory of qualitative interpretive SM as underpinning theory to explore FE leaders and teachers responses to discourses of using data to inform wise decisions. Qualitative research involves the use of qualitative data, such as interviews, documents, and participant observation data, to understand and explain social phenomena. Qualitative researchers can be found in many disciplines and

fields, using a variety of approaches, methods and techniques. In MIS, there has been a general shift in MIS research away from technological to managerial and organisational issues: hence, there has been an increasing interest in the application of qualitative research methods.

A better understanding of how data can be used successfully can lead to the design of systems that are supportive of decision-making in such areas and will contribute towards the development of alternative future systems in order to enable leaders in FE to use data effectively to support learning and decision making processes. Examining the use of MIS and the extent to which they are effective in supporting the work of leaders in FE will increase the body of knowledge among leaders in FE, enabling them to use data more effectively as accountability tools and in decision making processes. The gap in data use in FE colleges need to be closed to help leaders and teachers in using data effectively to support learning and data driven decision making. Increased knowledge of college staff will build good capacity for learner achievement and for the success of the colleges overall.

Interviews data and document analysis were utilised in this research. The first data collection used in this study is document analysis. The document sources included sets of policy and procedure texts and official Reports from variety of sources and government agencies such as the Foster Report (2005), the Leitch Report (2006), SAR and the Ofsted Reports. The documentary analysis also includes the internal reports generated by MIS software or provided by MIS staff on schedule i.e. monthly, weekly, every term and so on. I carried out a series of one to one semi-

structured and focus group interviews. The second method of data collection employed in this study was interview data. The interview data collected for this study were from one to one semi structured interview and focus group interviews.

Data from the qualitative interviews and documentary analysis were examined to provide insight regarding how data and MIS are used or can be used to improve education. To summarise the analysis of documentary and participant interviews, the data analysis in this section was focused on two main issues to answer the research questions. First is the data analysis on how the data are used by educators in FE colleges and the barriers they face in using data effectively. Second, what steps can be used to improve use of the data. The MIS framework and recommendations are derived from both the 'factor research' approach at the theoretical single case study level and the in-depth 'process approach' at the more detailed situated level of the embedded sub-units of analysis from the three 60 interviewees/focus groups in their actual daily situations.

As mentioned before, the study adds to the growing body of and builds on the existing literature of effective use of data in FE colleges in support of education and learning. A better understanding of how the data can be used effectively can lead to the design of systems that are supportive of decision-making in such areas and will contribute towards the development of alternative future systems in order to enable leaders in FE to use data successfully to support learning and decision making processes. When staff in FE colleges increase their knowledge and experience on how to use and implement data driven decision making successfully, this leads to increased student support and improves achievements.

Evaluation of the research method and design

The data collected from both the focus group and individual interviews supported effective analysis that enabled insights to the aims and the research question of the study. The use of interviews, following the documentary analysis, allowed the main findings from the documentary analysis to be explored in more depth through the interviews. On the basis of document analysis, I simplified and sub divided the questions to encourage the participant to pay attention to and be motivated to respond to the interview questions. Indeed, this helped me to gather very important points and valuable data to help to identify the findings from this study on the role of MIS and data use in FE colleges to support learning and decision making.

Using the theory of Sensemaking in this study was very useful to explore practitioners' responses on the role of MIS and data use in FE colleges to support education and decision making processes. Overall I believe that this research design and the data collection methods were appropriately worked out and fit for the aim of this investigation. Participants for this study for both focus groups and individual semi structured interviews varied in their role within organisation and locations. Participants in this study range from senior management teams, middle managers, head of services, course team leaders, senior tutors and tutors in targeted FE colleges. The research method and design may and can be altered if it is expanded in other colleges as follow up to this study without a lot of changes and modifications. Of course the findings would be unique to each college and situation in which the study was conducted. For such a study in terms of scale, size and the number of participants, the data collected and analysed were very good, as I did not aim to generalise the findings from this study. Of course this study is not free from difficulties and limitations as mentioned before in areas of choosing

research method, data collection and selecting samples of participants. I believe that I have managed very well to overcome all these limitations by good pre planning and getting professional advice from my two experienced research supervisors. Vast amounts of quality data were collected, which reduced and minimised the limitations and did not impact on the outcomes from the analysis nor the findings produced in this investigation.

Importance of the study

This study was qualitative and I adopted Weick's (1995) theory of Interpretive Sense Making as previously noted. This qualitative research used the interview data and document analysis as a data collection method, from which the single case study with its embedded units of analysis was drawn up. The interview data collected for the study were from one to one semi structured interviews and focus group interviews. The participants in the study were reasonably well-suited for this investigation. Despite all the preparation and planning for focus group interviews, I experienced many expected and unexpected challenges and difficulties. It was not easy to book each focus group with the right people in it in such a way that they could work together. At the beginning of interviews, I was trying to keep the interviewees quiet and listen to the conversations. Focus groups are about participant interaction, and are meant to be flexible, so I encouraged participants to engage in conversation but did not force them. Having too many participants was difficult for controlling and keeping track of who was saying what during audio transcription and data analysis. The smaller group interviews worked well, in the sense that they all had lots to say, but, on the other hand, this meant that in some cases the dominance of some participants made some of the conversation a bit inactive. It is very easy to not gather very good quality data if varied interview techniques are not applied by the focus group interview

conductor. I have tried very hard to make sure all participants were included and gave them a good opportunity and chance to speak and express their views on the issues/questions asked during the interviews. I used probing techniques to make sure everyone understood the questions and rephrased and simplified questions to make them easier to understand and response to conversations.

This study proposes many important recommendations to FE colleges to take to improve the use of data in decision making and learning. When staff in FE colleges increase their knowledge and experience of how to use and implement data driven decision making successfully, this leads to increased student support and improve achievements and success rate.

The findings from this study built on and added to the existing literature on the positive role of MIS as system and service to support education and effective use of data to assist leaders and teachers in learning processes and in particular the use of data in FE colleges. Much of the previous literature examined in this study was on the role of data use in schools. The findings from the study come out with same or similar findings as prior literature examined in the study.

Philips and Pugh (2000) have listed 15 definitions of originality in research. I have used the list to identify the originality points which came out from the study. The main originality points that came out from the study are:

- The research was conducted by myself as researcher and supervised by two experienced university supervisors;

- Three FE colleges were selected in this study that have not been selected before for this type of study;
- The data collected and analysed for this study came from only these three colleges. Documents, interview and focus group data are used in this study are unique;
- The data collected and the participants for this study were only used in this study and provide a unique perspective of the issues relative to the three colleges;
- The literature review has shown no evidence of any study conducted in UK FE colleges on the same topic or research questions;
- The research methods and design were prepared and conducted particularly for this study;
- The literature gathered for this study has analysed studies on the role of data in schools that were conducted in the United States and Australia;
- The study is a case study approach and the findings from the study are related to the specific situations involved in each of these three FE colleges, as reported by interviewees. The study did not aim to generalise;
- The research identifies two frameworks namely, a framework for effective MIS in FE colleges and a framework for steps to improve the effective use of data in support of education and learning. Both frameworks can be adopted and implemented easily in FE colleges and can enable educators to support learning and monitor success and achievements effectively;
- The research enhanced the researcher's professional experience and practice in this field and is likely to have a positive impact to achieve greater understanding about the various

needs of educators for data, in support of the development of user friendly systems to meet their needs;

- The research identified many recommendations to FE colleges in order to improve the use of data in decision making and learning. The recommendations from the study will be presented to the management of these three colleges. The recommendations can be used by leaders and managers in FE education, by FE stakeholders and policy makers to change their practice and policy on using data to implement data driven decision making successfully. The recommendations may also contribute towards the development of an alternative integrated and user friendly future MIS system. Such a system would be able to support educators in FE colleges at different levels in using data effectively, on time, and when needed, to support learning and decision making processes.

Contribution to knowledge

The findings and outcomes of the investigation demonstrate that the study represents a substantial and significant contribution to knowledge, in three domains. First, it contributes to knowledge and understanding of the role of MIS and effective use of data, and the extent to which they are effective in supporting the work of leaders in FE. The study developed a new MIS framework in FE colleges (see Figure 5.1) to support FE institutional business aims and improve education and learning. This new MIS framework is recommended for implementation within FE colleges and can support teachers and educational leaders in colleges to provide enhanced educational opportunities and improve practice and decision making.

Second, the research identified many recommendations to FE colleges in order to understand the wider role of MIS within the entire FE system to improve the use of data to support education, learning and decision making. The study designed a new framework for steps to take to improve the use of MIS data in FE colleges (see Figure 5.1 and 5.2). The framework and the recommendations can be used by leaders of FE education at higher levels, including stakeholders and policy makers to change the practice and policy on using data and to implement data driven decision making successfully. Changing the practice and policy can lead to increased student support and also improve achievements. The recommendations for this are outlined in the next section of this chapter.

Third, the study made some recommendations for future researchers to conduct on the same or similar topic through the use of different tools and methodology. These recommendations can be used by new researchers in this area to build on the work and outcomes from this investigation. Suggestions are made for other studies to continue the investigation of developing further understanding the role of MIS and effective use of data within education in general and FE in particular. Recommendations and indications of where further research may be undertaken are explained later in this chapter.

Finally, the single case studies identified four key themes discussed in chapter 4, namely, problem with access, data integration and availability, staff awareness, understanding and use of data, ownership of data and data in an accessible format to inform decision making.

Additionally, in chapter 5 a fifth theme was identified. Use of data for Self Assessment Report (SAR). These themes informed the ongoing development of this study.

Recommendations to improve the use of data

Earl and Katz (2006) stated:

> *"Not so long ago, decisions in education were based on the best judgments of the people in authority, using a combination of privileged and tacit knowledge of the context, political savvy, professional training and logical analysis. Data played almost no part in decisions. Now, there is no escaping data in education. Accountability has become the watchword of education and data hold a central place in large-scale reform."* Earl and Katz (2006: 2)

FE college educators must use data to inform and validate decisions, to monitor students retention, achievement, attendance, punctuality and success rates and overall the course, school and college performance. Using data effectively has become an essential skill for FE college staff to have to fulfil and meet the various demands, requirements and accountability measures put upon on FE institutions.

Despite all the changes in the FE system over the last two decades, FE colleges have to submit their funding returns data (ILR) to the government funding agency, currently the DS. ILR data are analysed and reports produced from it are used by OFSTED, SAR, Auditors, Exam boards, LEA and other government agencies. OFSTED uses trends of retention, achievement and success rates upon inspection of colleges. Staff colleges at different levels have to use data

regularly to monitor attendance, punctuality, retention, achievement and success rates as this is the basis for internal and external monitoring of the performance of the colleges.

This investigation suggests that the main providers of data are MIS services. MIS provides tools to make the data available for educators to use on the daily basis to support the learning. The study suggests that there are some barriers which do not help educators to use the data to improve the learning in FE colleges. The findings from the study have provided a basis on which to make recommendations to FE college leadership and management and policy makers to take to improve the use of data to support the education and decision making. Below is a summary of recommendations from the study which FE colleges could reflect on in order to improve the use of data:

- Management commitment to use the data effectively: Crucially, management of the organization at all levels has to be committed to use the data to make decisions. So culturally the organization has to make the commitment to use the data. If that commitment does not exist, data are never going to be used effectively.
- Easy access to data: Educators require information which is easily accessible and can be interpreted to help inform teaching and learning.
- Improve communication: Another vital step to use the data effectively is good communication among teachers/leaders within the same service/school or different areas and directorate. Good communications enable educators to share their knowledge and struggles in using the data.

- Timeliness of data. It is very important to have the data available for educators on time as time delays associated with providing the required data will have a negative impact on educators' ability to use the information for the right decisions at the right time. The data need to come in time to make important decisions
- Data Integration: It is important for educators to access to one system that they can gain admission to for useful and relevant information. The system may provide access to different sources of information in the background but for the user of the system it is important that they can get the data from one place without logging to many systems.
- Provide quality and reliability of data: almost all participants in this study clearly articulated a need to find quality data that could be trusted to make and support decision making.
- Motivation to use data: It is important for staff to be engaged about what data, when, where and what additional data might be needed to evaluate course/ class performance and set improvement targets. The use of data for both accountability and improvement in achievements needs to be emphasised for FE educators. College data are used by OFSTED inspectors and other government agencies. As FE colleges are public organisations and funded from public money, members of the public and tax payers are interested in college data in terms of achievement and value for money. Educators also need to be motivated to use the data by managers providing time for staff to train, analyse and use data. Leaders and teachers have to use data and make sense of it regularly to monitor progression, retention and success rates.
- Staff development or continuous professional development (CPD): Various facets of staff capacity appeared to enable data use in my study, including teachers' level of preparation

and skills, access to professional development to bolster technical and inquiry skills, and support from individuals who were skilled in filtering data to make them more interpretable and usable. All college teachers and leaders need to practice and develop their skills for communicating data to all stakeholders. Practitioners need to be trained and prepared to use data effectively to personalise learning. They need to have the ability to interpret data and make sense of data to understand student progress, make daily decisions and interventions to meet individual student needs. Also, opportunities to staff to practice need to be provided by college leaders/management.

- Collaboration: In assessing the research findings on the effective use of data, this study has examined patterns and levels of collaboration among staff and leaders in FE. The collaboration includes sharing knowledge in team meetings, coaches, or other formal or informal school or directorate meetings. Collaboration and conversation will allow teachers and leaders in FE colleges to develop data driven decision making systems targeted to meet their individual, school, team and college needs. Data use and analysis can be a social activity. Whether working toward common professional developments, greater understanding, or a better MIS system, the study shows that educators can realise better educational learning and achievements if they work and share together. In working together, teachers/leaders share information, pool expertise, and learn from each other.
- Good purpose to use data: Data has to have a purpose; it has to be linked to an outcome. The purpose is not just to have accurate data or a culture of using data. It is not about giving people the tools and being able to put the numbers on the self-assessment report; it has to have an impact on outcome.

- Good and professional support in place: This study suggest that educators need a good service support to help them to obtain the relevant data on time and when required to use this for decision making.
- Useful MIS tools are available to educators: It is necessary to give educators the right tools to be able to understand data. Not everybody is intuitively comfortable with the use of numbers. The software needs to be capable of disaggregating data and providing user friendly reports and data to aid educators in decision making and learning.
- Ownership of data: It is important for staff members to distinguish between curriculum staff who own the data and support staff who look after the system and data.

The above points are very important for FE colleges to follow to improve the role of MIS and the use of data to support the learning process. Educational institutions that create ways for individuals to improve, and in doing so, embrace the creativity and individuality that is intrinsic to all educators, are institutions that are more efficient in identifying weakness and mounting effective responses. These institutions are very effective and continue to improve in support of the learning process. I believe that these steps to improve the use of data in FE institutions are quite attainable. I also believe that all educators want to know more about their students and educate them better, and I believe the systemic response discussed in this study is effective in supporting both education and decision making.

Recommendations for Future Research

The current study used qualitative methods to gain a deeper understanding of the role of MIS and data use to support educators to improve instructions and decision making. A better

understanding of data use will enable and motivate leaderships and educators to turn the data into information and make sense of the information to take appropriate and wise action. As mentioned before, the research methods and data collection were fit for the purpose of the study, although there would be more need of further investigations on the role of data use and MIS to understand the effects of the other factors and government policies on motivating educators regarding data driven decision making.

