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**THE USE OF THE WORLD WIDE WEB
IN TEACHING AND LEARNING IN
HIGHER EDUCATION:
A CASE STUDY APPROACH**

REBECCA ELIZABETH EYNON

**THESIS SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

**CITY UNIVERSITY
DEPARTMENT OF SOCIOLOGY**

FEBRUARY 2004

VOLUME 1

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Abbreviations

CAL	Computer Assisted Learning
CPD	Continuing Professional Development
FAQ	Frequently Asked Question
HEFCE	Higher Education Funding Council for England
ICT	Information and Communications Technology
IT	Information Technology
LEA	Local Education Authority
MCQ	Multiple Choice Questionnaire
MLE	Managed Learning Environment
QAA	Quality Assurance Agency
RAE	Research Assessment Exercise
RCT	Randomised Controlled Trial
WWW	World Wide Web

Acknowledgements

I would like to take this opportunity to record my appreciation of individuals and organisations that made this PhD possible. I would like to thank Professor Frank Webster for his first-rate, committed and enthusiastic supervision of this project. Also, the staff and students at Old U and New U who participated in the research, in particular, the six case study lecturers who so kindly allowed me considerable access to their work. In addition, the staff and students based in the Department of Sociology, City University for all their support in my final year; and the Economic and Social Research Council (ESRC) for their financial backing. Last, but by no means least, I would like to thank my family and friends for their caring and wholehearted support of this “eternal student.”

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Abstract

Government policy emphasises the role higher education is expected to play in the era of the “information society” and the benefits the increasing use of new technology in teaching and learning within the university will bring. Accordingly, the purpose of this research was to explore the influence of the WWW in teaching and learning in universities. The study was designed in response to a rejection of technological deterministic approaches and the call for more empirically grounded study of the relationships between society and technology. It examines the use of the WWW in six case study modules in two universities in England from a staff, student and institutional perspective, located within the national context. A case study design, utilising a communications framework, was adopted to guide the research process. The methods utilised were: literature review, analysis of national and university policy documents, semi structured interviews with staff and students, two student questionnaires, focus groups with students and analysis of the case study websites.

The cases explored here provide a rather different picture to that painted by the dominant discourses about ICTs and higher education. The use of the web in teaching and learning neither appears to be radically transforming the university, nor to be providing (or even regarded as) a ready solution to the problems the sector currently encounters. Yet, the technology is, in places, adding to the experiences of staff and students in a variety of complex ways. Through exploring practical instances of educational innovation this research has indicated the mesh of interrelating factors that are at work when using the web in teaching and learning, and the importance of considering the full range of experiences of the individuals involved, the variable purposes of using the technology, and the influence of the social contexts that surround initiatives. The benefits of the use of a communications model in further research is highlighted, and the use of mixed model studies promoted to gain greater understanding, aid with generalizability, and provide arguments to counter techno deterministic accounts prevalent in this area.

1. Introduction

British government policy has emphasised the role that higher education is expected to play in the new era of the “information society” and the “obvious” benefits the increasing use of technology in teaching and learning within the university will bring. As a consequence of policy directives and other economic, social and technological factors universities have undergone significant changes in recent decades. The transition from elite to mass participation, reductions in the unit of resource, and heightened global interconnectedness signal some of the developments that pose severe challenges to the contemporary university. This study was designed in response to a rejection of technological deterministic approaches and the call for more empirically grounded study of the relationships between society and technology. It explores the use of the WWW in six case study modules in two universities in England from a staff, student and institutional perspective, located within the national context. This chapter provides an overview of the study: 1) the rationale; 2) an outline of the project; and 3) a summary of its structure.

1.1 *The research rationale*

Dominant discourses concerning contemporary society enthusiastically highlight the increasing significance that information has in our times. Indeed, it is said that we have entered a new era, caused by advances in ICTs. This information society, characterised by dominance in information-based occupations and the prevalence of ICTs (Dearnley and Feather, 2001:11), is likened to the industrial revolution in terms of its import and the implications it will have for the UK. This new age brings a great deal of promise and opportunity for contemporary society provided that we adjust to these new global times. Supporters excitedly embrace this new era and are overwhelmingly optimistic about the increasing use of new technologies, changes in the nature of the workforce and other reforms required by the information society.

While this is a simplistic account, it is found in government policy documents, numerous books, and recurrently in the mass media. Several major difficulties with this popular approach have been identified. It cannot be denied that information and new technologies are of increasing importance in current times. However, the assertion that this will lead to direct impacts on society in inevitable ways manifests a flawed determinism. Bold statements are frequently made about the positive

benefits ICTs will bring, but it is generally accepted in the research community that any influence of ICTs will vary as a result of a range of complex and interrelating factors (e.g. Woolgar, 2002). Debates around the existence of the information society, if it is viewed as a break with previous eras or rather a continuity of previous times, and the technological deterministic accounts identified in some of these arguments, will be discussed in detail in chapter 2.

The main purpose of this study is to explore the influence of new technologies, specifically the WWW, in teaching and learning in universities. In the UK, higher education institutions have undergone major and accelerating changes over recent decades. A major force of current change has been, and continues to be, government policy. Currently, government policy directives in a number of areas are designed in order for the UK to be globally competitive within the information society and universities are no exception. Indeed, education and the prevalence of new technologies are essential to the realisation of this vision (Lax, 2001:120).

The government sets out a clear plan of the role universities must play in this new era. Universities are increasingly expected to: improve links between industry and education; to fulfil the needs of the new workforce; by increasing the numbers of students who enter higher education, catering for the life long learning market and offering flexible learning opportunities (Robins and Webster, 1999:2); and to be globally competitive both through the programmes it provides to students and the research it carries out. It is clear that, more than ever before, universities are expected to fulfil the needs of society. These and other demands are all placed on a sector with diminishing resources.

In addition to these demands, government policy documents promote new technologies as the “solution” to many of the problems facing the contemporary university. For example, it is argued that ICTs will increase efficiency, access and flexibility and is especially suited to new “just for you” forms of learning (CVCP, 1999:2). The use of new technologies will enable universities to serve more students, from a wider social, demographic and geographical base, wherever they might be (Gell and Cochrane, 1996:251). Further, the use of the WWW is seen as an important tool, in order for universities to compete on a global scale, threatened by a reduction in market share to other universities (both nationally and internationally) and private

corporations. Typically, in the policy literature, new technologies are viewed as a good thing, bringing “obvious” benefits once teething problems have been sorted out. Indeed, this confidence in technology has led to much discussion about the appearance of the “virtual university” which may, according to some accounts, lead to the end of the campus based university as we know it. For some, these changes are seen as positive, but they are typically associated with a technological deterministic, and utopian view, for which they have been criticised. A dystopian vision of the future of higher education, which echoes this technological determinist position, has also appeared (e.g. Noble, 1998).

This view of technology as a tool, either to overcome current difficulties or as the factor that will lead to the death of the university, is flawed and can be associated with technological deterministic debates. The “either / or” division identified in these discussions is too simplistic. The stress on technological potential has led to a lack of attention being given to the complex range of relations that are involved in practical instances of educational innovation, and how the adoption and use of new technologies is likely to differ in various social contexts. Critics of the information society and other technologically deterministic theories call for empirical studies of what is actually happening in a variety of different social contexts. As Woolgar (2002) notes, there is a need for detailed empirical studies of using technology, as a means to develop informed theoretical generalizations about technologies and society (Woolgar, 2002:4). Research is required that resists the “clumping” present in many discussions about the influence of new technologies, e.g. that technology will influence everyone, but specifically who, in what circumstances, and in what kinds of ways? Accompanying this is the need to relate micro findings to macro concerns, e.g., individual experiences to shifts in employment patterns (Woolgar, 2002:4-8).

A further criticism is that this new era of the information society is presented as an abrupt break with the past. This is viewed as problematic for a number of reasons that will be discussed in chapter 2. Associated with this is the view of novelty. Indeed, historically, each new media technology tends to be associated with “utopian projections about how they will transform humanity” (Flew, 2002:55). In addition, researchers tend to neglect lessons learnt from previous research on other communication forms and thus “reinvents the wheel”. This has a number of implications for the current research. First, as opposed to exploring what is

happening in current universities as a break with what has gone before, the focus here is on viewing the changes within the university as layers that are explored together with characteristics and functions identified in existing and previous times. The research aims to consider the “real life” changes of different institutions adapting to new circumstances, occurring due to factors such as globalisation. As Robins and Webster (2002) state:

To develop a more sociologically grounded narrative of change in higher education – one that is aware of continuities, as well as transformations, and that acknowledges the complexities, conflicts, and contradictions that must necessarily exist in any real-world institution.

(pp.6-7)

Secondly, the research will use ideas and methods derived from previous communication forms to help guide the research. This will be discussed further in chapter 2.

Thus, the purpose of this study arose from a concern with the simplistic overarching statements about the use of new technologies, specifically the WWW in higher education, and the usually positive “effects” this appeared inevitably to have for students, lecturers, the institution and the sector as a whole. It was also at pains to resist the reverse of this: that ICTs were leading to the degradation of higher education. From the outset, this research rejects the notion that debates around new technologies should be reduced to a “good” versus “bad” deterministic approach and sets out to explore the complex range of relations that are involved in practical instances of educational innovation.

The term “virtual university” can be used to describe a range of developments in higher education. It can be used in connection with the virtual, distance learning universities such as Phoenix at one end of the spectrum to the range of changes and continuities currently taking place in the more “traditional” universities that are in a transitional period (Robins and Webster, 2002:10-11). The focus of this study is the way new technologies are supplementing, not substituting, existing practices in higher education institutions and the relationship between these real and virtual forms.

The research draws on the field of social informatics (e.g. Kling, 2000) and stresses the importance of a range of cultural, social and technological factors in the design, use and adoption of the WWW in teaching and learning. The research explores specific examples of the development and implementation of the web in teaching and learning, within the broader national context. The research aims to contribute to: 1) the debates around the virtual university and the future of higher education through the exploration of on the ground experiences; 2) the study of the relationship between technology and social life; and 3) educators knowledge about the ways in which the WWW could be incorporated into their teaching and the potential consequences of such a move. The design of the study is outlined in section 1.2.1 below.

1.2 *An overview of the study*

In this section a brief overview of the study is provided and is divided into three sections: 1) the study design and methods; 2) the selection of the cases; and 3) the research issues to be explored.

1.2.1 Research design and methods

The study explored and compared three modules at a traditional “red brick” university and three modules at a “new” university that used the WWW as one aspect of teaching and learning.¹ The project was primarily exploratory and was designed to investigate the development and use of the WWW at a number of different levels in the educational process. That is, at the student and staff level and the interactions between these individuals within the broader institutional and national contexts. In order to achieve this goal, a case study design utilising a communications framework to organise, conduct and analyse the research was adopted.

Using a communications framework allows this research to link both micro and macro levels of research and provides a useful organising function. Teaching and learning (not necessarily using technology) can be viewed as a communication process (Hills, 1979:13, Mende and Curtis, 1997:308). Further, the use of the WWW in teaching and learning can be likened to a model of communication. The Internet encompasses a variety of forms of interaction, for example, one to one, many to one, one to many, and many to many (Burnett and Marshall, 2003:47-48). Indeed, each of

¹ Here the study focused on each module over one semester. Typically, students took eight to twelve modules per year over two semesters and studied for a three-year period. Exceptions were those taking clinical degrees or those who chose to take a four-year degree with a year out.

these forms of communication may occur in a variety of different ways on the Internet and will depend on the way it is intended to be used by both the “sender” and “receiver.”

Thus, this project has focused on the four main components of communication theory (social context, production, content and audience) as an organisational function. It is important to note that the use of a simple communications model does not advocate the use of systems theory or a didactic approach to teaching, nor does it imply that the WWW will be used in an assumed way. The use of such a model provides a framework for the research but allows for the intended, and actual, use of the WWW to occur in a variety of ways. For example, for some modules the web may be used purely as a didactic form of communication, i.e., one (lecturer) to many (students). In other contexts it may be used to enhance collaborative, student centred learning where communication may be one to one, many to one, or many to many in a variety of directions. For further details of the research design see chapter 3. To guide the study, research issues, or propositions were developed and are listed in section 1.2.3 and justified in chapter 2.

The research can be located within the pragmatist paradigm, and uses a parallel mixed model design (Tashakkori and Teddlie, 1998:5-16). Thus, the selection and combination of qualitative and quantitative methods have been chosen as they were felt to best answer the research question, not because of a particular allegiance to a research philosophy or methodology. The methods utilised are primarily qualitative but include a smaller amount of quantitative methods where appropriate from the fields of sociology, media and communications, education and psychology. This type of approach will yield the most informative and useful findings in this under researched area.

In brief, the research methods that were used were as follows: to explore external factors that may influence the institution a literature review and analysis of policy documents and national statistics was conducted. To consider issues about each institution semi structured interviews were carried out with key individuals from each university and policy documents were analysed.

At the beginning of each case study module students were asked to fill in a questionnaire to investigate basic characteristics (e.g. age, gender and WWW usage) and their expectations of using the WWW. Halfway through the students were given a learning styles inventory to determine their approach to learning. At the end of the module students were asked to fill in a final questionnaire exploring their opinions and experiences of using the web. In addition, students were asked to participate in a focus group to discuss these issues in detail. Students were asked to take part in a semi-structured interview to explore the usability of each site during the module. Student on-line contributions were collected in three of the five cases where on-line discussion boards were incorporated into the website.²

A copy of the website was kept for analysis and the lecturer and any other key individuals associated with the initiative were interviewed towards the end of the module. Specific details of all these methods are described in chapter 4.

1.2.2 Sampling

For the purposes of this study three modules from two universities were selected for analysis. The two universities that are the focus of study is one pre and one post 1992 university that are in close proximity to each other. It is hoped that these two universities will provide an interesting comparison between a traditional “red brick” university (Old U) and a “new” university (New U).