I would recommend conducting this study on a larger scale to increase the validity of the study, to increase the number of targeted colleges and increase the size of the participants. An increase in participants or inclusion of other FE colleges would strengthen the understanding of the role of MIS and data use in support of learning and decision making. Recommending such an approach would require more than one researcher.

Future research should continue to be conducted using a mix of quantitative and qualitative approaches. These could be conducted in order to gain a deeper understanding of how effective use of data will motivate and increase the knowledge of educators to explore the best ways of providing support to student, staff and overall achievement of the colleges. These variances can help to create a more complete picture of data knowledge, data understanding and make use of data among educators in FE colleges to be used continuously to support their work. The study would benefit from the use of quantitative data via questionnaires in addition to the existing qualitative approach. Using questionnaires could expand the size of the study by increasing the number of FE colleges participating in the study. The use of a questionnaire, interviews, document analysis and observations, provides an insight into the role of MIS and best use of data

in decision making in FE colleges to assist the leaders and teachers to improve teaching and learning on an ongoing basis. Conducting further research using a case study approach will provide a much richer picture as more and additional information will be collected.

Lastly, I would recommend the use of data analysis software such NVIVO as this will be particularly useful when there is more data to be analysed. It would be difficult to successfully analyse a large amount of data without such a useful tool.

Summary

FE college educators must use data to inform and validate decisions, to monitor student retention, achievement, attendance, punctuality and success rates and overall the course, school and college performance. Using data effectively has become an essential skill for FE college staff to possess.

The MIS framework and recommendations from this research are derived from both the 'factor research' approach at the theoretical single case study level 'case' of MIS to support education and learning in FE colleges and the in-depth 'process approach' at the more detailed situated level of the embedded sub-units of analysis from the three 60 interviewees/focus groups in their actual daily situations.

This study suggests that the main provider of data comes from MIS services. MIS provides tools to make data available for educators to use on a daily basis to support learning and decision making. The study suggests that there are some barriers which do not help educators to use the data effectively in order to improve learning in FE colleges. This study reveals many important

recommendations for FE colleges to embrace to improve the use of data in decision making and learning. These recommendations are:

- Easy to access to data
- Data integration
- Good communication
- Professional development
- Collaboration
- Motivation to use data
- Available support in place
- Purpose to use data
- Data quality
- Useful and user friendly software tools.
- Ownership of data

A better understanding of how data can be used effectively can lead to the design of systems that are supportive of decision-making in such areas and will contribute towards the development of alternative future systems in order to enable leaders in FE to use data effectively to support learning and decision making processes. When practitioners in FE colleges increase their knowledge and experience of how to use and implement data driven decision making successfully this ought to lead to increased student support and improved achievements and success.

The findings from this study add to the growing body of literature on the role of MIS and the effective use of data in supporting education and learning processes and in particular the use of data in FE colleges. Much of the literature examined in this study was on the role of data use in schools. The findings from this study demonstrate the same or similar findings to the prior literature examined in the study and provide a useful MIS framework (Figure 5.1).

In conclusion, studying a professional doctorate in Education (EdD) has introduced me to the power and opportunity to explore and enhance my professional knowledge and experience. I can see how I have benefitted from this additional perception. I feel, having almost come to the end of my doctoral study, that it is only now that I feel clarity about the transparent knowledge and experiences, professional identity, personal transformation and transprofessional working (Smith, et al., 2012) that I have gained and I can used in every day to improve and support the education and learning. I believe I have benefitted considerably from the success of the research. Studying the doctorate in education, the processes of reflection, the need for thoroughness, the collection of evidence critically, and the application of SM theory have all impacted directly upon my professional practice and delivered real benefits for the study and the FE college in which I work. Finally, writing up my thesis paper has provided an additional aspect to the investigation as I have become more knowledgeable and experienced about many aspects of FE education and the role of MIS in supporting learning processes.

The study also suggested recommendations for future research to conduct on the same topic through the use of different tools and methodology.

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Appendix A

Case Study Design – Single Case Description

The main purpose of this study was to attempt to understand and identify the factors that enabled the educators in FE colleges to use MIS data to support learning. A single case study with embedded units of analysis was designed for this research to answer the research question: *'How does Management Information Systems (MIS) support learning in Further Education Colleges (FE)?*'A single 'case' of MIS supporting learning was designed and the boundary of this investigation was established as 'within FE colleges'. The factor approach will give a 'thin' description to the investigation. The factor approach attempts to identify those factors which have the most influence in successful implementation of IS systems.

The 'factor research' approach was designed at the theoretical single case study level of the 'case' of how MIS is used to support education and learning in FE colleges. The study identified a list of factors through documentary analysis, literature review collected and my own professional experience of MIS and the role of MIS in support of education and learning. Below is the list of factors that I found supported successful use of MIS in learning;

- Advanced in new technology
- Availability of MIS tools and techniques and fit for purpose
- Easy access
- Reliability and validity of data
- Available on time and when required

- Continuous support and development
- Simple and readable format
- Top management support
- Benefits of using MIS

Embedded Sub-Units of Analysis (Sub-Cases)

The embedded sub-units are the sub-cases that provide 'thick' descriptions. This brings in the 'people' dimension that I have discussed in terms of sense making. It gives a detailed view from the ground from the actual 'lived' world of the interviewees, in the context of the detailed description the research provided about them and their situations, based on all my knowledge. At the process level, I have identified the detailed sense-making that interviewees went through to come to terms with their complicated, messy, human situations, and the way that I recorded, analysed and experienced that. The process level demonstrates how MIS actually works in three instances to support learning in FE colleges. These three instances form the sub-cases or sub units of analysis that I focused on in this investigation. The process research approach focuses on the development of a study/ studies on issues such as the relationship between researchers and users and the impact of a system on the organisation (Larsen and Myers, 1999).

EMBEDDED SUB-UNIT OF ANALYSIS: CASE STUDY 1

Interviewee 1: A middle-aged man employed as a senior curriculum manager. He has experience of working in different colleges using different MIS systems. He said that that he found the MIS system in the current college difficult to use and he struggled to find information

on the system at the right time when he needed it. He believes that MIS systems can support educators to improve education and learning but he is frustrated by the limitations in the way he can access the data and the time he needed to spend to access the relevant information to inform decisions at the right time. He made sense of his situation through humour and also by hoping that the situation would improve. He discussed the need for greater accessibility and ease of use in the MIS system. Interviewee 1 said:

> "*Nothing in this college ... to be out to extract the right data at the right time it's got a long way to go although we are not very good at it and that's a problem ... is too difficult to find the information you need because you need to go to lots of different sources and perhaps it's slow and coming towards non-performing ... looking for its not as good as many other colleges*
>
> *In my previous college, we had got the data accessible to us in one place. You can have it located one place at entry or one place in a system which is easy to find and easy to get to and everybody can get access ... not just a ... if you know where to get to it can be very simple and easy to get to because the key performance indicators are the ones you need to be looking at not every piece of data from the college is ... no."*

During the semi structured interview he has raised the issue of access to the data to meet his needs and make sense of the data to make decisions on time. Below are some main points he has raised:

- Data integration
- Availability of data
- Accuracy and reliability
- Motivation to use of MIS data
- Timeliness of data

EMBEDDED SUB-UNIT OF ANALYSIS: CASE STUDY 2

Interviewee 2: A middle-aged man employed as a senior lecturer in one of the targeted colleges. He worked before in college support services and has experience of working in curriculum and college administration. He uses the MIS data regularly and he is one of the strong believers that everyone must use the data and take responsibility for the ownership of the data. He made many suggestions to encourage staff to use data and make them aware where, when and how to access the relevant data to meet their needs to make decisions at the right time. Interviewee 2 said that he found the MIS system data can be used to improve education and learning if staff are knowledgeable and aware of how to interpret data correctly. Interviewee 2 said:

> "*Any improvement in education derives from the interpretation of data one way or another. I'll give you an example in that you can only make provisions to improve delivery of certain courses, if you look at the achievement rates, say if you ran a course, say I ran A-level French and the achievement rate is constantly at a low performance then there is something that is not quite right, either that the teaching or the delivery is not good enough, or the assessment of the students is not accurate or perhaps the curriculum, the syllabus is not addressing –IT'S NOT well designed.*

He suggested that all staff at all levels should use MIS data, as data can help them and save their time and effort to identify the strength and weakness of a course, curriculum, individual student, group of students and even the performance of individual staff. He said:

> *"At the end of the day, if you look at pass rates, attendance and so on, the interpretation of the data helps you to make decisions so every time you interpret data one way or another, it's helping education in general. Perhaps you would redesign the course, readdress the quality of teaching, perhaps you ... as I said, well, there are different interpretations so we have to look at what is causing the problems and try interpreting the data in which you will inform decisions. If students are not attending a course on a regular basis then what is wrong? Then when you look at your data and your attendance figures, particular courses for attendances is below benchmark, and then you have to tell why that is the case. So by interpreting the data you then address the problem"*

EMBEDDED SUB-UNIT OF ANALYSIS: CASE STUDY 3

Interviewee 3: A young woman employed as middle manager in the targeted colleges. She is in charge of planning and designing and running the curriculum and managing staff at various levels in her area. She uses the data quite often and she makes sense of the data to plan and organise her courses. She thinks it's the tutors' and curriculum staff responsibility to take ownership of the data and make the data right. She thinks MIS services will alter their data and make the data accessible and in a format that can be understandable by staff at various levels. She thinks everyone should attempt and make an effort to make the data right and the data to be used, make sense of it for decision making. She said:

> *"What I did this year was get the best to grip by using Pro achieve, because I could use it but I was not using it very well. So what I did was get the Pro achieve and downloaded loads and loads of data about the courses I want… and I brought the data down ..... my school to see how many men are in the school or what's their achievement like and what's their achievement like by age and if there is a particular ethnicity or ethnic group that achieves better than another one. Pulling that data apart was great. The data's all there and it's just a question of working out what you want to know. What I've found useful is, recently, I've been planning the courses for the next year. When I've been planning the course file if I said that can you find out how many students are on these matching courses, because we timetable them really badly"*

She has given her experience of using data to aid her with planning, organising her course and support learners in classes. She made a few suggestions to improve the use of data to support learning. The main points are summarised below:

1. Management support to use data
2. Continuous professional development and during staff induction
3. Improve communication
4. Collaboration
5. Ownership of data

Appendix B

Individual Interviews

Interview: II01

How do managers/ leaders use data to make decisions?

Data are used by managers at a range of levels in the college to measure progress against targets which inform finance and resource management, curriculum design and delivery and quality improvement.

Data are benchmarked and often given a red, amber, green (RAG) rating to enable managers and users an easy way to identify where attention needs to be given and further progress made to reach targets.

Data leads a self assessment process which curriculum managers complete tri-annually. Data are continually monitored and enables managers/leaders to respond quickly to areas which are at or below benchmark. Trends in data provide further evidence of quality of performance and provision.

Ultimately data drives quality of provision, and funding and is reported at regular intervals to the Information Authority. Qualification Success Rate (QSC) Reports are produced and submitted to Ofsted for inspection purposes. Any data which is below national benchmark is of concern as it is flagged as not meeting minimum levels of performance MLP – and improvement is required by the College to enable the funding bodies to continue to fund the qualification(s) which fall below MLP.

- What practices are effective in teacher use of the MIS tools available?

Teachers most effectively use MIS tools which give them information on the performance of their learners, at individual and class level. Teachers most commonly use EBS reporting tools.
The practice of having accessible data on the college intranet "CONNECT" is very effective for staff.

- How can data be used effectively and can its use improve education?

Data and trends are very effective in improving quality once teaching staff feel confident in using it to inform their practice.
Equality Diversity and Inclusion data can shape the way in which groups are taught and succeed. E.g. gender balance of groups, age of groups, specific learning needs, ethnicity and cultural or religious practices should all inform the planning of learning and assessment.

E.g. Lesson observation data can inform teams on areas for development and e.g. use of ILT in class, grades of teaching in particular areas so resources can be effectively deployed to underperforming areas.

- What steps can FE colleges take to improve the use of data?

This is a question of raising staff awareness to the power of data, engaging them in using data to effectively plan their own provision, and reading and understanding data as it applies to the whole college, and in judging performance through self assessment.

In effective colleges MIS managers are working with teams of staff in developing the above. Appraisal/performance reviews use data to benchmark staff performance, and this in turn leads to an assessment of staff training needs. In this college staff learning and development and working with LDMIS to run workshops for managers in the use and management of data as information.

- What software and data tools were most useful to teachers/leaders?

ProAchieve is not seen as particularly user friendly by staff who do not use it regularly, but filtered spreadsheets developed by LDMIS and put up on the college intranet under MI monitors are more favoured by teaching staff who find them easier to read, filter and to understand.
ProObserve software is new for teaching staff, and there will be a training programme at the beginning on next academic year, to enable observers to input their observation feedback directly into the software fields.

Other LDMIS data tables are used successfully by staff, although sometimes they have expressed frustration at having to download from MI monitors, populate the spreadsheet and send to the Director. There is a sense that a live data feed would be helpful to see rather than data snapshots which need to be regularly updated.

Data tools such as E-iLP reporting tools are useful for managers to look at results in Moodle and to monitor progress, such as number of learner targets achieved. ESB attendance and punctuality results are usefully fed into moodle, to enable learners to see their own results.

Interview: II02

- How do managers/ leaders use data to make decisions?

Managers and leaders use learner data in different ways and for different reasons.

- For example they look at attendance and punctuality for a group of learners or for a programme area and identify areas for concern and then make necessary arrangements to improve attendance and punctuality for that particular group or programme area.
- Managers and leaders uses students' registration data and initial assessment reports to

identify and assess volume of additional support required to overcome language or learning difficulty barriers.

- Recruitment data are useful for managers and leaders to assess demand for a course/qualification and accordingly plan for next recruitment cycle.
- Students interim achievement data are useful to managers and leaders to identify whether progress is taking place within given time and accordingly allocate resources so maximum success rate can be achieved within time.
- Managers and leaders may look at students' achievement data broken into their age, gender, ethnicity etc. so they are able to identify if any particular age-group, gender or ethnic group is disadvantaged and allocate resources and extra support accordingly. This is particularly important where a college gets students from a wide range of ethnic backgrounds.
- Managers and leaders may use historical data and other benchmark data to smart targets.

- What practices are effective in teacher use of the MIS tools available?
  - Teachers are trained on using of MIS tools so they are able to update student information as soon as possible and also able to take advantage of analysing data for their own group/area. They also need an instant access to live data. And, data must be up-to-date and accurate. Otherwise, backdated and inaccurate data might mislead managers and leaders.
  - All teaching members and FE leaders should have knowledge of understanding data and reporting including tables, charts, basic database etc.

- How can data be used effectively and can its use improve education?

  - Data can be used to improve education. Initial assessment, ethnic and socio economic background, home language, prior education information of students are useful to plan teaching style/method, differentiation and requirement for additional support.
  - An early tracking of at risk students can help curriculum managers and tutors addressing issues and make necessary adjustments before it is not too late. This process may eventually ensure students' achievement.
  - An integrated and centralised learner registration, course time table and exams/assessment schedule will help lecturers, curriculum managers and tutors to plan assessment/exams dates in a way that allows learners enough flexibility to re-do their assignment/test within the given academic period.
  - If students have access to their own attendance, punctuality, coursework timetable and grades then they are able to plan their study more effectively.

- What steps can FE colleges take to improve the use of data?

- In order to improve effective use of data FE Colleges lecturers and Junior Managers must understand the objective and implication of different types of reporting (data). Lecturers and Curriculum Managers must be actively involved in reporting and planning processes.