From analysis of university policy documents a number of similarities between the universities can be identified. These are: 1) they both have large numbers (over 20000) of students; 2) they are both attempting to widen participation; 3) are increasing lifelong learning and CPD opportunities; 4) are trying to enhance “employability” of their graduates; 5) view ICTs as a possible “solution” to some of the problems they are currently experiencing and 6) are trying to overcome financial difficulties in similar ways, e.g., by cutting staff costs and closing or downsizing non profitable courses/departments. There are also a number of differences between the universities that one might expect: 1) Old U is trying to overcome budget problems through expanding, New U is not/cannot do this to the same degree; 2) Old U is placing more emphasis on global rather than local activities whereas New U places far more emphasis on links within the region; 3) students at Old U are typically

² In one of the remaining cases this data was not available, and in the other on-line discussions took place in German.

eighteen to twenty-one, from the higher social classes, study full time on traditional academic courses and are nationally or internationally recruited whereas New U students are typically local, often over twenty-one, disparate in class origins, and likely to be studying vocational courses, often on a part time basis; and 4) Old U places a greater emphasis on research. Both universities have a devolved structure, yet at Old U the majority of departments aim to achieve similar goals, i.e. to have a national and international reputation, with an emphasis on research and high RAE scores, whereas the criteria for success within each school or department at New U varies, depending on the nature of the subject, although good teaching is of primary importance and centrally evaluated.

The two universities were selected not as examples of institutions at the forefront of using the WWW in teaching and learning, but as typical examples of universities in the UK in 2000/2001. That is, small pockets of innovation were occurring throughout each university and more “bottom up” initiatives were apparent as opposed to a “top down” approach. The findings from this study may highlight what is happening in typical universities in England (though the issue of generalizability will be discussed in detail in chapters 3 and 9). In addition, these universities were chosen as access was fairly straightforward and, given the significant amount of data collection involved, this was essential to the study.

The six case study modules were chosen differently at the two universities. The focus of this research is how the web can be used as part of the educational experience for residential students as oppose to the use of the web in distance education courses. At New U there has been a centralised research project to explore innovations in technology in teaching and learning for a number of years. This project is coordinated by a small research unit within the university and involves lecturers bidding for money to implement a new innovative approach to teaching and learning. The head of the unit was approached and he/she suggested three modules that may be appropriate to the research. These were modules in German, Cultural Studies and Midwifery; after meeting with each course leader all three agreed to participate in the project. At Old U six modules were identified from a university web page that provided examples of work across the institution where innovators were utilising the WWW in their teaching. All six were contacted and after meeting with four of the course leaders three agreed to be part of the study. These modules were in Dentistry,

English and Law. The characteristics of each module, e.g., the purpose of the WWW, the number and type of students and the specific characteristics of each case study that may be of interest will be discussed in chapters 6 and 7.

The case study design can be longitudinal or a “snap shot” of a particular phenomena (Rose, 1991:200). This research can best be seen as a “snap shot” of the two universities. The research took place over one year from January 2001 to 2002, with each module being followed for one semester from start to finish, with a pilot phase from November 2000-January 2001. A key consideration is when to stop collecting data (Anderson 1998:157). In this case, it was because it was important to set a specific boundary around the research for logistical and analytical reasons. Also, to explore a module as it occurred within one year. The research propositions that helped guide the study are highlighted in the following section.

1.2.3 The research propositions

As stated in section 1.2.1 the research is based on a case study approach, utilising a communications framework to guide the research process. The four subunits of analysis are context, production, content and audience. To provide a complete and accurate description of the issues of interest fifteen propositions were developed that can be categorised into one of the four sub units of analysis to help guide the research. These are summarised below. Obviously the four sub units and the associated propositions are related and overlap. Justifications of these propositions are provided in chapter 2.

Social context

- What pressures are universities in England currently facing?
- How is the nature and role of universities changing in response to these pressures?
- In the two universities studied here how are the institutions and departments responding to these changes in role through the support of technological innovation in teaching and learning?

Production

- What are the main motivations and/or incentives for academics to use the web in teaching and learning?
- What are the main barriers university staff face when trying to use the web in teaching and learning?
- What are the main motivations and/or incentives for innovators to use the web in teaching and learning?
- What are the main difficulties innovators face when trying to use the web in teaching and learning?
- Why did the producer (of the case study module) use the web for that particular course/component of a course?

Content

- How were the case study sites produced?
- What educational purpose(s) are the case study sites designed to fulfil?
- How are the sites presented and how does this influence usability?

Audience

- How do students use the website? (e.g. amount of use, and the features they use the most)
- Why do students use the website in this way? (e.g. perceived / actual benefits, and or / barriers to use)
- Are social relationships (with other students/lecturers) altered by using the web in teaching and learning? If so, how?
- What are students' opinions on using the web for greater amounts of teaching and learning, and / or replacing more "traditional teaching"?

Sections 1.1 and 1.2 have provided a brief overview of the rationale of the study, the study design and how the study was conducted. In the remaining section of this chapter the overall content of the thesis is summarised.

1.3 *The structure of the thesis*

The thesis is divided into nine further chapters. Chapter 2 outlines the theoretical debates and previous work that has informed the design of the study and the development of the research propositions. In chapter 3 the philosophy and methodology of the research for the three main stages of the research process, i.e. the type of investigation and study design, the selection and use of methods, and the analysis of the data, are discussed. In chapter 4 the more practical aspects of the research, i.e., the methods selected to study the research question, the design of the instruments, the collection / construction of data and the techniques used to analyse the data are summarised.

Chapters 5-7 inclusive are a description of the results derived from the analysis of the data. The focus of chapter 5 is the institutional context of each university, with reference to the current national circumstances in higher education, through analysis of policy documents, national statistics and interview data. Chapter 6 summarises the findings from each of the three modules at Old U and similarly chapter 7 outlines the results from the modules at New U. Chapters 6 and 7 are particularly lengthy, yet essential to provide an understanding of the complexities involved in this area. The purpose of each of these three results chapters is primarily descriptive, and few links are made at this stage between staff and student experiences and the institutional and national contexts. This is achieved in chapters 8 and 9, providing a contrast and comparison between cases, interpreting the findings with consideration of the various threats to validity and reliability, and significance of the results in relation to previous work in this area. In the second of these two chapters the potential future of the university is explored, together with proposals for the improvements to the study and suggestions for further research. The conclusion, chapter 10, provides a summary of the findings of the current study.

2. Literature Review

As highlighted in chapter 1, this study aims to explore practical instances of educational innovation from a staff and student perspective located with institutional and national contexts. In the first section of this chapter theoretical approaches that have informed the study design are explored. In the second, a review of the relevant literature and policy documents in higher education are provided, alongside justification of the propositions that were formulated to guide the research.

2.1 Technology and society – some theoretical approaches

Essentially, theories focused on the relationship between society and technology can be placed on a continuum with technological determinism on one end and social shaping theories on the other (Preston, 2001:110-111). Technological deterministic theories are characterised by a reductionist view of social change where technology is an independent factor that impacts upon and drives inevitable changes within a society. They encompass both utopian and dystopian viewpoints (Burnett and Marshall, 2003:10-12). These theories are problematic, as the focus on technology neglects other social, political and economic aspects; technology is just one of a range of interrelating and complex factors at work and society may take up, develop or use technology in various ways that may change in different contexts (MacKenzie and Wajcman, 1985:3-6).

Social shaping theories of technology emerged in the 1980s in response to a critique of technological determinism that was popular at the time. In brief, this tradition investigates the content of technologies and the organizational, political, economic and cultural factors that influence the process of technological change or the process of innovation (Williams and Edge, 1996:53). Any influence of a new technology is not seen as linear and straightforward as in technological deterministic viewpoints.

Technological deterministic views are often, but not always, quantitative, and focus more on the macro level of research. In contrast, social shaping studies are likely to be more qualitative and focus on more micro levels. Qualitative studies of technological innovations are valuable, because they highlight the multiple factors that influence the adoption and use of a particular technology, and overcome the reductionist and over-generalizable claims often found in technological deterministic

approaches. Yet often, social shaping studies do not relate the research findings to more macro concerns. Interestingly, studies of other communication mediums have presented similar debates and patterns of research, for example, the recently emerging literature on the studies of cyber cultures focuses to a great extent on the user (typical in audience studies of other media) and thus suffers from a similar criticism that the approach ignores more macro concerns. In contrast, researchers who employ a political economy approach to studying the media typically neglect the audience. Researchers, enthused by the novelty of the newest technology, can ignore concepts derived from studying other media, but should in fact build on and adapt these approaches (Caldwell, 2000:2).

In chapter 1, the concept of the information society and the field of social informatics research were highlighted. In this section these two approaches to the study of the relationship between technology and society are explored in more detail and their contribution to this research project discussed.

2.1.1 The Information Society

As highlighted in chapter 1, the view of Britain as an information society is apparent in dominant discourses. The information society is typically viewed as the start of a new era, as a result of the impacts of the prevalence of new technologies on society, characterized by a large number of networks and information flows, globalization, and an increased number of symbolic workers. As Webster (2002) notes a clear distinction should be made between the popularist, techno-enthusiast view of this new age and the social theorists who have sought to describe and explain what is meant by the term (Webster, 2002:4).

Webster (2002) identifies five definitions of the information society: technological; economic; occupational; spatial and cultural. While there is some overlap between each of the five areas, theorists typically emphasise one of these definitions over the other four. All of these definitions are characterised by the use of quantitative analysis at the macro level to provide evidence that we are now part of an information society, e.g., the prevalence of ICTs in technological accounts or the amount of informational labour in occupational definitions of the information society.

Accordingly, all five definitions suffer from similar difficulties. Firstly, these quantitative measures are problematic as they are not based on strictly definable criteria, e.g., the classification of a job as based in the manufacturing as opposed to the service sector is based on a judgement call. Secondly, little is said in these explanations as to precisely how much of each of these measures, e.g. the amount of ICTs, constitute a move to the information society. Thirdly, quantitative measures of information are directly related to an impact on society, i.e., more information implies a change in social life. What is lacking in such analysis is consideration of if, and how, these qualitative changes are taking place and the relationship between these and quantitative definitions. Further, these approaches view information as something to be counted, and ignores different types and quality of information and the variety of meanings information may have within the social system (Webster, 2002:8-29).

In discussions about the information society, information is always considered to be of primary importance, but that is where the agreement ends (Dearnley and Feather, 2001:18). At one end of a continuum, supporters of the concept of the information society view this new era to be fundamentally different, signalling a break with previous times (Stevenson, 2002:184). At the other, contemporary society is viewed as a continuation of the past. Many theories and viewpoints can be placed along this continuum. The belief in a break from the past is typically associated with the view as technology as the driver of change; in contrast, supporters of continuity in society view information, while key, as secondary to traditional social systems (Webster, 2002:6). They consider the “informatisation of life” and that information, while a prominent feature of contemporary society is a result of previous events. They view informatisation, “as an outcome and expression of established and continuing relations” (Webster, 2002:266).

The belief in the notion of a break from previous times can be associated with technological deterministic debates. In this view, technology has inevitable and direct impacts on society. The idea that change is inevitable, and that society simply has to adjust to what is happening, is particularly problematic (Webster, 2002:267). As this quote about government policy and the information society from Dearnley and Feather (2001), who are both supporters of the information society demonstrates:

Across the world, it has been understood that there are economic and social benefits to be derived from the use of ICTs, as well as less desirable consequences (such as unemployment in traditional industries), which have also to be addressed. The positive approach is to encourage the development of an information society and to promote the use of ICT to support it.

(p.95)

In other words, change, driven by ICT, is inevitable, should be embraced and any “teething problems” ironed out. The alternative views from those who see the continuities in society with previous times argue that change is not inevitable, technology is just one part of the social fabric, and choices and decisions can, and are, made.

While the focus of this study is not to explore the concepts and debates around the information society in great detail it is important to consider the academic arguments alongside the more populist accounts. What is demonstrated in the brief discussion above is that there is a need to add to these debates about the definition and existence of the information society with empirical on the ground research. Indeed, in the theoretical literature alongside the continued debates around the information society there has been an increasing interest in what it means to be a part of current times, where technology and information are of key importance. As Dutton (1996) notes:

The visions of scientists, technical experts, business entrepreneurs, economists and politicians are important because they help to set the goals to which technology and public policies seek to give concrete meaning. However, it is in the realities of organizational and social life that technologies and policies are diffused, implemented and reinvented.

(p.4)

This is the purpose here, and, in order to achieve this goal, the research has drawn on the work of an emerging body of literature termed social informatics, which is outlined below.

2.1.2 Social informatics

Social informatics research can be placed somewhere at the opposite end of the continuum to the overly simplistic deterministic views of the relationship between society and technology. Social informatics can be defined as the, “body of research that examines the design, uses, and consequences of information and communication technologies in ways that take into account their interaction with institutional and cultural contexts” (Kling, 2000:217). It is interdisciplinary in nature, and the research

methods utilised depend on the questions that are the focus of study (Kling, 2000:218). This term encompasses research with three main kinds of orientations, although some research may be characterised by two of these: 1) analytical, 2) critical or 3) normative. Studies with an analytical orientation are studies that develop or contribute to theories about technology in institutional and cultural contexts. Research with a critical orientation focus on the users perspective and studies with a normative orientation are designed and carried out with a view to making recommendations for practice / policy (Kling, 2000:229-230).

Social informatics research uses the concept of “sociotechnical networks” and views ICTs as socially shaped, not as a tool, in order to overcome technical deterministic analyses. A sociotechnical network comprises of all the equipment, individuals, policies and managements structures associated with a particular context. In this case the term network is taken to be fairly unstructured as components of the sociotechnical system may change, may be linked to other networks etc. (Kling, 2000:219).

Sociotechnical analysis is often carried out with the technological artefact and the social world as separate. Recently, a highly intertwined model has been suggested where these two areas are seen as closely related (Kling, 2000:220). For example, in a study of the use of web-based discussion boards to replace face-to-face seminars, the WebBoard messages would be examined alongside other more social constraints, such as, rules and regulations for using the WebBoard. Indeed, this second model is likely to be particularly useful where the use of ICT is a primary form of communication, e.g., emails (Kling, 2000:221).

In summary, social informatics research views technology as just one part of a complex interplay of social factors. It is pragmatic in approach, utilising research methods that are not associated with one of the quantitative or qualitative paradigms but based on the most suitable techniques to answer the specific research question. While it is interdisciplinary in nature, it is possible the researchers “home discipline” will guide the methods used. As social informatics is a relatively new term the awareness, sharing and development of ideas across disparate fields is still in its infancy.