- FE providing institutions must invest more resources in the MIS including programmers, analysts. AoC and Dept for Education may play a pivotal role in this and they may provide guidelines and tools required to improve the use of data in FE sector.

- Funding organisations may provide FE statistics across the sector and relevant benchmark data to facilitate FE institutions to compare their own data and set effective targets for themselves.

- What software and data tools were most useful to teachers/leaders?

- In our college all software e.g. EBS Agent, E-Zone, Pro-Achieve, OBS are useful for learners as well as teachers and leaders. However, real time integration among different systems would be more useful and effective.

Interview: II03

- How do managers/ leaders use data to make decisions?

Data on student's achievement, retentions and success rates are used to plan the curriculum development for the following academic year; which courses to run, which to expand and which to cut. This will later determine the requirement for teaching/ assessing/IV staff employed the following academic year. The data are analysed three times a year in preparation of Course Reviews and then SAR's.

Cross college data (pro-achieve) allows comparisons on national level whether success rates and achievement rates are within national standards. National benchmarks are used in SAR, where success of each course is identified.

Demographic data are used to ensure equal opportunity is in place and all students are provided with equal chance to pass the course. This is also later fed into individual learning plans of individual students, application of specific learning and teaching styles. Three times a year the data are analysed in preparation of Course Reviews and then SAR's.

The attendance records of each directorate/curriculum area/course/ student is analysed for different types of decision making. Data on students' attendance and punctuality reflect whether students are on the right course, if the teaching is appropriate for students' and curriculum needs,

if there is an issue about the Level/Course /Teacher or student. Actions can then be taken to rectify the problem, depending on at which level of the database the issue is highlighted.

- What practices are effective in teacher use of the MIS tools available?

Pro-achieve data allows setting course/curriculum area benchmarks and identify weak areas, in comparison to the national standards.

The electronic registers work effectively, linking the attendance and punctuality data to students' e-ilps. The e-ilp is a tool used equally by the students/ teachers, but also managers to make decisions in regards to disciplinary procedures. The e-registers are a clear evidence of student's attendance and punctuality. Reports can be created to show the whole class, curriculum area or directorate, to see patterns and identify the problematic courses/students. This then can lead to individual learning plan for students and or CPD for teachers.

- How can data be used effectively and can its use improve education?

Data can show patterns if processed into a meaningful information. It can provide analysis per subject, curriculum area, and directorate or even show the performance of the whole college. If compared over time or with similar educational organisations, it show how successful is the provision.

Data therefore can support in:

1. Decisions on whether to expand the curriculum area or reduce the provision
2. Decisions on recruitment procedures
3. Decisions on induction– to make sure that the right students are on the right course, and the right teachers are teaching the right course
4. The demographic data can lead to specific focus to improve the success rates of particularly disadvantaged or less successful groups

- What steps can FE colleges take to improve the use of data?

    - Provide training for teachers
    - Make sure that data is timely, accurate, relevant and reliable
    - Simplify the analytical tools
    - Provide more visual tools

- What software and data tools were most useful to teachers/leaders?

    - Pro-achieve
    - e-registers
    - MIS – in house reports

Interview: II04

do you use data?
Yes.

why do you use the data?
Because it is reliable and normally valid and it enables us to make a judgement and form of views and from that actually you can make manageable decisions. It is a precursor for making management decision and to see if these decisions are making an impact at the starting point is whether from continuing as one of the continuing point but obviously the number of questions about other sources of evidence apart from data otherwise you become a bit too empirical and then there is obviously the question about the reliability and validity of data and very often you getting the data which is not very accurate and you sometimes realise what you're been presented with and senior management is presented with is not that accurate at all so you have good examples of healthy data and sometimes you get normal as to how data should be so there's always some level of scepticism shall we say

how do managers for what it is in the college user data to make decisions
RI had a meeting with clients this morning and there were similar points that were raised in the meeting this morning which I can remember meetings going back 5-10 years ago about the availability of data the reliability of data and the requirement of actually using data to form judgements which has not changed massively which is in fact interesting as we have had better software updates to better machinery and higher specs of I.T. but sometimes you come back to the same issues as to where the data is or isn't complete or available . You know there is the actual issue or sourcing of data and the time you use the data. But increasing managers are now expected to produce quality reviews which are much more thorough in terms of the breadth of data so not just student success rates and complaints procedures and one aspect is attendance punctuality responses from surveys etc which without their own internal data analysis issues so the idea is that you become more data rich and then you have to analyse the data and then make judgements and decisions so you can only go so far with it

you mentioned the availability of data, do you think the data is not available or not available in detail
well there sometimes is the issue of the data being available like producing a self assessment report and having to produce it by a certain date in September and the assessment making judgements fundamentally mentioned measures as to whether you have been successful , whether the learners have been successful and whether your teachers have been successful and whether you have effective managers over the last year and some of the basic data and did the students stay and were they successful is still actually not necessarily available and then you're also getting evidence which is right now looking at a set of enrolment data where the stats which were saying that we are significantly short of a number of 16+ and adult learners in a particular area and where when examining the data and when opening the enrolment figure figures will suggest that those figures are entirely incorrect.
So why do you think that it is incorrect

I don't know actually as the worry is that you're not actually looking at something complex stuff

like nuclear physics here you are basically having to add up something like 50 courses and a maximum of 25 learners per course because which is approximately 400 learners and you are making a rather simple sub division between 16 to 18 and over 18 and the figures don't always seem to add up to me and the reality is your understanding so the figures add up but the reality in which the figures that are meant to be commentary is actually fundamentally quite different and it can be worrying

Interview:II05

Do you use data/?

all the time

well the data are not just attendance and punctuality registers its all the personal information about student telephone numbers and addresses courses are doing timetables where are they right now and I often have to find students there is two reasons why is that one is for person shooter and other reasons for senior tutor is so some senior tutor after tracking down if I get a referral after tracking down go and see them working with construction in here and going get them and if the system is up-to-date that works really well
if you've got the details of it on paper why do you use the data on the system
because they are not my students where I can get the information on paper from nobody gives the information

how to use the data to inform decisions?

well decisions on whether to retain a student order to progress a student then you're going straight to punctuality and attendance and if the figure is below a certain amount of we don't want to back next year we are sure to check change of behaviour we have tried to convince you is worthwhile taking this course seriously and you haven't changed so we are not going to progress into next year
you mentioned about attendance and punctuality but how do you check like you check at the end of the year or
always check all the time continually throughout the year as soon as I get a referral I want to know the attendance was like and also as a personal tutor I can monitor my own students attendances for other classes much more easily using electronic data then by paper-based
you mention up-to-date data and accessing data are I think us who had later I had about the format of the data or maybe the data you're getting is not reading difficult
it's a very long process which I can do it but lots of people can't is to get the class lists for various headings with you've got to that and then you've got to click that and if it can click that
so it's not a z-axis
no it's not easy to access lots of people find it difficult
and using the data can be used to improve education
yes I do
how
because if you've got a teacher who has got very bad retention three can see that unlike a teacher

from last year had lost 19 people from across and Cheney started with 10 so so they were continually cycling through change starting offensive opened in new lists.cycling through the come they go so it can haven't got good retention and you haven't got good achievement rates this and you haven't got good attendance why do you want to you you don't do anything so but then as we we know this information but they don't actually act on it proactively these managers and if you look of course we have pack package courses this you can look and see why are they coming to this class they can manage to find 83% attendance on this class which is quite what you want anyway but they have only got 74 on that class consistently said this teaches attendance is continually lower so why was the reason I mean nobody has time to follow this up but in theory could is
what steps can FE college can take to improve the use of the data?

accessibility to be simpler and class lists could be easier to get and managers need to keep the system up to date and sometimes I'm looking for teachers and local database and I look at it and the teachers of their I'm not a computer so I help a lot of people always find it difficult to use the data and computers that are I think regular training is important and I think the biggest mistake you can make is to give people too much information in training is the biggest mistake of telling us to match you need a couple of things you can go away and use like short and sweet pass likely people to things which you know they can go back go back and use which they would you know they will use and then they will remember it but if you try to give a whole overview of everything people just get knocked down to is like teaching anything like tree training is teaching us to got to have a very clear outcomes are while this still didn't go away knowing of pseudomonas do that to a maximum because budgeting to get in a lot of enthusiastic people and say it is very greatly conducive to do this you can do that and do the anti-get overloaded same with white for training you need to tell teachers to keep the information up-to-date and the teachers need to tell the students to get information up-to-date that's the biggest problem I have is this will

Interview: II06

There has to be an accuracy and has to be a link between the two systems because there is no point to update one system and receive the information from the others which is not updated which means you have to do it again the same job as she did for the other one what's that can FE colleges use to improve the use of the data.

I think there has to be a possible one system which means that all the information you collect will be fed into one system only second there has to be people would understand what they are doing when they input information system and make sure that they accurately look at it and see if the information they have input is actually correct so that is one of the things because most of the frustrations is about when you send information the information is not correctly on the system so it's not updating system.

its updated or just incorrect obviously a mistake happened with both sides but
when you see not updated you don't think it's if the data are available it is access then it is easy to identify so why is my data are not up-to-date.

if I do a classless to 4 example antenna classless out I'm expecting to find a few mistakes but don't expect that after two months the information is not yet on the system or if it's on the system is incorrect because of actually do something for my hand I make sure that when the information is in system it's actually correct and if I do mistakes obviously I will make sure I would inform the relevant person and change the information which is incorrect incorrectly put on the system at and what it is not correct.

if it's not correctly can still try to whoever recent information I share this information and it's not correct then can you expect the second-hand information is actually correct in the system these are what if it's not correct what impact does that have on the data

the impact is full example if you are not recording achievement for student obviously you won't get the money for the particular student so that they will be financially impact and if you're not quick enough to point these mistakes and rectify this mistake before anything has happened then obviously part of the blame most of the time is blamed on the person which didn't information rather than that rather then the person who put the information from the system how can this be rectified.

I think there has to be a two-way fort you send information and information is put on the system to check the information once you make the amendments if the information is not correct and obviously you should really not that it expect from the donation is still wrong by the third time

Interview: II07

From my experience I can tell you first of all that the use if data by myself in the college is always quite beneficial in the sense that I have worked for MIS , so I know a little bit of the background and the data and tools available and currently as Curriculum manager have been more purpose and strategic use of data in terms of curriculum development and achievement and so on. So the data are essential of course, and in my point of view, I have an overview, which is quite useful in the sense that I know what is required from the data that is available, and at the same time I have some good ideas about what should be made available…

As you probably know when we have to justify and resolve include results and achievement is key to the college, you need that data to be readily available, and be able not only to monitor the performance and to check what is going on, but also to make adjustments in the future say for example, if I can have a clear picture of the trends of certain data such as punctuality, potential achievement and so on…if I had one for the past 3 years of the current format you came up with, that straight away gives me a good idea of the progression in terms of those ….so there is a clear trend, if I had to go look for that data separately year by year, course by course, that would be a bit of a nightmare really. So having that easily accessible makes everyone lives much easier.

Well you have to make decisions, process regular reports, approach a number of staff and discuss the reasons why they say punctuality is not that good or maybe you need to approach staff to praise them for the good work in terms of achievement or vice versa so that data needs to be available.

Well we have to trust the data as it comes to us because you cannot do much about it if we feel that something is not right, and if there is something that we need we need to communicate with yourself or MIS to produce the data in a format that is useful.

If I come to you and say, …, it will be trusting to see how if we break down this data for instance, such as attendance, say if we break down by sickness and authorised absence and say excluding that then we have a very different picture and that's just an example that we came up with so you have a chance to look at two different figures, very different say you could have a student who perhaps plays tricks and will be more sick and have some authorised absences and when you look at his attendance including authorised absences and excluding, you will see that for many sessions he wouldn't have attended so you'll see that the year after he will be doing the same thing if he again is behaving in the same way so if you have that data you can prevent from this happening again in the future.

If the data are interpreted when it is presented in a useful manner, not just numbers with numbers but if it is broken down into a clear format then for example, there is a lot of use for that data, raw data serves a purpose for economics staff so I suppose you also need the feedback from as many economics staff as possible in terms of what the data allows us to do and what kind of judgements they can make based on that data or if they would that leads particular data in a different form, in a report for instance.

Well I think when you say in the western world the education system shows inequality…they say that but I'm not sure I agree with that because I was lucky enough to start in Portugal up to university level, in France at university level, was able to study in Mexico and in the UK so I had an idea of how things work, and I don't think the education system as far as I am concerned legitimises that inequality, there are of course drawbacks and elements that perhaps they are not in favour of equality as such given the nature of historical and cultural backgrounds in those countries. But in Western Europe, I think there is pretty much equality in this country as a prime example.

But coming to your question now, data to promote equality even further is very important now, not only to have a look at, for instance if we collect that raw data when it is raw, we can create that in a useful format for everybody then we can again address the problem, for instance to put this into context, we are perhaps the most diverse borough-culturally and ethnically diverse in the country, perhaps even in Europe. So if you don't have a picture of the ethnicity, for instance of the student population, if you don't have an idea, of perhaps the cultural background, you cant make decisions on how the …balances. Say you have a student population of 70% African-Caribbean and 30% of the rest, and then you are going to have to address asylum seekers in line with the area in where we live in, are the courses geared towards that ethnic group? Or are the courses intended for a wider European group?

First of all the data should be easily accessible. Number two I think it should be well promoted so that… by… first of all by coming down from top management right down to the lecturer in terms of using uniform or a data bank or a data …that is the same for everybody. And Number two, I think we should promote that by making it compulsory or mandatory for when a new teacher

joins the college to make it part of their induction-so if I join the college as a new teacher, that should be part of my training, how to use the data content of the corporate database.
-It will definitely help because we are talking about having access to the data in the first place. So if you go right across the college and interview every single member of staff, you'll find that lots of staff don't even know what you're talking about.

Make them aware that something exists, it should be part of their induction and know that it's available and say how it's going to help you, saying what do we have and what will we get out of this…its not only promoting this database, it's making sure that people know that it exists and how to use it. You can also use LDMIS to often for instance throughout the year, to arrange some workshops. I have in many instances promoted the use of SRIS, the use of the data and I've actually done some presentations and we will be doing more in the future as people are not sure about what they get out of this two.
Make it interactive-you could set up a presentation/workshop and give them two,three or four questions and they have to make a decision on X or Y issues and then after to model the data in SRIS-where do you go? What data do you need? What kind of reports do you need? Look at attendance…they could be awarding students for great achievement or attendance or even for instance a very good example, you can make the problem in the college to some extent where customers are hardly ever up to date because if lecturers knew how to use the system properly, they already have that available so ….so that the data are always accurate so that kind of thing needs to be assimilated.

You'll be using this in the college in general by proving the teachers and the management having the data for … say if you want to track a students attendance, if they want teachers to sign their EMA, then all the teachers will have a pretty good idea knowing whether the student has been attending or not. You have the backup of the data should you have to produce any concrete evidence, although all that is in the register anyways but that would make it easier for the tutor to access that without having to go through all the paperwork.