The discussion above has several implications for the design of this study, which is explained fully in chapter 4. In summary, this study can be located within the pragmatist paradigm, and uses a parallel mixed model design. The research is primarily exploratory, and aims to consider a variety of different aspects of the use of the web in teaching and learning in higher education. In order to achieve this goal, a case study design utilising a communications framework to organise, conduct and analyse the research was adopted. This type of approach was utilised for a number of reasons: 1) that there is a need for empirical, on the ground, research; 2) the belief that technology needs to be considered as part of a range of interrelating factors; 3) the need to use methods (both quantitative and qualitative) that are appropriate to the research question, 4) the idea that both micro and macro issues should be considered; 5) that lessons from previous communications research should be utilised; and 6) that this research needs to be carried out with an awareness of popular discourse on this topic. In the second part of this chapter, section 2.2, a review of the relevant literature that helped guide the research is provided.

2.2 Justification of the research propositions

As highlighted in chapter 1, fifteen propositions were developed to help guide the research. Each of these propositions are justified in the following sections. At present, the research in many of these areas is limited, and thus the development of the propositions is primarily based on what, how and why questions. Details of the methods employed to investigate each proposition are summarised briefly and discussed fully in chapter 4.

2.2.1 Context

Significant changes have occurred in UK universities over recent decades as a result of a number of inter-relating social, political, technological and economic factors. The most significant and related influences are the changing relationship between universities and society, globalisation and the prevalence of new technologies.

Historically, universities were set apart from society, they had a monopoly over knowledge and their value to society went without question. However, the ivory tower separate from society is no more (CVCP, 1999:2). The changing relationship between higher education and society is apparent in the reports on higher education by Robbins in 1963 and Dearing in 1997 (Barnett, 1999:294). The Robbins report

highlights how society benefits from the university being set apart from society. By 1997 the Dearing report acknowledges the value of space from society, but stresses the importance of higher education orientating itself towards the needs of society, particularly those of an economic nature (Barnett, 1999:296).

As is clear from the Dearing Report (1997) and the White Paper entitled, *The Future of Higher Education*, published in 2003, universities have a key role to play in the success of the UK in the information society. A primary goal is to develop a workforce with the relevant skills to be globally competitive in this new era. Accordingly, changes in the university can be seen: the move from an elite to a mass education system (Maier et al., 1998:3), changing learner profiles and expectations, the increasing emphasis on lifelong learning and portfolio careers, flexible learning opportunities and changes in the kinds of programmes offered and the ways these are taught and assessed (Flew, 2002:163). The Dearing report put forward a number of reasons for resuming policies to increase the numbers in higher education. Firstly, through increasing participation from young “traditional entry” students and for lifelong learners, the UK would be more globally competitive, with a population equipped with the relevant skills. The growth in numbers would be mainly from students seeking qualifications at a sub-degree level (NCIHE, 1997:para 1.11, 1.15, 1.16). Secondly, increasing participation must also lead to a wider variety of people from backgrounds to enter higher education (e.g. those with disabilities, ethnic minorities, and lower-socio-economic groups) to avoid widening gaps within society (NCIHE, 1997:para 1.17).

A second goal is to increase the links between private companies and higher education. For example, the white paper published in 2001, entitled, *Opportunity for All in a World of Change*, promoted the establishment of innovation centres and technology institutes, comprising of both higher education institutions and businesses. These kinds of partnerships are believed to lead to skills transfer and development, innovation in research, and attract more business to the area (DTI and DfEE, 2001:para 3.7). Indeed, the government has commissioned an independent review to explore how to improve links between university and business in order to strengthen the economy. The final report, the Lambert Review, is expected to be submitted to the government in October 2003.

The significance of globalization as a feature of change is also seen in debates about the increasing competition for the university from both national and international higher education institutions and private organisations (Flew, 2002:163). This competition is both in terms of programmes offered and research outputs and contracts won. For example, the Dearing report noted the increase in other potential competitors, particularly for life-long learning markets, from employers, other institutions that may be linked to communications and entertainment industries and distance learning via ICT from overseas institutions (NCIHE, 1997:para 1.20).

There have been a number of collaborations between various institutions to capture a share of this market, to enhance potential research opportunities and to share course materials. For example, eUniversities Worldwide Ltd. was established in 2001 for marketing and supporting on-line courses offered by various UK universities in order for the UK to become a competitor in the virtual distance learning market for overseas and home students. It is a partnership between universities and colleges, Sun Microsystems and was designed and co-ordinated by HEFCE who provided sixty-two million pounds for the project for the period 2001-2004. A second example is Universitas 21, a network of seventeen research universities established in 1997. Perceived benefits from the collaboration include: promoting exchanges between researchers, teachers, students and administrators across different universities; sharing of courseware materials; recognising partners courses as equivalent to ease student exchange programmes; and the e-education business developed in partnership with the Thomson Corporation. Further examples of collaborations include Cardean University, an on-line university specialising in continuing business education and The Worldwide Universities Network, a partnership between research universities to work together on research projects, share facilities and educational resources in order to enhance the success of individual institutions.

While governmental pressures are not the only drivers of change in the contemporary university, it is a prominent influence, as a large proportion of a universities budget is from government. Related to this issue is the obligation for students to make a contribution to the cost of their university education. As a consequence, the Dearing report predicted that students would act in a similar way to a consumer of a product, considering issues such as the quality of service, the benefits and the cost (NCIHE, 1997:para 1.21). Indeed, the government seek to provide students with increasing

amounts of information regarding the quality of university teaching to allow students to make a more informed judgement about where to apply to university (DfES, 2003: para 4.4, 4.5). While many academics have criticised such initiatives, the autonomy experienced by universities in the past is steadily being eroded.

Alongside these changes in universities there is no doubt that there have been huge developments in technology and the prevalence of ICTs is likely to have an influence of a number of aspects of higher education, e.g., teaching and learning, research and communication between different parts of the organisation. However, for some commentators the adoption of new technologies will bring “obvious” benefits and may solve many of the problems facing universities. Particularly as the above changes in roles are to be carried out in a system with decreasing levels of funding. This deterministic view is apparent in the Dearing report, which states:

We believe that the innovative exploitation of Communications and Information Technology (C&IT)³ holds out much promise for improving the quality, flexibility, and effectiveness of higher education...There is scope to reduce costs in the future, but implementation requires investment in terms of time, thought and resources in the short term.

(Para. 13.1)

Thus, as is typical with such viewpoints, once initial difficulties have been overcome there will be a great deal of benefit. However, the report also stresses their interest in this move being education not technology-led (NCIHE, 1997:para 13.2). Similarly, the Government’s response to the Dearing report, *Higher Education for the 21st Century*, published in 1998, states:

Communications and Information Technology offers opportunities to increase the effectiveness of learning and to provide improved access to higher education. All those concerned with the delivery of higher education have a responsibility to seek to ensure that the benefits of communications and information technology are exploited as fully as possible.

(Ch. 7)

This view of technology as the solution to many of the difficulties universities are currently facing has been criticised. Often, this has been in the form of a similarly technological deterministic, but dystopian view of technology and the future of

³The report defines C and IT as follows, “we have broadly interpreted the term “communications and information technology” to comprise those technologies which enable the processing, storage and transmission of both live and recorded information by electronic means.”

higher education (see, for example, Noble 2001). These critics see technology as leading to the end of the university as we know it, the “death” of the university. The “either / or”, “good versus bad” dichotomy can be seen in debates about higher education where the move from a liberal–national to a virtual–global model of the university can be identified. The first is characterised by the university as key in the development and protection of national culture, the “ivory tower”, and the second by the university as a competitor in the global marketplace. Supporters of the liberal national university condemn the move towards a virtual–global model. Likewise, those who back the virtual–global model see this move as desirable and consider themselves to be progressive visionaries in contrast to the nostalgic pessimists of the liberal–national camp (Robins and Webster, 2002:4-10).

The “either / or” division identified in these debates is far too simplistic. The liberal–national vs. virtual–global model are often based on an ideal, fictitious idea of a university that does not provide a clear examination of the plethora of activities and roles universities may employ in current times. Thus here, changes within the university are viewed as layers to be explored together with characteristics and functions identified in existing and previous times, to consider the “real life” changes of different institutions adapting to the new circumstances outlined above. Due to the significant amount of change in the contemporary university, it is important to situate the six case study modules that are the focus of this study within this broader context. Thus the first two propositions this study explores are: *1) what pressures are universities in England currently facing* and *2) how is the nature and role of universities changing in response to these pressures?* This will be achieved through analysis of national and institutional policy documents and national statistics and semi-structured interviews with staff from all levels of the two institutions.

Here the aim of the research is not to suggest a “pro” or “anti” stance on the increased use of technology in teaching and learning. An individual institution may decide that the adoption of the use of the WWW in teaching and learning may lead to positive outcomes and assist with some of the challenges contemporary universities are currently facing. These could take a range of forms, reduced costs, to overcome space constraints of increasing student numbers, educational benefits, to free up academic staff time etc. While the majority of universities are likely to move towards the adoption of the use of the web to some extent, some universities may well decide

that extensive adoption of the use of the WWW for teaching and learning is inappropriate within their institution. If universities do decide to utilise the use of the WWW for a greater amount of teaching and learning, a number of changes have to take place to increase the likelihood of success of such a move. Changes within an institution can develop from “bottom up” or “top down” initiatives. Here, the interest is in universities who facilitate the necessary change within the institution to allow academics to adopt these new methods without a drive from “top down” forces. However, there is still a need for relevant structures and support networks in place to help facilitate change.

A great deal of the literature that explores the likelihood of success of using new technologies emphasise the importance of institutional support for the academic to develop materials for the WWW, especially in the initial stages. For example, to support academics institutions should offer staff development courses, opportunities for staff to discuss their experiences and provide them with support from technical staff (Ryan et al., 2000:160). Similarly, to ensure successful adoption of ICTs in teaching and learning, the Dearing report highlights the importance of providing means for this to happen, e.g., through promotion, training, changes in job descriptions and recruiting staff with appropriate skills (particularly at management level) (NCIHE, 1997:para 12.19).

A significant number of the initiatives using the WWW for teaching and learning in UK universities are carried about by “lone rangers” (Taylor, 1998:269). Few institutions (utilising a bottom up process to change) have adopted this technology as an integral part of teaching and learning. Thus, the third and final proposition that will be explored in this sub unit of analysis is: *in the two universities studied here how are the institutions and departments responding to these changes in role through the support of technological innovation in teaching and learning?* This proposition will be explored through literature review, analysis of university policy documents and semi structured interviews with key members of staff at each institution. While adoption can be encouraged through institutional initiatives, success still depends on the academics within each university and the contexts in which they work. This is discussed further in section 2.2.2.

2.2.2 Production

There has not been a great deal of research that has explored lecturers' opinions on, and experiences of, using any form of educational technology. This is particularly the case when these issues are considered within a broader framework that considers external pressures on the university and any institutional factors that may be relevant (Steel and Hudson, 2001:103). The jump from innovators using technology to the innovation being adopted by "the mainstream" is difficult. The motivations which propel innovators to adopt new approaches are likely to be different from other academics'.

In a small-scale qualitative study, Steel and Hudson (2001) conducted eleven interviews with academics from across a UK university to explore academics' experiences of using, or perceptions of using, various forms of educational technology, which most often involved the use of the Internet. Academics felt that technology could add value to their courses in four main ways. The first was by providing students with basic resources, such as timetables and book lists that would save them time. The second was to enhance current ways of teaching about a topic by illustration or by helping to clarify issues for the student. The third was that using technology for teaching would enhance flexibility for students and that their role would change to a more facilitative or guidance role when using this technology. The fourth motivation was to increase the amount of student – lecturer contact (Steel and Hudson, 2001:109).

Hannan and colleagues (1999) analysed interview data from a large-scale study that involved over 200 academics from across fifteen institutions in the UK. The researchers reported findings from 103 of the interviews where academics were asked about their motivations for adopting some kind of innovative teaching method (a large proportion of which involved some kind of new technology). When asked why they had decided to adopt innovative practices in their teaching a third were motivated by trying to improve student learning; 30% to overcome issues around increasing student numbers; 20% to address the demands of external agencies and 11% to adapt their teaching methods to deal with curriculum change/internal reorganisation (Hannan et al., 1999:283). In addition, 71% (73) of the 103 innovators who were interviewed referred to one or more sources of inspiration and encouragement. Of these, 27% stated that previous experience of using the method

was a source of inspiration; 26% talked about some form of institutional support or support from another individual. 22% mentioned staff development opportunities; 18% were inspired by their own beliefs about teaching; 16% from seeing other examples at other institutions; 11% to increase interest in their job; and 10% were motivated from their research experiences (Hannan et al., 1999:285).

Johnston (1996) conducted a small-scale qualitative study to explore the thoughts and opinions of four academics (of various stages of seniority) that had been awarded University of Canberra “Excellence in Teaching Awards”. Each interviewee took part in two to three semi-structured interviews about their teaching (Johnston, 1996:215-216). One of the findings from the study was that these “good” university teachers felt that their main motivations for teaching well were intrinsic rather than extrinsic rewards such as money or promotion. The interviewees felt that these external rewards were about confirming and validating what they already did and would not be an incentive to be a better teacher (Johnston 1996:223). Indeed, Hannan and his colleagues also found that financial factors were not a significant motivation for the innovators as money was often only cited as the way to achieve goals rather than as a reward for innovative teaching. Financial rewards or promotion for these individuals were not mentioned as a factor of motivation (Hannan et al., 1999:287).

From these studies it is clear that there are a number of reasons for academics to use the WWW in their teaching, thus the first two propositions to be explored in this area explore: *1) what are the main motivations and/or incentives for academics to use the web in teaching and learning and 2) what are the main motivations and/or incentives for innovators to use the web in teaching and learning?* This study aims to explore these issues through interviews with academic staff across both universities who have used the WWW and asking those who are responsible for encouraging all staff to use the WWW in their teaching (i.e. senior staff who form policies and support staff) what they perceive as the motivations for “the mainstream”. It is possible that motivations and attitudes of staff will be shaped by their discipline, but also by the type of institution they belong to (Clark 1997:35) and this will be considered in the analysis of the data.