Any improvement in education derives from the interpretation of data one way or another. I'll give you an example in that you can only make provisions to improve delivery of certain courses, if you look at the achievement rates, say if you ran a course, say I ran A-level French and the achievement rate is constantly at a low performance then there is something that is not quite right, either that the teaching or the delivery is not good enough, or the assessment of the students is not accurate or perhaps the curriculum, the syllabus is not addressing –IT'S NOT well designed.
At the end of the day, if you look at pass rates, attendance and so on, the interpretation of the data helps you to make decisions so every time you interpret data one way or another; it's helping education in general. Perhaps you would redesign the course, readdress the quality of teaching, perhaps you as I said well there are different interpretations so we have to look at what is causing the problems and try interpreting the data in which you will inform decisions. If students are not attending a course on a regular basis then what is wrong? Then when you look at your data and your attendance figures, particular courses for attendances is below benchmark, and then you have to tell why that is the case. So by interpreting the data you then address the problem. Perhaps you think first of all perhaps the quality of teaching is not that good and that it is an issue.

Yes there are all kinds of implications…but the more data you have the better, but that needs to be interpreted in a meaningful way because say if you have an access course running, by default you going to have mature students with families and job commitments, therefore you already know it being an access course you are still going to encounter those problems. But if you have a database that allows you to tap into the overall picture of the access course provision, then you would be able to make arrangements, say to make availability of spaces in …perhaps make the course run at practical times, you know timetable and so on…

Personally at my level, I don't think the data should come from the top, it should be accessible and have easy access to the data, and you shouldn't rely on everything that comes from the top….

The value of data are different for different people. Say senior management may want the bigger overall picture of what is going on. When you say interpretation of data again, it depends on what you're looking for. Normally senior management is not looking for the itty gritty of what is going on in the grounds in detail, they want to have an overall view and think that data should be presented to them in perhaps that format. But for the most of the academic staff the data has to be easily, readily accessible, up to date and in different formats depending on what that person is looking for, but then again that should be passed on to you if that's not readily available.

Before I go and say why or how, first of all the data has to be accurate. What I mean by accurate is what is actually happening in the classroom in terms of attendance and so on…what is recorded needs to be what is exactly going on and sometimes that may not be the case, particularly when it comes to punctuality.

It's important because if you want a true picture of what is going on then the data has to be exact, so if you are not recording the data accurately, the picture is not accurate, if you are not doing your job properly, the outcome will not be a proper one. If someone is building an extension to your house and they don't build the foundations properly, the walls in a couple of years will cripple. So recording of data are very important and so is its accuracy in terms of the use of data and how effective that can be-it can be very effective, I look for that data all the time in the database. I look for a number of reports, anything I need, not only in attendance and punctuality, but for instance if I need to look at a class list, my immediate reaction is to use that content, I know you can expect from different places, say if I need course details, my immediate reaction is to go to ISIS because I know they are quite easily available. So if you make that data available in one place and make it clearer by making it into different formats, it can be more effective in that way.

First of all the management should…if they are trying to help teach the staff how to use the data effectively, they should …themselves how to use that data effectively. In my experience, and I've been in different parts of the college as a teacher, woring in different projects and as curriculum manager, I've noticed there are a lot of people who don't know or cant access the data. Why? Because one problem is they are not informed. They are a bit shy in terms of using the electronic format. I've noticed that some still go through the paper register to produce some kinds of reports, which is time consuming, and that is a clear example of not being at manager level.

If you're counting the ticks in the register, you take the register and you spend hours and afterwards and you have to calculate what percentage of absences from all those ticks and so on. Imagine someone having to produce that for someone for so many courses. I mean how many language courses are there and I don't even know the exact number. So if I have to spend time to go do this and do nothing else, so if you have these figures available, your time will be free to do other things and given the workload of staff it's very important.

I have already touched upon that but I think LDMIS has to be more proactive in promoting the corporate databases, the access to it and how easy it is to access it.
It's the assimilation of information, first coming from you; brief management, training, CPD, induction, workshop, presentations and make that a consistent action and you should have that throughout the year.

From a management point of view, I can tell you that if the manager is comfortable using the system and having access to that data in different forms and is happy and already starts using the data in one way or another, then it's a lot easier for that person to train the staff or make their staff aware of the tools already in place and how they can be used and if the manager feels comfortable with them, he will be in a position to have to relate that information to his or her staff. If the manager is not terribly comfortable with using those tools or doesn't know how to use them very well or is computer shy then of course that person is not going to enforce the use of the data to his staff. So it's a measurement of the management being confident with that data and with using it, so that they can also pass that onto their staff and identify any problems that may arise. I think its their role primarily and for instance; with me, I try to promote that as much as I can, and in the school already, people are being more open minded…is a good example, she uses the tools quite a lot, I've shown May quite a few times and she has got to know the system better….

Yeah, that's what I was doing…but then again of course there is a role, that kind of role needs to expressed well, the importance of that role needs to be emphasised by the light of you and the management. The senior management need to take that step in order to be comfortable in terms of using corporate database to make informed decision, and so if they are comfortable with that they will make sure that everyone; management within the college would do the same thing. But it's the managers' role to promote that more than anyone else. So the management need to be comfortable and knowledgeable on how what is available and how to use it. They have to make it clear that it is useful more than anything else, because what people want out of anything is 'what's in it for me?' and if you ask any manager they will tell you that if it is useful, if it makes my life easier, in particular given the workload that everyone has then it is going to be welcome.

I don't think there are cultural issues in terms of the data per se; I think the cultural problems here would be of background. Even the staff backgrounds and if they've been exposed to use these… and to gain the benefits out of those, they will be happy about doing it but it is about changing the perception, changing the mentality of a number of academic staff in particular, to take this on board, to accept what is available-to make their life a little bit easier.

The only thing I'd say is that I feel strongly that to improve the access and the utilization of the database, I think its important to make sure, to communicate, to make sure that everyone knows it's there and what it does and the benefits-and to do that is one of constant training…and the role of LDMIS in this system is to promote that constantly so that it will eventually be taken on as a given thing, rather than being a burden in some instances. Say for example 'I have to get this data done this way…' it shouldn't be, a burden, it should be a useful thing but also what I would add is that you should try to get people to give you as much feedback as possible. Whoever uses it, should, perhaps you should form a questionnaire or direct approach…to ask them what is it that you want us to do on top of what is already available? I mean I gave some suggestions on reports because we are aware of, we know the systems very well so we know what the drawbacks and strengths were and where we can improve but a lot of staff would probably just pull out a set of data and if they didn't get what they want, or for some reasons the system didn't work or there were problems with the network-they are going to get frustrated, they are not going to go back there. So the more feedback you get, the better.

Should it be that way? Because again, it just simply reflects that that person, that no1 doesn't know how to use that data, staff don't use that data because if that person did, they would come to you to ask whether it was readily available, unless they wanted a particular set of data that's not available in the report folder and maybe if it's a last minute thing they would come to you, but if that person had thought about it before, they would've come and asked you…

Interview: II08

I mentioned the key performance indicators and to monitor a weekly basis and I'm getting those reports were there unreliable because they rely on an individual so I don't think the data are live as well because even it if it's available if you're not getting up-to-date data it may be a problem isn't it
well because we got the register's that's as good as it going to get and the tracking of learners progress comes from the team to use a system of aware that teams then comes up from the teams use a system of where the teams were locked all the reckless learners and that comes up from the bottom so that's a good system that we had to submit every two weeks we monitor reckless learners in the comparison going on as far as the other data which is really important to come through the year is the number of starters on of course on a course because it got to go to monitor because you've got to go to measure your retention and potential success over the year and you can't be waiting until certain times to seriously harm the levellers well on this course what is the grace period showing on accurate although not that's important because your overall success is the ultimate indicator we are not comparing ourselves against our targets so you're not sitting target individually for courses are thoroughly but we should be at our course planning stage there are targets for retention and achievement in against every course which is a failing really because if you're not telling people to expect from them how can you expect a result so it's getting buying from staff which is important to so it's getting buying. Staff which is important is that the targets clearly. It is accurate/82 to the staff member Michigan steel walls retention and achievement target finishes this year teaching and learning observation grade targets there is easier to set clear targets for people so they can measure it against end of the year and if you can't get that will have that degree of detail in your data in your data management than you are comparing yourself to

nothing

you are saying you can't get this one that you are a director level and you're one of the persons who leads the college so I do think this is not available
I do think this is seen from MIS's its identikit seen as important as it should be it's my view given those constraints or
I don't know you has asked MIS department why these things aren't available there is a quality issue probably to inequality department they haven't potentially enables to enable this pattern because they should because they should be directly MIS is to say this is what we needed this is what should be given to colleagues so I think potentially the issue of quality not directing their are
do you think the data can be used effectively to improve education
yes

well by monitoring early intervention means you can ensure that students are achieving and attending because if they're not here they can't achieve is as simple as that so teaching and learning is nicer difficult so if server should consider a new putting them in front of a good teacher who you will have a good result it is pretty simple everything else apart from that its secondary so if you go into those key points with those and make sure they they hit the you'll get the achievements of the learners will be successful so measure of success is based on that happening and if that doesn't happen for whatever reason you got a problem this and monitoring of that is actually happening well throughout the year and their intervening early when there is a problem and if you only if you intervene early enough you can make a difference therefore get your success rates a lot higher
intervening to me by you or by
by managers which is then led by obviously the teacher next for example let's say the teaching was good in a class of first things going to which is going to happen is learners are not coming so suddenly your attendance drops believe that asked the question very quickly why has attendance dropped Sego backing receives is there a problem with the teacher if he found that there is a problem with the teaching people to turn around very quickly to try and get the learners back in safe and that the data you can't monitor and ask you to ask the teacher is
exactly we don't so if you don't have those key performance indicators in their very regularly and you get an end of term and find why is there no students and you looked at an end of term data and use a wise attendance solo and you find it's too late it differently gone for two months you'll never get them back there was no chance of passing tears probably lost opportunity of them from passing the course so so important to monitor and intervene
so you think there are some problems in terms of using the data so when he's in later I don't mean maybe the data are not available
I think the data are available everywhere in the right format in the right place is probably the issue I think that we clearly collect all the data and put them into different places and put them in different databases from whether EBS, Proachieve. Making sure it's available in a format that's easy to use and ready to use by the different managers at various levels is important

Interview: II10

I use data every single day I use data as report to governors, reports to senior management reports for four curriculum learner experience groups so in my view data should inform every of absolutely everything in what we do we don't make decisions based on personal punches based on suspected trends we make decisions based on real actual information

it's a whole range of things I personally think it is a communication issue at the start perception was we were given a place to go and get state we went to get it and it wasn't there right so the place the link that we were getting was the wrong link the that link gets what about the manager and gets an inactive sorted out and then get sent back to them that opportunity to use the data so that they'll build electron moving on to the next question now so that definitely has to be revisited again so I do think that you can have a wealth of data which is fabulously presented actually if people can't find it quickly can see immediately how it informs and helps them to do the job they have to do and they can understand it these are dead simple to 50% said the course was great than absolutely frameworks and excellence all sorts of places that we have data all over the place what I want is to see a picture of every bit of information on an individual with about a group of as an area about a school about a directory and minor we haven't got that and I didn't really care who belongs to what I care about is that I can go in and see this if they do individual learner started at this point got all this point got all the support got cut back on mentoring or TLS started with this great and equivocations and susses these qualifications and then got a distinction went off to university I like to be empty all of that regardless of who is responsible

what the data are all we have to trust is because that's the LSC look at it that will OFSTED look at it this is on the data rate this as a three-year trend of the final data
by the data in my classroom is quite devastated
then you should sort out it is your responsibility as manager of the response was to sort out with the MIS's with the college position is one source of data that solicits and that is the data which is central funding bodies awarding bodies that's only data we can work with

It is your responsibility as a manager to find out how to find out how you agregate that data with training lessons from MIS if you're struggling with interpretation of data with a support systems and I would expect you to be using them

using the data can be used to improve education?
I certainly do
If I look at certain learner survey data for example learners are saying the courses is boring the teaching and learning is dull and uninspiring I would therefore expect staff to be sitting down with learners and saying right what is it about this particular unit or module that you're not finding interesting and how can we make a more engaging and more interesting I think listening to learners and using the data that they give is really important. If we look at things like who is passing which modules we're tracking individual achievements as it again and again this is some area that learners are in some areas that learners are failing in their successful in we say what this what is it about a unit or module and may be the whole course why all those learners are

underachieving so once you have got the data you can look at it and see what's happening look at trends you can sit down and had to be open and transparent and honest and really be trying to get to the bottom of the problem and you can then revise and develop.

One of our key responsibilities to learners is to prepare them for the world of work would have employment world of higher study no employers could accept that your are late ever everyday so we need to empower and enable learners to manage their lives to meet the expectations of the external world and if you constantly say is okay to be late because of childcare is not something an employer was going to say to you it's not something at a higher education establishment is going to say so you are not helping our learners to be achieved by reducing the entitlement to learning by 30 to 60 minutes a day but what would say is going to find a way to enable the learner to attend on time so college nursery doesn't open until other than before 930 that's not meeting the needs of learners we need to change the opening times of the college nursery if it's an external provider which we are funding would be to negotiate that with different start time so we are getting the learner to accept that they are the responsibility for their life for the childcare to meet their demands for you know the 21st-century society and other things that I said to tutors here is because you know there's lots of female attire retires with childcare and many of these learners need to make the most of every minute of every class that they can get because they have got one year to achieve huge number of credits to be to go to university and if you don't set them up to work through an efficient smart way through to hold the hand of the support them will most likely get university on helping by helping them to progress effectively no because we didn't empower them and enable them to work in that environment.

Interview: II11

why do you use the data?

because I need to show growth in this area and last year you might be aware that this area was very low performance and we only had two full-time staff. I need to show that there is to get improvement in this area which they will charge of mainly senior management on the data to show that it was worth in proposals as and to continue that support so we can do it again next year signee show a significant improvement so as far as they are concerned that improvement is more judged on data now because that's always on and off enough extra funding and funding is key more than it has ever been done before because of the funding changes and cards are very conscious very conscious about every learner every achievement is underfunding in a way they had never had been well they have been but not as over the top of this year is the first year that we are being pressured

I use the data sometimes to analyse performance for instance we have got the success achievement retention data per tutor group so I have matched that of the I have matched that of the teaching observation grades and I have also looked at withdrawals so that it has given me more of an insight of a commute more of an insight on what CPD I need to do on the staff next year

continual professional development for instance one of my members of staff they seem to have lost have lost more learners over the and they seem to have a retention issue get the grades are

very good so I think it's less about teaching and learning in such … little less of a teaching and learning are as much as it is about tutoring managing behaviour so I think that member of staff abuse their CPD and if it's very hard to argue with them arguable of staff and so that's what they need just on the basis of observation however if all of that class as they are teaching have a data you have got something to show them to have a sensible distance vision with sensible evidence also you can show senior management that's why do senior management can't get to the ins and outs of everything I do hear they don't have the time for them to figures are represented what I'm doing a reflection of what I'm doing they are not always but I know that's what they will look at so this area should achieve an 80% increase from last year 8% increase from last year which is a small improvement but says that for small improvement so they've got that hopefully this will probably want to talk about and some

Interview: II12

Yes I think there is, at the moment emphasis on data is increasing
What the data can tell you, this is the theory, there are some practical problems with it but what data tells you is what difference you made. This is what inspectors are interested in, it's what the public is interested in, and what taxpayers are interested in because we are in the public sector. A learner comes to the college, what difference have you made to their life. For a start they have achieved a qualification, that is a measurable outcome and the data obviously tells you this. The data may also tell you whether someone has had additional support on the way to getting their qualification and you can see whether that's made any difference to them compared to people who didn't have additional learning support.

There are various ways of looking at the data which tells you what impact has your work had, so you're interested in impacts and outcome and the theory is you improve the education for the learners if you can look at measurable data to see what difference you've made. Of course data are not the end of the world, it can tell you so much but not beyond. The educational experience of a learner is bigger than that but nevertheless data are critical and vital.