While there may be factors that motivate staff to innovate, there are also a number of factors that are likely to prevent academics from using new technologies in their

teaching or adopting other innovative strategies. In a brief review of the literature in this area Knight and Trowler (2000) cite five main reasons why the current environment in universities is not conducive to academics improving or innovating their current teaching practice. Firstly, there is pressure on academics to work harder, by for instance increasing their research output or, due to increasing student numbers, being required to mark more scripts. Secondly, academics are more accountable and are required to demonstrate that they are doing their jobs well. Thirdly, the collegial nature of universities is disappearing as increasingly academics choose to work at home where they can work in peace. Fourthly, academics are expected to do more without reward that leads to knock-on effects in personal life and an increased amount of stress. Finally, as academics get older they feel less able to take risks and innovate, particularly as many academics no longer feel part of a group where support and advice could be offered (Knight and Trowler, 2000:71-72).

In addition, research has shown that innovation in teaching and learning may not be a positive move for teachers in schools. MacDonald argued that innovation might lead to an increase in the amount of work for the innovator. They may also experience difficulties with colleagues who may feel threatened or miffed by the extra resources the teacher could have received to support the innovation. In addition, the innovator may also feel unsure or insecure about their new work and innovation might threaten future career opportunities (MacDonald 1974 cited in Hannan et al., 1999:279). This could also be occurring at university level. Indeed, Darby et al., 1992 argued that there were few career incentives for academic staff to develop courseware for higher education (cited in McDonough et al., 1994:212).

As Sotto (1990) notes, teaching in universities has long been considered to have a lesser importance than research. However, the quality of teaching has received more attention in the past few years perhaps as students become viewed as consumers (p.203). The relationship between teaching and research is constantly changing and is associated with the changes in the higher education system and how we view knowledge (Brew, 1999:291). If research is considered higher priority then little will change in teaching. Indeed, the Robbins report in 1962 already cautioned against the over emphasis on research as oppose to teaching in universities (Elton, 1992:257). Though teaching, at least in some universities, is likely to be viewed more highly

through recent initiatives such as the Centres of Teaching Excellence and National Teaching Fellowships (DfES, 2003:para 4.27, 4.28).

In Steel and Hudson's (2001) study interviewees were also asked about potential difficulties of using the technology or "nightmare scenarios." The interviewees' responses were categorised into three themes. The first was fear of technological failure. The second was the possibility that instead of enhancing teaching the student would somehow be disadvantaged by using the technology. The third was a lack of control in the learning situation in three main ways: students may or may not be doing what was required of them; academics were concerned about intellectual property rights and academics had concerns about students plagiarising (p.113). As the development and implementation of teaching becomes more team based and more student-focused academics may also feel that they have less control over the teaching environment. Other difficulties of such changes may include issues around the uneasiness academics may feel when putting their material on display for peer review. They may also be reluctant to use new technologies when there is little evidence (from personal experience or the literature) as to how to use them effectively. Academics may also find it difficult to acquire the new technological and teaching skills that are likely to be important in this new role (Ryan et al., 2000:159).

Again the difficulties for innovators and mainstream academics may be different. Thus two other propositions in this sub unit of analysis that will be explored are: *1) what are the main barriers university staff face when trying to use the web in teaching and learning and 2) what are the main difficulties innovators face when trying to use the web in teaching and learning?* A final proposition that will be explored in this area is to ask: *why did the producer (of the case study module) use the web for that particular course/component of a course?* Exploration of this proposition will aid the analysis of motivations for innovators discussed above and may also provide more depth on issues around pedagogy and technology that are explored more fully in the "content" sub unit of analysis. The primary research method for each of these propositions will be through semi-structured interviews with relevant staff from each university.

2.2.3 Content

It is useful to explore how the websites were developed and the first proposition in this sub-unit of analysis is: *how were the case study sites produced?* The final website is likely to be influenced by a number of factors. For example, the initial pedagogical motivations of the lecturer; the resources and time available; the technical ability of the lecturer; the capacity of the technology; the level of training and support offered to the producer and organisational factors such as university guidelines regarding presentation. Typically in books on this subject an ideal situation is presented where a team of people including a design/technology expert develops websites and other educational multimedia. However, in reality in higher education institutions the lecturer is likely to be the principal developer who may or may not have some help from a technical assistant. Indeed, the lecturers are likely to be largely self-taught. All the case studies that are the focus of this research had been developed prior to the start of the study. Thus the design process of the website was obtained through semi-structured interviews with each case study lecturer.

MacFarlane (1994) suggested that teaching had to perform the following functions for students to develop conceptual understanding: orientation, motivation, presentation, explanation/clarification, elaboration, consolidation and conformation. Conventional university teaching e.g. via lectures, seminars and assessment can achieve all these functions (MacFarlane, 1994:145-146). As Pellone (1995) notes some websites may incorporate all of the elements required for classroom teaching while others may only use one or two to support more traditional teaching methods (p.72). Thus, for the purposes of this study, how the websites are to be used in relation to the remainder of the module and the specific potential benefits of various features of the site, such as discussion boards and self-assessment tests, will be explored.

In most of the cases that are the focus of attention here, the web has been used as a supplement, not as a replacement to, “traditional teaching,” but this varies in nature and amount. Bonk and colleagues (1999) have proposed a ten level model for incorporating the web into teaching and learning. The scale runs from the most minimal use of the web to the use of the web for an entire course, typically for distance learning students. The stages are as follows: 1) placing of syllabi on the web; 2) addition of links for students to explore; 3) student work posted on the web;

4) resources provided for the student by the tutor (e.g. lecture notes, slides and discussion boards); and 5) where different tutors from around the world can use the same resource in different ways (Bonk et al., 1999:5-9). For these five levels participation on the web is completely voluntary, existing as a supplement to traditional teaching and there is no assessment attached to using the website (Bonk et al., 1999:9). The next five levels are as follows: 6) participation on the website is graded, e.g. through online discussions; 7) communication via the web extends outside the registered members of a course to others such as practitioners or other experts; 8) the web replaces all traditional teaching but is still intended for those who have access to campus and facilities e.g. library, computer room etc; 9) a distance learning module; and 10) a distance learning module that is part of an on-line course (Bonk et al.:1999:10-15), see also Barron (1998) and Mason (1998).

Bonk and colleagues (1999) also consider the potential benefits / problems for both tutor and student for different features of the website. For example, the placing of lecture notes or power point presentations on the web may assist students to reinforce what they have learnt at the lecture and help them to prepare in advance for lectures and tutorials (Bonk et al., 1999:12). Another feature that could be used on the web is to provide students with resources that are difficult to obtain from the library to save the students time and increase “time on task” (Chickering and Ermann, 1996:5). There are a variety of other features with potential benefits both for the students and staff and these are summarised in section 11.1 of the appendix and throughout chapters 6 and 7.

Thus, a second proposition in this sub-unit will be: *what educational purpose(s) are the case study sites designed to fulfil?* This will be achieved through interviews with the case study tutors, analysis of case study documents and analysis of the case study website (see section 11.1) to ascertain the role the web played within the module and the potential benefits of each of the features that are available on the site. The findings from this proposition will be related to the study of the audience outlined in section 2.2.4 below.