If you had a system for at risk learners who stack up different bits of data so attendance is one thing but there may also be prior factors, they might be from a poor background in terms of economics which will be measured through their enrolment data. If they're over 19 they're receiving learner support, if they're under 19 they're getting an EMA which indicates a means test and indicates they're from a family that is not wealthy. They've got mentoring, various other things would be included in the data and you've got a risk profile which you can monitor and if somebody hits enough of these triggers, the traffic light system then the lights go from green to amber to red and amber is a warning sign you then need to work with the learner to make sure they're getting maximum support and they're not going off the rails.

Interview: II15

Why do use the data?

to analyse where we are because leading a school I need to have that data to find out to compare

what each group is doing is there any issues concerns do you want the attendance and punctuality achievements to prepare for next year if you want to make any changes or improvements so I personally feel it is very useful we need to have that I do strongly believe we need to have data
is this something you would use to inform decisions

yes I do use the data to make decisions if I see a trend I see a trend for course where course is not performing as well then I might change it for the following year to a different course or make changes to that course to make sure it is for example if it's time situation where I'm running that course in the evening so it could be that looking at the trend I could change it to the daytime or vice versa so does help me to make changes and make decisions for the following year

what sort of data are you using?

all of it attendance punctuality ethnicity gender comparison with national benchmarks
what is your source of data?

getting it from MIS . Some data we keep locally as well.

so how do managers or leaders in the further education use the data to make decisions?

as I said earlier we do look at the data and evaluate it discuss it in the teams and see the viability of the courses because it could be that some courses are not very effective in meeting the needs of the learners as i said it could be a timeframe or it could be that time of the day it was running so you make decisions with the team to change that of course
so what practices are effective to use the data of MIS tools available, what practices are effective
actually it's to get the data and dicuss in the team.

do you get the data you want?

yes I do the data I want but sometimes maybe there are maybe the local data are not much in MIS data it could be because all the information is not passed on to you I don't know the reason we are looking into that as well or it could be the way that a MIS has presented the data into different to the way we are keeping it locally may be that we haven't taken into account in our data a grace period that we are allowed for sample
you mention the presentation of the data why is it important?
it is important into how you can interpret that data it needs to be in clear layouts that people can understand and easy times as well to follow if it is sorts of complicated they could be more difficult to analyse.

do you think you get the data you want?

yes i do get the data that i want but sometimes it is not as accurate as you would like it to be and it could be that our local data which we look at on a day-to-day basis where MIS may be getting information later on.

you highlighted the accuracy of the data the data accuracy how important is accuracy of the data?

it's extremely important because we feel that to save time and everything I feel that this data should be sent to us in centre asked by MIS's and a standardised across the board so we don't have to keep the local data to interpret and discuss on issues being the generic data which is not generic the standardised data which is coming from MIS's and it should be the base of the other decisions.

you mentioned you are using the data to make decisions and you also mentioned what data you are using and where you got that data and how can data be used effectively to improve education the use of the data?

the use of the data you can use it for example in class you can discuss it. Your class of 20 learners sometimes you can I'm not talking about disclosing their confidentiality and fees and fees on anything like that but you can use over a class of pro class of 20 you can present focus of 20 you can present the to the class so how come there are some of you which are doing really well in attendance and punctuality100% and there are others some of you which about 66% so that sort of motivates learners to improve that

so when looking at attendance let's say you look at individual students and the attendance and punctuality is not up to your target how and in what way can a teacher at your level use the data to support the learner?

because you can check it and all the teachers for that area can look at it as well and discuss it with the students individually first to see how they're weaker and then put the systems in place to implement that would improve the attendance maybe they are maybe they are not aware of it so we when you have this data in front of you then they can see it and it does help tutors to discuss it in team meetings all it does helps you to discuss it in team meetings so a personal tutor could discuss with the lectures where the problem is and how we can change it how we can improve on it and discuss with learners as well

you said you need the data to make decisions and you said you can get the data but do you think you can get all the data
yes
what steps can FE Colleges can take to improve use of data?

I think, the training where people don't know how to use it they tend to feel they can't or the data are not correct or they cant get the data I think if you drill it down it just boils down to the training needs we need to have training not just once because I know we do the training we do tell them once we tell how it should be and they need to practice as well ongoing so that somehow there needs to be a link between the training and the day-to-day use of that.

when doing the reports when they are planning the courses when they are planning their student workshops for example they need to see it through they need to see if the learners are falling behind in one of the subjects you can see it on the subject results and reports and if the person is falling back then it can be used to plan that to put additional help in place to support the learner.

maybe we need to have a forum to discuss do we need additional things in their is there any information missing a team of people using the data. May we get this forum to answer to discuss these things.

discuss what?
any additional needs we can have
and in what formats
a sort of forum where the users get together
ok to get feedback
yes to that sort of feedback and discussion but what else do we need to
and okay
and what about
and maybe then pass or transfer these things to MIS people which you are developing those presenting that data to incorporate additional information which if there is any missing
in corporate information and the training and because it could be I come or someone come to the training and say it's the data are available but also you can log into another system making it the state will want to what this means to the staff for more teacher to say only to log in EBS to get some data and I need to get another system to get another data what do you think the data in separate places?

I think there needs to be one place where people can log on and get all the data canal system is to look into various places well now is getting better but still we have good approaches to get the data and then we need to go to EBS together registers so maybe there is a need to interlink everything
So we need integrated system
yes integrated system where we can where everything we can be accessed
so could be maybe this may be many systems behind but for the user is one system there needs to be one system.

so look out for is that we look at the course of the locals who can see the learner and will allow you can go to exams and learn from their good achievements and so drill down as well
yes definitely and may be attendance and punctuality is there so everything would be in one place I think it's got much better approach it now you think you're down quite a bit but still is not as integrated as fully yet I think.

what software or data tools you think are useful for yourself or teachers?

well any software useful as long as people know how to use it looks like that but the ones you are using the example
the ones like proachieve you for example to me that's quite good because you can drill down and once you are trained and if you keep practising it is quite useful tool and you to use to find the data but I think it boils down to how much you're going to use it if you feel once the training or twice a training should be fine
this is about proachieve. What about the other the data and software like EBS
we do use EBS. EBS are straightforward I think that as a said it should be integrated into one

system
what if you don't use the data exhibit different levels if you say all I know is I do in my class and everything we do is the data what is going to happen?

I don't think you can convince for example sometimes you can't convince the example when you talk about learner that sometimes they don't realise that they realise they don't realise that they be missing so many days. If you put evidence in front of them in front of you when you're talking to them as it is very important so you do need to have data.

You have mentioned accuracy of the data what else about the data?

so in a format that I think easy to access human and that was the data you can easily say okay the fact is this and are based on the facts we can make judgements
exactly the systems in place to support in place you can talk to learners find out why this is happening there are lots of things you can then follow it through to improve that but learners attendance and punctuality for example. You can talk to learner to find out why that it is happening so there are lots of things you can then follow it through to improve that learners attendance and punctuality for example which in turn is will improve which in turn will improve their powerful achieving this their qualification.

DO YOU think the data can be used effectively?
yes definitely.
I finished my question is do you need to add anything about the way we can improve the use of the data for the role of MIS?

it is there a possibility of there being an integrated system can you see a new future where we can link older systems because to me it is the valuable that we should have that everybody should use that.

just to let you know we have got the new version of EBS agent it is very easy to use and as fast speed is much improved and also you can different report formats. You have mentioned attendance report, it is in the format t is very easy to read as also of this and you can get the students registered attendance timetable and print timetable for students as well so a part of our success rate apart from success rates which come from proachieve, all the data can be put into one system and we can add new reports and even the existing reports I think people can use it at different levels and can get the data and you can do about issue as well howls the attendance at punctuality and success rates and even for example look at the achievements. You can see and ask why this student attend three years for the same level you can look at the example of an also come in and ask MIS. You can see which students entered onto exams. We have got this in place. I just wanted to know to whether you could see a role of MIS supporting learning
oh yes definitely

Interview:II16

Do you use data?

Yes all the times.

Why do you use data?

We use to inform a whole range of decisions needs to be made about the college and obviously our main businesses are about education and training. Our key data is student information. Being students on FE programmes, how many apprentices we have got, how many people doing T2G. All focus on Making decisions whether we are on contract for various things we do. It is import to look at it. We look at it every week, every Tuesday Morning.

How leader/manager use data to inform decisions?
We use data in a whole range of ways depends on what you looking at what point in the business cycle you are. Learner attendance and punctuality, looking we have got problems with particular subject areas, courses, classes students are not attending. Through looking at retention whether students sustained in class. Looking at achievement rate, success rate that leads to a number of things and make decisions to see whether provision should be kept open or not or whether we should the provision or close the provision down

I think there are 3 things that could make the college improve the use of data. One is absolutely crucially management of the organization at all levels has to be committed to use the data to make decisions. So culturally the organization has to make the commitment to use the data. If you haven't got that commitment you're never going to use it effectively. So there's a kind of pre-requisite and understanding that data are important. From that flows the need to keep it accurate for people to check data. So data accuracy is from a subset of culture saying that, we've got to use data.

The second thing is giving people the tools to be able to understand data. Not everybody is intuitively comfortable with the numbers. I think that that is one of the weaknesses in the UK. It is a weakness in Further Education that unless you're in a subject area where the use of numbers is important, people are not comfortable of using numbers. It's amazing how immature some people are in terms of understanding whether a number is significant or not. So if you're confident using numbers, you will know whether that data are important, significant or not. So you have to give people the tools to be able to do this effectively and I think that to expect staff, who don't come from a background where they're comfortable using numbers to be able to.

The third is data has to have a purpose; it has to be an outcome. The purpose is not just to have accurate data or a culture of using data. It's not about giving people the tools and being able to put the numbers on the self-assessment report; it has to have an impact on outcome. That is crucial because why do we have to have accurate data? Success rates are really important, retention is very important, attendance is very important because it's about the learner experience. All the numbers are tools and proxies to ensure that we give a good education experience.

Interview: II18

I think understanding the data is crucial I think every colleges could work more closely with their MIS Manager and MIS team and learn and teach them more about the data. I don't think that we know enough about the data for example is ethnicity, ethnic groups we don't know how ethnicity groups were the data. A lot of staff in the colleges are scared look at the data because they don't understand it. We need training the staff not just the managers but the whole team even myself I still struggle with it sometimes so training courses need to. I think training courses are very important.

What software and data tools used which you find useful?

I do not to use Proachieve. I look at the system to look at things like attendance rates. I don't use proachieve I do not use much of the system data I am not on the curriculum my work is mainly based on admissions reports that the data has presented to me but I think the attendance reports now are now good and we added targets. Data can be more sophisticated. People can see where we are not global targets, by an individual target and against age group targets so people can see how they're performing with applications with concrete targets like age groups.

So if the data has been used effectively can these people make decisions based on the data?

yes, we make decisions all the time based on the data, closing the courses for example they can help people by looking at trends. These decisions to see to see man resources required. Who needs more ALS, the data helps to make decisions about critical things like construction have asked for more publicity because there are struggling with recruiting.

Howard I finish my question is do you want to add anything about the where you can see the role of MIS or how you think data can be used to support education in the FE colleges?

I think more staff need to get training about how to get how to use the data. Another thing because LSC changes all the time we don't know sometimes what is important one time it is success rates another time it's SLN's, what is important what do we need to do as a college to do well. as a manager you think what are the key things are what is important we need to have aims and objectives. Is this what is going to make us a successful college? No one knows what is the most important thing?

Interview: II19

Why do you use the data?

I use the data for various reasons over the last year iv learnt to use the data specifically to find out curses are performing against the numbers in the class is one person better because of the area because of the ethnic group attending the class not doing very well and another ethnic group and a all-woman class and a all men's class I like to compare of the outcomes of the class and the data and also I compare the geographical area because of the classes and the students because of

students of age difference because of students in accommodations also in temporary bed and breakfast style accommodations so all these things over the last year I have learnt to use the data.

Do you think your background or what you're doing to decrease or use education system social economical quality or how your data could help you in addition to your task or your job?

I think before this last year and its also thanks to you the way your data are written that I can understand and use it for what I want and the difference forms is now presented in actually has very much done that there are several pockets in the borough which are probably socially very seriously challenged and there was attendance and press issues and so what we can do is we put on different extra provision so we can link with family learning and the family learning is a teacher which works in the school to support parents anyway and what we did was we got that teacher to link with that teacher are resole teacher and to link with the school teacher and work with the parents of the school a extra curriculum program which was about supporting their children in school so because a lot of parents wants their children to achieve……..a lot of refugees may start off as economic refugees but they may not be and they end up as economically lower than anybody else or the time being and part of the struggle to get out of that economic area for their children but they work very hard trying to establish themselves economically and socially as well as trying to be part of this education system and one of the ways they can do that is to help their children but language is a barrier socially and economically there is all sorts of housing problems so what we do is we link with this teacher and we get them to support the language of their children to the education system and we did that by looking at some of the data's of these areas My understanding is limited and as iv grown to understand it year of the system has supported of developing new ways of presenting it or adding extra elements to it which helps support my understanding of what's happening in the community and I also this year compared a lot of it to Haringey data which is on the Haringey demographic so it actually lined up with a lot of its stuff

So you're comparing our data with this thing

Yep

Maybe im wrong but this is what some people think sometimes the data can be from the top from the politics from the government and not necessarily people agree with the data because they will look at it from one angle because if you have your local data you could probably argue and say oh the achievement is good in this area we done because you know in the policies and the government for elections, for anything the own data you could deal with it isn't it

Oh yeah that's also true because what they do is say one area is now regenerated that area now no longer needs money in fact we still have classes in that area and we find that there's a base level of people who still need the access that they were getting funding from the regeneration which is now gone and those people have not benefited enough to take them out of the social and for us educational health scales

So the data you think is useful

Yes

And the data are now helping you like if you could say before using the data and after using the data could see different

Many differences for me for me in my job personally as a professional is a growing experience for me to do my job I knew this data in my head and I understand socially, visually and in my head I could see what was happening that I didn't use the data before to justify to present my argument or my outcome to my manager and now I use that I used it with john low and I used it with the inspectors and I used it to back up my argument

What practice is effective in using the data?

Teachers mostly use it for numbers in classes, attendance and retention they use it very regularly

Do you think it will help them do their job effectively?

Yeah it will help them in those areas they can see if some bodies attended 80 percent or not or have got a day off or achieved or unachieved and there are series of elements on their daily productions on needing to have information to check how their class is performing and if their register and annulments are accurate

Do you think instead of them to do it they do it one by one on paper and concentrate on teaching instead of people looking at oh where does he/she come from? Have you achieved it the data are there?

Yeah that's much better

Do you think your helping them?

Yeah! That's much better

So they could be concerned on the main goals isn't it?

Yeah

People say data improves education what do you think? On the other hand people say the education system we could use social inequality. My question is can data use improve education

I think it can be used if the person using it is wise this is the difficulty isn't it because data can be manipulated to present an argument against your case and I think someone who has the genuine benefit of education either for their own class or for the department, college or government has to use it wisely but I think the interpretation of data in its truest forms to me has given a real picture of where areas need improving and not just in areas where we have super output areas but areas where a teacher is not managing the retention, attention and achievement correctly so you can put a support in for the teacher and that benefits the education but its very grand level I think the

college has a lot of data which I think gets the picture of the quality of teaching and its truest forms can show the strengths and weaknesses of the college and if implemented correctly can perhaps continue professional development or support system which can be raised or share the level of that in quality but can also be manipulated by someone who wants to hide something

And some of the data maybe not available

Well yes it can be manipulated into figures or into presentation that doesn't describe this element of the picture but describes that element of the picture

Making the data available you could manipulate the data and support

Yeah the data becomes more increasable more effective and more available to people and someone can research that data then someone can use that data to strengthen that argument I would use data on how many resources I use and retention and achievement can be improved by bringing these resources in

Otherwise maybe the data from the central thing maybe you have a meeting here is the data and you wouldn't have anything to prove but now you have something to prove or say no the data are against all this and is not matching what I have and you are not saying my data the different people to say no this is my data my local data I collected it on my spreadsheet you are saying the data collected from the central database I am looking at this data im not talking about the data I collected locally just you presented only this bit

Last year I think there was a discussion about short-term attendance, which had low attendance so this is one of the first things I looked at and found out that area had the highest proportion of triennium community because of localised short-term lettings from the council they went temporary accommodations and were moved constantly and that's effected the attendance of the class and they may have been moved to a house 12 blocks away and they needed time to deal with the council situation and being asked to move and all that and interviewed the students to find out why and it was because I looked on the council thing for where their accommodation was and it turned out to be the highest area of the borough

We covered how the data can be used effectively so how can the management-overcome barriers or helping the staff use the data effectively
You may have to link it closely to the teachers job if we forget that the teachers are always under pressure and they don't have enough time to do all the work they want to do and if we forget that we think they can do everything the link between a teacher finding out what relevance this information has to this class directly and the instruction that find out what the retention is there isn't a link the teacher don't see how to use that data effectively to analyse what's happening in class and to consider what they can do about it

How will they do this?

I think management need to demonstrate to teachers how practical really effective it can be for your class so for example someone could run off with the data and everybody in their class it will

show their regular attendance, if their having a particular day off, late on a regular basis something really simple like that and then the teacher would be able to see the pattern emerging

How many teachers know about it?

They know about it but they don't know how to use it

Ok but what step do you think they'll need?

I think their needs to be a training, which is based on very practical elements of what benefit of you as a teacher to improve the management of your class because its about managing your class and the profile of attendance, work pattern, anything which can be all sorts of analysing and teachers mostly want to support their students but sometimes they are so busy they know the students not in class and will say are you ok and I shall may say yes teachers are not recognising that this happens every second Thursday and is 45 minutes late each time well if its been happening for 3 months why not have a tutorial and find out what impact that's having and speak to the students about it and there are other elements I cant think of now and that's a very simple one

So this is basically lets say data awareness, workshops, training or staff training or something like that.

Yes but very practical how you can really analyse the very basic things, which show you a pattern emerging in your class

And the only thing you could have is if you have access to the basic data
This is what im talking about what step do you think your college needs to improve the use of the data and I think you mentioned staff training when you say staff training it doesn't mean generally how to use the data its not going to help you isn't it

What knowledge can that information give you to know what's happening in your class people know how to press the buttons for sris and there are also some people which might want the broader picture and might want to compare their achievement to someone else's in another class teachers have got different levels of interest haven't they some of them have very basic level of interest my class, my time, I am going home somebody else would see the pattern across their area and might want to do a comparison

How would we do a comparison? You would have to have the data to do this comparison

Yes you have to have the data and I think also you have to have the data but you have to demonstrate a purpose to the teams so for example you might train one team in this room and finding out all the data one team in another room and then you bring them together and ask them to compare their data and what is the difference and the outcome of why and then the question is why doesn't it make a difference is there a difference on the time table is there a difference the people are getting are these all polish people are they all working to their professionals so their outcome and time table has a difference are all these women with the responsibility of 7 children

each and can only come at 9:30 and yeah the training and that would be choosing and one is it gives them to identify their own issues and then it shows them how to comparing them to give them a broader picture and also I think the college makes a lot of broad goals they say we want everybody at 80% but there might be another particular area which might only be able to reach 76 and the best over 10 years has risen slowly and is now peak at 76 why cant that one be 76 if there is a solid argument and data to back it up but you don't know this well I don't mean you we don't know this without how to use teachers know their customers but its how its presented with the data which gives that final argument why couldn't their students got the thing right 40% attendance is a serious issue but because its just below and what is the issue here before the inspection I had loads of data and I noticed these particular classes always there punctuality was so different to the others much lower and as soon as I saw the names I knew why they've got cresses so what they have to do is start the class and then they have to start the class starts at 10 and the cress starts at 10 not the college so they cant afford to pay the cress workers an extra half an hour so they start at the same time so the parents have to settle their children so they will be 10 minutes late on the data that looks as if that class is not efficient or effective so I just wrote a profile on all those classes for the inspector case they saw which shows how the teacher manages the first 2 minutes for the other students giving work, reviewing the previous lesson and how their parents were asked to catch up on certain elements well Alison was saying this class isn't any good you need to sort it out why are they always late but I immediately assumed that the data backed me up the data shows me why I knew already why everybody knows their classes but I didn't see it like that until I saw the data and it proved that they all had the same issue and I could just set a profile and an argument that this is a particular reason and if we are talking about equality and widening participation it is relevant that this is work and management so it is appropriate to the education well one of the data's im going to look at this year im going to compare because they say its low we have a huge amount of women in the community which are illiterate if you look at Somalia 50 years of civil war they didn't have an education, Kurdish women from eastern turkey no education, Albanian women are very well educated in the basics of education there is a difference between the class because of the ethnic groups and literacy is a big picture and I think this should be used at the LSC to argue and in this year we are going to put them under a special code but in the future I think it should be used to show the LSC that we have the proportion of real people in the community and in the collage but lesser in the college of people who are illiterate how can they achieve the colleges policy is to bring them there so therefore the colleges policy and the governments policy should be funded to be able to go through the colleges policy

What other steps could the college do to move the use of the data?

So I think that's exactly why they don't use it because its not linked to it being specific for improving their areas because the teacher only focuses on their class they go in that class they teach they work they need they come in for the next class and they work they need and they teach and the link is not made on how the data can demonstrate to them the picture of their class and I think that management can continually use data at a science also it doesn't have any real impact its not real its figures its not okay we have 2000 students but only 54 of those students have exams its not real its too detached so I think its about making it real and teachers see figures and data as a science and it doesn't link to the real person sitting in my class and if you can if data from the top can say you have 12 people in your class and only 2 of them are passing, why? Lets

see what's happening in that class look at this picture this is the picture with dots ethnic, time, external and they need to do that for the choice as well because people don't see it it's a catch this is science up there a lot of people are having a main anxiety about late mathematics aren't they so it closes people off so that's about language so what people need to do when they say we will hit 70 to 78% of the benchmark its about a minor translation we've got 3,600 students 2,824 are doing well but the other 840 what's happening all of a sudden a teacher steals 840 students I am not getting it why it becomes real you know

Interview: II20

From my point of view the electronic data one of the improvements over the last few years would be the easy success such as … you got the data you want. I personally use the data in a number of different ways. I use the … to monitor which courses need and to monitor whether or not I'm reaching the targets. I use SRIS extensively too. I particularly like the new reports the …… so I can monitor a bit more closely, so I can monitor courses and the whole school. What I did this year was get the best to grip by using Pro achieve, because I could use it but I was not using it very well. So what I did was get the Pro achieve and downloaded loads and loads of data about the courses I want… and I brought the data down to thing sin my school to see how many men are in the school or what's their achievement like and what's their achievement like by age and if theirs a particular ethnicity or ethnic group that achieve better than another one. Pulling that data apart was great. The data's all there and it's just a question of working out what you want to know. What I've found useful is, recently I've been planning the courses for the next year. When I've been planning the course file if I said that can you find out how many students are on these matching courses because we timetable them really badly so its usually entry of numeracy its actually very hard to do entry of numeracy along the… because the timetable at the same time or you timetable them to do a six hour day without a break. So I asked you to tell me how many people are enrolled on entry on literacy and entry on numeracy well the …… so what I could do is timetable both two courses so those seven people have a better timetable to probably last six or seven people from the numeracy class because they cant bear the timetable, and that's really helpful, actually being able to request that kind of data, it's great.

I think data are useful in… I think it can lead to measures to improve. The data itself isn't going to improve education but using the data are a totally different thing so for example for a year and a half I asked them our attendance isn't good enough, our attendance isn't good enough, our attendance isn't good enough and then last year we could break it down by course. Then I actually showed them that the attendance on this course isn't good enough look at the percentages and then if it would say 6% they would go whoa I didn't realise it was that low and they believed the data that's the good thing, they actually had trust in that data so if I present them with those figures then we can actually plan how to change that to 60% as acceptable. Otherwise without the data I would have had to rely on gut instincts and say you know what this isn't good enough and whatever but what makes me say that so the data are the evidence you need to make. I have been doing the job for three years and in terms of changes there have been massive changes and quite a few changes I have managed to get going because I've got data to support my aim. Rather than me just saying I've got an idea, I think blah blah blah because if they say no I don't agree with you, I can say we have to look at the last three years data and they can't carry on like this can they.

I actually state the data quite a lot. We have a school meeting in each term and each time we look at class sized data, we look at… we look at attendance, we look at achievement, we look back at achievement. We look at it at the school and I show my team that so that they can see and one of the interesting things that we did was class size, as I showed them the class, and it goes a, b, c, it goes down at c and goes back again at b because the points where we enrolled and it goes up at b so I said can anybody have an explanation for why it goes down at the box b, why is it doing that? Everyone said oh it's too hard. It generates discussion if you can do stuff like that. Rather than me saying I don't think there's enough people in your classes and they're going to go we don't care about these things but the data does actually help. Another good example of that is my school has an… 5% of that 6% is probably rising and it doesn't fit the profile of the local community but I wouldn't have done that had I not known where to get the data to know what course is available and we identified that…another two courses. We have got a full range of level one and entry levels meant that literacy and numeracy aren't up to scratch so they're not coming in and that we have to get them in.

Most of the learners in my school are… there are only about 60 or 70. What I've noticed is the classes that recruit the 16-19s would accept is quite ugly and one of the courses we've closed. We have a profile of black African women are our best stayers and our best achievers and it's quite interesting, followed by black Caribbean women, followed by Bangladeshi women so you can see where the peaks are.

The effective data are better to use as an individual to guide your decision-making so classroom teachers need certain data, especially the managers need certain data and I need certain data and there's some data that I don't necessarily need. The way I feel at the moment with sometimes data that there is a, and what I noticed taking that time of, what I noticed after I came back was that the data had stopped coming after us and we simply had to know where to find it and that was good, that's a really good strategy. So I know that on the CLG I can check my numbers. They come to me every Monday morning and it's not under the email section, so I might check it every half term. What I don't find so useful is some of the analysis of data by subject set degree because my school is a very small part of that in the college so I get graphs that don't reflect the work of my school and I understand it but it's not going to in. I can see the performance indicator type stuff, Jane as my manager needs to have that… stuff which is… and separation of the work and me. She needs to see that graph and she needs to see that data but that data does not influence any of my decisions. I look at it and say okay I've got the basic idea and I file it. What I look at is the data that came into my school because my decision-making is largely about my school. Once I know this stuff I'm happy because I have to know it but it doesn't affect anything I do.

I think that over the three years the data has become more and more accessible and I mean in terms of getting hold of it but I also mean in terms of someone getting it and saying huh I get this, that one bit except for the SSG. It's in a different format and it's understandable in a way because a lot of what you've done in your area is… so if I came along and said would it be a good idea if you could get your course data just for one course, you know for the last three years… Subject area, no ones asked for that yet so it's just coming out in our form where it needs to look

different. Having the overview is nice it really doesn't affect decision-making in a way that… and Pro achieve.

I think as a class teacher you need access to the class list, to your personal tutor list and the data relating to the course itself. There's student data and then the curriculum managers need a bit more than that. They need an overview of their curriculum area, they need to know which courses are… and I need the school data and I'm less interested in individual students. Then Jane needs the data for the whole subject area and that's fine but if there's one thing that bothers me about data are that it comes right up…

There is a training issue. September I sought SRIS training and Pro achieve training. The SRIS training has never happened. The Pro achieve training happened and it's quite good. It never came to be, and the Pro achieve training is quite good but there's a different system used with the software so being able to use SRIS is not the same as showing others to use it and it is quite difficult to get the people. What I did was I had my curriculum manager, my course team training, and I'd only had it but I joined it to look like you know. A couple of them went, yeah that's great you know, yeah, I get it. About two from about nine. They're not particularly anti literate; they're not particularly interested in being anti literate.

My school is quite quirky because I think my team understand the benefits of something like this. They don't understand Pro achieve at all, it's a mystery to every single one of them. If my whole school could use SRIS effectively then I would be happy. My CM could use Proachieve then I would be happy, that's roughly how it needs to be. I think in terms of the school and SRIS, they do need training but what we need to do is what I thought I could do is do a rough guide; it needs a rough guide to last emergencies. As a school of literacy my team are very good at reading things, very good at doing structures, very good at engaging but they're not very anti literate so there's no point sitting them onto a computer. So I thought to myself what they need is five key tasks, which they have. I was trying to think how to check an individual students attendance, how to get your personal tutors list done and put it right, how to check on your courses and then what I would do is one sheet for each of those that were how to sheets that were step by step, you know, open a… then do this, then do that. Somebody actually asked me if I could do that for the new course file report. Could I a step by step of how to get to it. They could see it as a great report but they had no idea of how to get to it. How to do the electronic essay one and you know just like little bits but I was thinking to start over again they don't need anything, they don't need to know everything. One of the key things they had to do.

If it's not got people who are I.T. literate. They need to do it again and again. I actually thought, I had this idea that we could do, add two sheets which did… stick them onto the wall because the thing about SRIS is it' one of those tools where you should, you know, you go to your class and someone's dropped out, you go back to your desk and do your class list and that's it. People are so.

That happens in my school, people are like uh I don't understand it. I think that over the last few years people have come to understand that it is their job to manage the class and that includes the data that goes with it because I think previously that when they if you kept them on the register

but they weren't actually there, it affected your attendance figures and it affected your retention figures just like that, and that's how we generate our money.

I… to facilitate this thing about attendance and punctuality for me to highlight to my school how iffy we are at it because we are doing it differently, we all address it differently and how is it really acceptable for students to not be here for six weeks or at least two weeks. The SRIS told me differently I could show them their class list and I could show them how many people had attended for less than fifty to find that data you know. So I can use things like that to generate a different attitude to call on people and say what's going on.

We need SRIS from a staff point of view. You need it because it's different but you also need it because you've got fifteen learners in a class who are coming and going and you don't know what time they're coming and going. What they achieved in the previous year is on that so you on often when I have a problem student I'll flick through and have a look at their profile and on their profile it will say that last year they did an entry to course but in someone else's school and I'll look at what they're doing now and they're doing a level one course in my school and I'll think that's a massive thing. I'll go and talk to students and say oh what's this? They're either not coming which is why they're not so that information about the learners is obviously in one place it's great, you know. I can go on SRIS, I can print out, what courses they're doing who their personal tutor is, what their attendance had been like. I gave a lad a right telling off. How many do you think he's missed out of the possible forty? He said um eleven. I sent him the register after that. Having the data of SRIS. He was so shocked. I don't think he noticed every lesson he was missing.

We did that two years ago. I said it'd get better if you come to classes from now on. I think as a college it's got something about, as the head of a school we all appreciate format we understand, it's almost in plain English, you get it and you think huh so someone has to deal with these false indicators and say they mean nothing. The data should be available rather than thrown at us. The LDMIS, its better to back up the CLG and Pro achieve and SRIS you will get data thrown at us from other place. We feel it should come from one place, and then we'll believe it. As a school I'm good at using the data, a couple of my curriculum managers are good at using the data that's about where it stops. We're still very iffy. My team is good if we highlight something. On a personal level I'd say at least 50% of my team are data literate. They're not interested. The steps I think are to, the agenda items on course team meetings of data and to encourage data that they want to highlight. So you bring your course list and you say how many people are active on that because what happens at the moment is that curriculum managers handle all the data or if they don't I do and actually if I was a class teacher I'd handle my own data, I would be looking at who's doing what and so that's why I need the data to step up a bit so that for each course meeting you go to you can take certain, basic data with you and you give it to the person who's having the meeting so this is where I'm at. Occasionally we get complaints about classes, I put this right and it's still not right. Things get lost in the post, or someone's on holiday so it takes a week to process.

One of the things that I've been doing by analysing the data I can say which course is not running next year. I look at three years, not just one year, it's not the books it's a trend. So if I look at trend data I have to look at eight courses, I have to wipe them off the course file for success based

on data. I set up four new courses based on need, that's on external data. In the leadership capacity I have to explain to my team the courses I have closed. That's my tool, my explaining tool. One or two are not bad at performing but they've had their day. I need to say that. The data says the course is okay but we need a different direction. We have no white guys in the courses. This doesn't match the profile of the community. We have two courses directly specified for white men. If they work well then most of them will join long courses. I wouldn't have thought to target white men in Tottenham, it never occurred to me, like you know targeting people walking off the street. It made me spot things. I soon asked them why you leaving? Why are you going? What's the problem with this?

Usually the MIS stuff, data sparks me into action. The data helps me. I had no idea that there were hardly any white men. I couldn't just believe my gut instinct and say this, with the data I could say this is what we're dealing with.

The basic data, everything is there and what I did was turn it into my own. I didn't quite know what I wanted. Part of the problem is pro achieve is a bit more annoying and so people are less keen on using it. SRIS is great. If I said on SRIS can you put together that shows all the 16-19s in 8A for the last three years I click a button and it goes ping. If I go on pro achieve to use this stuff I have to filter a whole load of stuff and if you're not a confident I.T. user that's nothing doing there.

Now that I'm used to pro achieve I'm fine with it but me being fine with it is not actually an answer because my curriculum managers should be using it, analysing it in the same way I've analysed my curriculum also. I can't keep that going because I can't be there all the time, I just felt like it. What I would do is group it by 16-19 black Africans to see what the success achievement and retention data are like, that's how I'd do it, that's how I'd group it and that's easier on pro achieve if you can go onto SRIS and click go, then of course people love that. SRIS is a simpler process than pro achieve. The data are there, I think it would just be an improvement for the managers.

The performance indicators are at school level so but with documents like that and it arrives too late. Its difficult to know which data are which. Performance indicator the data are different. I think you just need to get them all meeting. You just need it all to meet up really. It's not actually a big thing. I think with performance indicator data, you have a lot of that data, a lot of it, by the end of July. Yet the booklet comes out in, well no it's all done isn't it? You put it all on pro achieve and you put it SRIS. I'll tell you about one of the things that I liked about what you did; there was not a lot of language. You go on the electronic system and get everything quick quick quick.

We need a standard formula to make decisions. Some of the business decisions we have to make is based on performance. Data are manipulable we all know that. So if I have a course which is performing badly, if I add them up a bit and turn it around slightly it will look brilliant to achievement but it might look dodgy for retention, but I can still say how brilliant it is for achievement. That means I can keep that course when actually it's not very good, I shouldn't keep it.

I don't see how the data cannot help the college. I know the teaching staff feel very different in my school and that's because I operate a school in the…I seriously think from September in whatever staff room we end up in it would be worth me spending half a day just doing, how to get your class list off SRIS and print it off promptly. They have asked me to do some demos and we shall show them some. What's the purpose if me demonstrating it? Sometimes all we need is the class lists putting right. When actually what we should be encouraging is the management because that's the thing they do most, manage their class lists, the electronic essay one.

I mean that happens to us a lot. We get a lot of, do this. The data are there, you can get that. If it happened to me I would probably know that information. If you do this to me, how many people are on this course and this course? And you'll say why? And I'll say well because what I'm trying to do is timetable it better and you say, what do you mean? And I say because, this happens and this happens and what I'm thinking is I there's enough students we could do it better. Then you go, okay then. When you didn't really know what I meant, you did a report and it didn't mean anything so you came back to me and said no tell me again, why? Then I'll tell you again why and you'll say right, I've got it now and did it. If we had the conversation the first time rather than by email then you'd have spent less time on it. When you asked me why I know you're trying to but it's almost like a different language. I think I'm being dead clear and I say to you, can you tell me how many people are doing this course and this course? So you tell me how many people are doing that course and the you tell me of course how many people are doing the other course not how many people are doing both of them.

Interview: II21

I: How do you use the data to make decisions?
R: erm well data on some of the ongoing stuff on students progress clearly I don't think I'm listening for example getting up to date with there unit records now I can see that out of 9 units 21 students have got 6 units completed and 2 students are missing some so now I no who I need to chase up so erm get them back on target so to complete the 9 units before July so that kind of ongoing stuff erm oh the other source of data that I use of course is a register data and I and and erm one of the advantages of the current register system from the pink form we used a few years ago you have actually got the data in front of you and you can go to them and you can see erm the student which has missed so many weeks and then we chase them up and we have a policy in the team that if students miss and we are not sure why then we phone them and we also have a possibility of sending them text messages we have a system set up on the computer and I can send a text message saying why aren't you here so we do that that's for the kind of ongoing bases and the other kind of data about attention and achievement is ongoing is what courses are so difficult in previous years so which courses need us to give extra time to think about how we are going to do better next year.
I: And you have got this data.
R: yep
I: ok is It from proacheive?
R: from proacheive from SRIS
I: apart from the LDMIS what other data do you use?
R: well
I: when I say data not necessarily the numeric data

R: one of the things like definitely where they are with their units I mean that's locally health data in terms of when units, all the courses are broken down into units they all have to achieve a certain number of units by the end of the course plus an exam as they complete a unit that data are transferred to the file that's locally held data and also things like how they doing with the units who needs additional learning support based on individual students weaknesses.
I: How do you get this weakness thing from the students how I mean from the data from the
R: from assignments, from tutorials. I see as curriculum manager I see virtually every I see examples from every unit because if I don't mark it I internally moderate so I would see samples of all the units erm which means I have a fairly good idea of what kind of standards we are achieving and that kind of data.
I: as the curriculum manager do you get any data from feedback of the students to say how whether you are meeting there needs?
R: yeah well we use the college feedback the questionnaire to be honest because they come so often and they are so detailed we've stopped using are in-house evaluation because we thought students would be like oh not another form to fill in so we tend to do other feedback on a informal bases so we have class reps well we haven't got so much this year but usually we have a meeting with the class reps and they come and see bad issues from there particular course I've got 5 main in-house courses as well as my 5 main courses taught here we kind of get data from how they feel about things.
I: for what purpose do you use the data?
R: well mainly just to make sure students make progress and to help us to decide where we need to target our extra efforts and for example the data from last year tells us the achievement on our main errrrr very poor and one difficulty we have was that a large number of students didn't pass the end exam so we targeted that as a strategic area to work on this year and I have a member of staff which has been working since January on exam preparation last year we started much later in the year so we've used that information from last year to make a tank we've also instituted a sebum of erm unit test which are based on the exam format where before we might of done them in a less structured way we've done very structured unit tests based on exam type questions so we've done all of that because of the data from last year which shows what we were doing was very successful.
I: what's your source of data?
R: Well that would be exam results. We use collage data mainly, the exam results come from the awarding bodies so we've got information from them and then the locally produced data about unit assignments and I mean things like all our courses the students can get grades so we so we can compare for example this course so many percentage of students got above a pass and got a merit or 1 course graded A to E so they can get above a E grade so they can compare that and say this year they got good we got more A grades so we know we are doing better.
I: what data do you find more relevant?
R: depends what it's for the register for tracking attendance and punctuality for some extent but actually who's here and who isn't and addressing individual students the locally produced data in terms of pushing individual students within the course because its what each student has got in the grade if iv got a sheet with their names and grades listed and I can look and see that they got that then that's my locally produced data and that enables me to work with the student and say hey where's your unit this one and why haven't you handed this one back in.
I: can this local data be shared or be recorded centrally?
R: I don't think at that level no we keep it in the course file in the staff room and all the team can

access erm but at that level its not ready yet to go central because its not represented the whole course when we got the course achievement that data goes central and then we can compare it year on year with the end results.
I: In what ways you use the data to help the learners?
R: erm well in the ways I've just been talking about really to say erm where do they need an erm extra support is it with particular units is it with exam preparation is it with working with them on attendance or punctuality so they are here to actual do the work in the first place.
I: and how do you identify these people?
R: yeah erm well how do we need to identify if we have extra support looking at there work are they getting it in on time is it of the right standards erm we have good support from the erm ALS (Additional Learning Support) people erm
I: do you send to ALS
R: yes I identify we requested ALS support but in induction or even before induction for progressing students we have a number of students which move from level 1 to level 2 to level 3 so we can identify a new trade A.L.S so ALS was in place right from the beginning so we identify additional students from years gone on by the level of standards of there work .
I: do you use the data to help the student in other ways for example student with poor attendance or
R: yes we use the senior tutors to come and talk to the students with poor attendance we set up tutorials we set them targets we use the tutorial paper work to action plan to students and say you are going to improve your attendance and then look at the register and then you can see and sometimes the register also enables you to pick up things like erm although there are over all attendances 80 percent say on 1 particular lesson its 60 percent and you can see on one page that its very poor but on another lesson they've come every you can identify what is it about certain days ,certain lessons ,certain mornings ,afternoons.
I: maybe finding some problems childcare problems
R: exactly it could be a childcare problem it could be whatever all sorts of things.
I: the data could help you to identify
R: yes it could help it to identify but it doesn't necessarily mean we can solve it
I: yeah identify maybe it could be the timetable of the cause
R: yeah we try to be as family friendly as we can but yeah but there are obviously individual students which find that difficult.
I: How do you use the data to meet the needs of the community?
R: we run a lot of courses in the community erm I mean courses outgoing out there in different centres well it hopefully yeah I mean we look at the numbers of request of courses for example we've collaborated with the N.V.T training centre in the borough which has erm a large number of applicants for a course which they weren't going to offer all there places too erm I think they had a 100 applicants and they could only offer 30 places so we then took from her database and offered places on courses we had here to support what was going on elsewhere erm and if we get requests well we have had requests from childminders so where now putting that on within the community and we cannot run them here.

R: yes I know I am just thinking of other sorts of data we haven't mentioned so far that would identify that we tend to do things like that in team meetings and we would perhaps have an agenda item that said CPD and I get are main awarding body and other sources about training events and I would maybe take that and say you know lets go through them and see who would

like to do what. I yesterday have identified a training need for 1 member of staff which we need to find some training for her to do another member of staff the one who's preparing the students for exam we identified that she needed to go on some training on preparing students for exam which she did and she came back and said now what I want to do is to get involved in writing exam questions so we then enabled her to go on another training day to go and work on writing exam questions I haven't seen her since because that was last week.
I: how to use the data to improve the performance of your courses?
R: we use the data from last year to take the course of the course file because we decided it wasn't a good course the assessment work was very poor they came into collage 3 hours a week and the amount of assessment they needed to do for that was out of all proportion and the achievement was a struggle so we decided this was not a course we wanted to do again because the data told us achievement hadn't been good so we had taken of the course and replaced it with something else which had a different assessment system they haven't finished yet so we don't know if it will be an improvement but obviously we will look at that in September I don't think that we will be able to do it before then because it wont finish till July and we wont have achievement we have to run it again next year I think and look at it and see if we want to keep it for the following year and we also look at the requests to see what's wanted I mean we are doing a number of courses as a direct request by other people well London borough of Haringey asked us to run courses for customer assistants so we've been doing that in conjunction west green learning centre asked us to run some child care courses so we've produced a course

I: To what extent do you trust LDMIS data?

R: nowadays pretty much well because its right I mean im a perfectionist and I like things to be right caryn would tell you that you know if its not im on the phone or im sending an email saying why isn't this on why isn't that on and you know now I would check it I would phone john and say why isn't this student off or on and I check it and if its not if its not right I know why its not right I mean I know one is not right and il ask john why not but its not I don't trust the data I know its not accurate but I know why its not accurate so I don't have to rely on something and say this is the figure because I know it isn't.
I: if the data are right do you think its going to help you?

R: its going to help me its going to help me to know what iv got to do in terms of numbers and achievement and the pro achieve data I know historically its not right you know but I don't look at previous years because it just annoys me , and there are still 2 wrinkles on there which we have not been able to sort out but I do understand why we haven't been able to sort out but I do understand why we haven't been able to sort out.

R: oh well I have no idea I have no previous experience of that kind of data in my last collage I was so part time I had no access to it at all I think my courses there would have had 100 percent attention and zero achievement because no one explained to me about deadlines and students which left or anything like that so there data was probably wrong but here

I: when I say MIS data are wrong it could be based whether if you own the data so sometimes people think your responsibility to make MIS data accurate as possible
R: yeah any data are as good as what's provided if I don't withdraw students and it says I have 30

students in a room and I no I have 20 in a room who's fault is that its mine not the data's fault.

Interview: II25

I: What kind of data do you use to make informed decisions?
R: , well the data has to be accurate and the data I use, is data in potential achievement some enrolment numbers. we do collect some data on previous year students and we get some data from where students went to. we have tried several times to collect data from students who've left when they send us information about where they've gone to and what they've done. , it's really, it gives us very useful information about the current students. For example if we know the access students went to certain universities, we could inform current access students about places they might be able to go to. it would be useful to know whether our students were able to get into the universities based on the qualifications they got. They usually, know where they're going to go before they leave here.

I: How do you use the data to make decisions?

R: a lot of it is looking at trends say for example, if you take a course run this year such as engineering, we've got a very full group this year and looking at the data over the last three years you can see this trend which means we can fix, or we may be able to run a second group next year so they'll be put in two groups next year. So it informs our planning as to whether we should have an extra group, whether we should close something. We also do contacts, for example we contact all the, , you know London this year, to see if there's any university…a degree. So that's part of our contact outside. Because, a lot of other data….all those sorts of data do and help in the planning of what we're going to run the following year. We need to use information from the local community about things like college setup, to find out what they're going to be running and therefore wondering whether we should be running the same things or whether we should be looking at different markets. The basis is on the LSC funding out whether we are going to grow in a certain area or whether we're going to keep our provisions steady and not grow.
I: What are those purposes of using the data?
R: well the purpose is to make informed and accurate decisions so if we decide to set up a new course, you don't want to find in September, that you've done it on guess work and to then find that we don't have any students to do the course. If we planned it in advance and if we've got data to show the market then you know, we're putting on, we're not just guessing what we're putting on but we're making sensible decisions based on hard information.

I: What are your sources of data?

R: mainly the college, mainly the LDMIS, , the means to which we do it is with things like proachieve but we have other sources which the college collects, which you may know for example. We do a little bit of research outside ourselves but not an enormous amount but most of the data has come via the college.
I: What data do you find most reliable?

R: Most reliable? , numbers of students on courses, retention rates, achievement rates. If the achievement on a course is low then we take immediate action, and it might be putting things into place or sometimes it means closing the course. Quite often we find it hard to close the course because the achievement is moving. enrolment numbers also. The data are also, we use it to, at the moment we're just doing a marketing …course because we think there's a market but we're not getting enough students so we nearly improve marketing this September, targeting marketing to where there's students…
I: In which ways do you use the data to help the learners?
R: to help the learners? Well as I said data on what previous students have done, enables us to begin reliable information about which universities they should apply for. I said it helps the learners if we have a very large group and if we're able to split the group into two and therefore we have more…
I: Do you use the data to identify the needs…?
R: Oh yes there's a lot of data that we get, that we collect the year, say for example, goes off for assessments for the students, almost all students, for most 16-18 year olds, all their initial assessments, and we use them so for all those things, we look at their particular learning support needs, and at learning support for all individuals. We use that data a lot at the beginning of the year to find…
I: In what data to you use, in choosing the data?
R: Using the data, well we do look at requests from the students asking for courses, , and we will be looking at that. what we try, well we try and do is ensure that when the students come onto the… programme they're then able to progress, progress, progress, right until they go to university so making sure that not only do we get them on the courses but then that we can actually provide progression for the next course. So making sure provision covers the full level from say basic level up to A level and checking to see if there are any requests for courses that we don't run and to look into them. All the time we're investigating new courses, finding out about new courses. we get a lot of training sessions coming through from exam boards such as EDEXCEL and they tell us what courses are coming up, what courses are new and we use the internet to look for new courses and then staff go on training sessions to find out about new courses so at any time we've got a good idea of what courses are on offer and then try and match those of the local community.
I: In what way do you use the data to help the staff?
R: Well obviously if you're using the data to give the students support that's giving information to the planning, say for example, if we decide that we're going to run a new course next year, if there'll be a second group next year, if we're going to close something next year. It gives them time to plan in advance. So that now in April we know what we're running next year and the process is going through and staff know what going to be running. They know what year it'll be running, what's not going to run, and therefore it enables them to plan in advance and do their…
I: In what ways is it going to help them?
R: Well it'll be the best use of their time; more efficient you got to prepare them for courses and not going to run um and they are preparing for new courses which should attend the…….
I: Do you think it's going to identify the data to meet their needs?
R: well we I mean for some training yes and for some for example at the moment we are making sure that every teacher go um……..that every single member of staff has a teacher qualification that goes through the college database on those qualifications
I: Maybe the data in the classroom or provision or um…

R: I mean I also obviously feed back teaching staff that we all say. I drew up a table of the profile of the motivations and so um and all of this stuff is important in meetings and all the staff know what the profile, observation profile of the school is. Also ones who started to save um the amount on satisfactory lessons then they…….
I: How do you use the data to improve the performance of your courses?
R: well if you're planning a course well because you know well in advance here, you're going to be running it, it will make schemes of work and again make the course run better. some of the courses dramatically improve by….data, working on unreliable data. That data you know makes informed decisions for me.
I: Going back to LDMIS data, to what extent do you trust LDMIS data?
R: Yeah I trust it reasonably well now, pretty well, it's much more reliable than it was. I do use it, obviously I check it as well, I mean when we first get achievement data and things like that we have to check it accurately. Well that's not always the fault of LDMIS, it might be something that hasn't given us…… or it may be incorrect. But once it's been checked what we do by achievement data we check it absolutely student by student we check it. But it seems to be quite reliable.

Interview:II27

The biggest support for us would be the data to be entered automatically to course review documentation SAR etc. At the moment we have to look for many sources of information as those not always marry up. We get attendance and punctuality in one database, retention and achievement in another database and Additional learning support in another database. We need data integration; it would be great at certain time of the year or during SAR review if MIS send the data in course review format or told use where to get. We need one stop shop to get these data. As at the moment these data are in different places, when they are produced, are the data up to date?"

Appendix C

Focus group interviews

Focus group interview: FG01

Tutors need to mark registers in classrooms and on time with integrity, if you don't mark with integrity then you don't have a true picture of attendance and punctuality.
You have to have the right software is a condition. The college need to have the right integrated software. The course file, timetable, register application, exams and enrolments all should be on this integrated system. The issue is not the right tool Staff have to use the software with integrity so any reports on the attendance and punctuality come out from the system would be correct and up to date. Equally staff have to withdraw students on timely manner so any reports produced will be up to date. MIS staff to run exception reports to capture non compliance as early as possible to alert the manager to get back to the tutors.

Tutors should realise that MIS staff look after their data, they don't own the data. MIS produce report and give them access to their data. Registers marked in class and attendance and punctuality reports can be produced from the system. Curriculum staff can access to their data and make requests to MIS staff to update such student withdrawals.

Focus group interview:FG04

do use the data?

Yes I do

Why do use data?
I use data to monitor the performance of the FE curriculum. I use it in two-ways one as an inspector where you're using it to compare the performance when you're using it to compare performance of a particular set of programs in a college with the performance outside the sector so that external information other comparator look at how about individual colleges performing and I also use it in consultancy role in the colleges to look at colleges' performance in terms of curriculum both across the College and in sector subject areas and I then work with managers so that they use that information to inform their decisions about what they are going to do to make improvements or even review the curriculum drop courses sometimes.

Can you explain to me how user data to inform decisions?

yes okay, the details would be for instance looking at a set of' level 3 programmes to see how they compare in terms of performance with that particular set of subject and level with the courses nationally if they are drastically underperforming and obviously you may need to look at a more complex data underneath those performance indicators to be sure and you want to know what exactly the issue is. If those programmes are pulling down the overall performance of the faculty then should the faculty be offering that course are how long has it been underperforming

consistently been underperforming when there is something about a radically wrong or are I or want to use a complex issue to explore further off course but ultimately I mean those courses are withdrawn.

do you think you get the data you want to ?
I think there is a huge rift between academic staff and MIS and it's common in all colleges and faith in the system is usually is the issue. They don't recognise the stats as they own they know students on the ground and what the performance looks like and all ways are and always you find with that exception to find and not anomalies with their perception of what they are and what MIS is and I think lots of bridges need to be built to make MIS more user-friendly to academic staff so they understand it better I personally believe in data I do my job by data at the barrier on top of that was what the academic staff put our means that there is a hugely wasted resource and there is too much to be a bitter debate about how things are I mean to me data are nice and hard and clearly illustrates how something looks but academic staff don't regularly accept it and probably I think initially more dialogue between academic staff and MIS so they understand better.

t
we know we are talking real-time so basically it is monitoring retention and when retention has stopped so that their success is not possible to 6 so the success target cannot be achieved their legacy of that is that the courses, retention is that a student dropped out.

what about attendance?

Well, poor attendance proceeds often somebody dropping out. so poor attendance is an indicator that things are not going well so attendance you need to keep an angle on obviously because it suggests that somebody who won't be retained by the retention is a very clear indicator that you can't achieve 80% success because you haven't got any students left to it and that and that's why we were packing on the courses so with higher target so great that creative arts as a whole could meet its target and if it didn't meet its target the college can meet its target because one of the things you find in colleges is senior management teams can sit around a table and say level 3 we will do this and they set high-level targets but they do they are never interpreted down the line accurately its all this chance that they get achieved and that seems a weak it's not a good manage is not a good way to its not a good way to manage performance and staff do you know you have got to translator down to head of faculty programme area management managers and individuals so everybody has got a responsibility for the college target this and that is what we were doing in this college.

how do you know if there retention is right because you know some students have not attended for a weeks and you haven't withdrawn?

well, that gets back to the anomalies doesn't it between the local information that tutor records accordingly have gone to MIS and failure to communicate and use the systems efficiently academic staff are not always brilliant administrators and they are probably not

but if the inefficiency isn't it. Staffs have responsibility to inform MIS to make records accurate. When records are inaccurate which must be really frustrating and then at the end of the year when the data gets the data on table say this is wrong. This is not my data and have all the cleaning up .

oh yes absolutely I think in terms of teaching and practice that tutor would probably get direction for the manufacture about what they learn from the data in terms of individual students is absolutely correct critical and unthinking tutorial is not to be using attendance and majority data are a mistake like you to be too bitter a student to see how many days they had off you've been better are would be better attending this time it was last term that is great and the quite encouraging about it I think on an individual level it's very important that that it but that doesn't rely on some form which only some colleges have got but if there is an individualised record with all the individual targets and attendance and punctuality that is brilliant because that's the with a discussion with a student loan and a visionary field of the mafia is inversely related to her and random and you have used other practices can you explain to us what practices you found very effective when using the data to support education and an excellent job but they are sometimes outward facing and I think developing the inner face is really important if you really want to help the college improves performance and a few colleges I have worked in and I've actually worked with them to develop the reports we have developed reports which are standard and there is a perception of colleges that if managers can access to achieve they have got all the tools to monitor their performance accidentally let us all because it relatively unskilled people manipulate I don't mean the manipulate in a negative way configure proachieve in a way that they think reflects performers and the order is in a slightly different way so when they present reports and stories are different and I think some colleges that I've worked in that divide standard reports that curriculum faculty heads will use which are configured century so there aren't so many permutations which of course and of course the staff are free to use proceeds to explore other ways of looking at things about the messages it supports from the centre tell you how the college believe you're performing and its standard and that I think is really important to have that and because the funding body and inspector will look at it anyway

he is absolutely and expect to inspect all this and proceeds I can understand how interesting it is look at proceeds and look at detail but the standardised reports which can the standardised reports which can be agreed and negotiated with managers are an important a very important day centre has actually used some indicators to show the level of performance of hours preceding the level of performance like the red amber and green and I was looking for instant at the college at the college data I got some data yesterday and manually went through it indicating whether that was good but satisfactory if it was a trend well a lot of college is now in MIS do that in the centre and it comes out and at the end of the course MIS has graded the course at 1234 so that is a really useful thing to give to curriculum people because they understand it as a lot of the work has been done so you need less skill to manipulate data on proachieve day you just standard reports which will actually show them how the college is at the colleges perceiving their performance in that moment all of the time which is really useful with the well I would probably now even allows an the question and answer reviews if it's good practice in reports of the curriculum on the course and that's what we came in on
my next question both of you can answer this and what steps can every colleges take to improve the use of the later

it has two sides having read into it I think staff and is asked to take more could take more steps to try and understand the data also thinks the usability under two other reports for them everybody processes data everybody who uses data and produces data think everybody else is quite a ticket of using its really at which they are not so for somebody to say sophisms to say it on proceeds on to achieve it is part but you have to have that kind of data orientation so that the amount of that report is quite useful discipline also
I think it's more or less of a wheel mentioned earlier I think it varies from college to college I think at senior management level most colleges use data effectively but getting the middle managers to use data well in some college could still be a problem and certainly and certainly below middle management it's another world to them are really often don't engage with it at all
so hard living we
can make people understand the data are you here are the philosopher example something from my mind so you don't look at the CLG
yes that's correct them if they don't propose to do whatever somebody will look at it and then they've got an excellent million other jobs to do and it takes quite a sharp learning to understand how to manipulate that so they are is important is if you pre-populate from MIS it will be accurate it's going to be the central version of data not a locally and even as we found here last year's side

Focus Group Interview: FG06

It is all about the level at which the person views they never I wish that particular person needs to look at it actually EBS is great I think it about with excellent teachers act of teachers actually use it up and you'll be a huge server migration so teachers very clearly from a student in the class by class almost as hard as lookouts area school level because it's very difficult to get the aggregation and of course the Enfield we have had very specific problems with ….because I find it very difficult to find data in the and feels you are a from the if you are a fair are
now the winning of the data written on paper so when you printed concerning when you can vacancy you don't know any of that information from the data and do you think the data can be used to improve education
yes and that's why we are eight you will then go on to my happy life are now serious failures of the: do you have thoughts with unfortunate

Critically if the data are there all the time in some live or relatively live form it allows managers at whatever level to actually see there are problems with the data. For example, often when we say we can't agree with the stats that's because maybe there are many withdrawals that should have been processed but have not been. The more people can see that the more they can come back and say I've been checking this and this has not been done or this class is designated wrongly or differently. The more people can see that the more they can actively manage the data. At the moment there is such a wide gap between people knowing and owning these issues. It is curriculum managers that should do that not MIS and the MIS system which holds onto everything very tightly and doesn't allow people to get involved. The more that that happens in a live way the more that curriculum managers can own the data and they can't then argue that somehow the data can not reflect the real world because it would have been their responsibility to ensure it's right.

Appendix D

Consent form and research information sheet

the **UNIVERSITY** *of* **GREENWICH**

CONSENT FORM

Title of Research: How do Management Information Systems (MIS) support learning in Further Education Colleges (FE)?		
Investigator's name: Abdilkarim Mamand		
To be completed by the participant/interviewee		
1.	Have you read the information sheet about this study?	YES/NO
2.	Have you had an opportunity to ask questions and discuss this study?	YES/NO
3.	Have you received satisfactory answers to all your questions?	YES/NO
4.	Have you received enough information about this study?	YES/NO
5.	Which researcher/investigator have you spoken to about this study?	……
6.	Do you understand that you are free to withdraw from this study: • at any time? • without giving a reason for withdrawing?	YES/NO YES/NO
7.	Do you agree to take part in this study?	YES/NO
Signed		Date
Name in block letters		

Signature of investigator	Date

The consent form **must** be signed by the actual investigator concerned with the project after having spoken to the participant to explain the project and after having answered his or her questions about the project.

This Project is Supervised by:
Contact Details (including telephone number): ***Bill Goddard Head of Department of Education Leadership and Development,tel. 020 8331 9561, w.d.goddard@gre.ac.uk*** ***Dr Jill Jameson Director of Research, 020 8331 8058, j.jameson@gre.ac.uk***

the UNIVERSITY of GREENWICH

School of Education

PARTICIPANT INFORMATION STATEMENT

How do Management Information Systems (MIS) support learning in Further Education Colleges (FE)?

The research aims to identify factors that enable leaders in further education (FE) to use data effectively to support the learning and decision making.

The study is being conducted by Abdilkarim Mamand, who is an MIS Manager. It will form the basis for the degree of Doctor of Education at the University of Greenwich under the supervision of Bill Goddard Head of Department of Education Leadership and Development,Tel. 020 8331 9561, w.d.goddard@gre.ac.uk and Dr Jill Jameson Director of Research, 020 8331 9502, j.jameson@gre.ac.uk

Participants in the study will be subject to six questions asked by the researcher who is interviewing them. These six questions will relate to how MIS supports learning in FE colleges. The interviews will be tape recorded in progression and later transcribed. Each interview should last no more than one hour.

Being in this study is completely voluntary - you are not under any obligation to consent. You are welcome to withdraw your consent at any time either before, during or after being interviewed. All aspects of the study, including results, will be strictly confidential and only the researchers will have access to information on participants. A report of the study may be submitted for publication, but individual participants will not be identifiable in such a report.

A better understanding of how the data can be used effectively can lead to the design of systems that are supportive of decision-making in such areas and will contribute towards the development of alternative future systems in order to enable leaders in FE to use data effectively to support the learning and decision making processes.

When you have read this information, Abdilkarim Mamand will discuss it with you further and answer any questions you may have. If you would like to know more at any stage, please feel free

to contact either ***Bill Goddard Head of Department of Education Leadership and Development,tel. 020 8331 9561, w.d.goddard@gre.ac.uk or Dr Jill Jameson director of Research, 020 8331 9502, j.jameson@gre.ac.uk***

Thank you for your participation.