The way in which the material is presented is likely to have a number of implications for the “user”, i.e. the student. Some presentational choices may enhance/inhibit usability of the site and some may have implications for the way students learn.

Usability analysis typically explores issues of presentational design such as site layout, ease of navigation around the site, page layout, graphics and other stylistic features (Morkes and Nielsen, 1997). Specific elements such as the position, font and size of the text, graphics and colours used are also important design decisions (Boyle, 1997:151-164). In addition, the content of each page must be structured in certain ways as users tend to scan rather than read web pages and prefer brief sections as oppose to long pages of text (Nielsen 1997a cited in Morkes and Nielsen 1997). Other features such as a large number of links can be seen as beneficial for some users to find out more information on a topic or because they enjoy surfing, though for others this may result in getting lost (Thimbleby, 1997:2). A great deal of the research that has focused on web usability is typically focused on commercial rather than educational websites. It seems likely that the same “usability rules” apply, but there is a need for other evaluation frameworks for educators that apply specifically to teaching and learning (Whittington and Sclater, 1997:2).

There are a few recent examples of a move towards the creation of frameworks to assess educational websites. A framework proposed by Whittington and Sclater (1997) aims to assess the accessibility of an educational website. The factors a site is assessed on include: 1) suitability of site for the users (e.g. can anyone with a disability use it and are the computers that people access the website from quick enough); 2) security issues (e.g. ensure that students are registered and authentication of them is possible); and 3) copyright is protected and no one else’s copyright has been violated. A second example is the work of Boshier et al. (1997) who have focused on the overall presentation of the web through types of content analysis. The researchers developed a coding schedule involving the following categories: site background; accessibility; web architecture; face validity of the site and attractiveness. The researchers went on to explore the interaction between the attractiveness, interaction and accessibility variables to distinguish between the best and worst designed web courses (Boshier et al., 1997:345).

This study aims to add to the existing work in this area by exploring the proposition: *how are the sites presented and how does this effect usability?* This was achieved through developing and utilising a qualitative coding framework and applying it to each of the case study sites to analyse usability. See section 11.1 of the appendix for analysis of literature and justification of the framework. The findings from this

proposition will be analysed alongside data from student questionnaires, focus groups and interviews discussed in section 2.2.4.

2.2.4 Audience

An important consideration when exploring the web for teaching and learning is: *how do students use the website?* This question focuses on issues such as, how much time students reported using the case study website, the specific features or parts of the site that they made use of, and how this relates to the way the tutor intended the site to be used. This proposition will be explored through self-report from students from the questionnaires, interviews and focus groups and related to propositions in the production and content sub-units of analysis.

Related to this question is the second proposition in this sub-unit of analysis, i.e., *why do students use the website in this way?* There are likely to be a number of inter-relating reasons: the perceived and actual benefits of using the web and/or the barriers to using this medium in relation to other ways of learning. The interaction between benefits and barriers are likely to differ depending on the individual student and their specific circumstances and previous experiences. They may include a combination of some or all of the following factors: enjoyment, ease of use, assessment requirements, perceived benefits to learning, time saving / wasting, if students have the necessary skills to be able to use the technology effectively (Trochim, 1996:6); if there is help / support available for those that don't (Tweddle et al., 1998:265) and computing facilities (Ryan et al., 2000:161-162). These factors will vary in importance for student to student, depending on the module and the way the web relates to the overall experience of the module and the perception / motivations of learning at university for that student. Potential reasons for the way in which students are tending to use the site will be explored through analysis of: student questionnaires, focus groups and interview data alongside the views of the tutor and analysis of the website.

As the use of the WWW in teaching and learning in higher education increases and the type of students participating in degree courses changes, it is likely that there will be a move towards more flexible forms of learning, where students are not expected to learn face to face on campus as much as they used to (Ryan et al, 2000:163). Further, the use of new communication facilities, such as email and discussion

boards, may influence the ways students relate to each other and / or the lecturer. For some, these mediums may lead to positive benefits. For example, they may assist shy students in expressing themselves, lead to students “opening up” more, enable students to get to know a larger group of peers, or to ease communication between the lecturer and student. However, all may not welcome this possible change in student experience and may find the more virtual forms of communication alienating or not what they wish, or perceive, the campus-based university experience to be. Thus, a third proposition in this sub-unit of analysis asks: *are social relationships (with other students/lecturers) altered by using the web in teaching and learning and, if so, how?* This will be achieved through analysis of the data from questionnaires, focus groups and interviews with students, and interviews with the course leader of each of the six case studies.

The final question to be asked in this sub-unit of analysis is: *what are students’ opinions on using the web for greater amounts of teaching and learning, and / or replacing more “traditional teaching”?* Indeed, this is an important question, particularly with the emphasis on students becoming more like consumers and universities encouraged to compete in e-learning markets. Consideration of this proposition will be achieved through analysis of questionnaire, focus group and interview data.

It is perhaps worth addressing here the question of educational effectiveness and the WWW. Typically, the WWW is seen as a beneficial teaching tool. For example, the Dearing report highlights a number of benefits of using ICTs for teaching and learning; for example, to assist with the rise in student numbers, to aid understanding via interactivity, access to learning materials, and instant feedback to enhance learning (NCIHE, 1997:para 8.20, 8.24, 8.25, 8.26). Despite this confidence, there are concerns that the decisions about the selection of new technologies for teaching and learning typically neglect questions of educational value and are based on technological and economic issues (Kirkwood, 1996:41).

A question that is often asked is about the educational benefits of using the web to deliver courses as compared to the other more “traditional” modes of delivery in higher education. An answer to a question of the educational efficacy of one medium over another is likely to be considered valuable by a number of individuals in higher

education, the commercial sector and government. For example, the Dearing report noted that, in current times, the reduction of funding has led to an increased emphasis on large group teaching in universities and this is likely to have negatively influenced the quality of the students learning experience. Thus, new methods that may overcome these difficulties by ensuring no drop in standards, while keeping costs down need to be found (NCIHE, 1997:para 17.40, 17.41). While the report noted that, in general, initiatives which involved the use of ICTs in teaching and learning had in fact increased costs, the report predicted that new approaches to delivery via ICTs would increase over the next 20 years, and this move could, in the long term, save £200 million a year whilst maintaining teaching standards for students (NCIHE, 1997:para 17.42).

Such a cost benefit analysis cannot be answered using the case study design adopted here. Any attempt to do so, perhaps using previous student cohorts as a comparator, would suffer from a number of threats to validity that have been identified in reviews in this area. For example: lack of control of extraneous variables; no randomisation of subjects; no account of reactive effects such as novelty; and problems with the validity and reliability of the instruments used to test learning (Phipps and Merisotis, 1999:18-21).

While it is recognised that these questions are important, there are a number of criticisms directed at research that attempts to address the effectiveness of one type of teaching method compared to one or more other teaching methods. Reasons include: education differs too much between and indeed within institutions to make generalisations possible; there is no such thing as a “traditional method” of university teaching; such research does not question if what is currently being taught is of value; and research should focus on the underlying educational principles rather than the medium that is used to deliver education (Ehrmann, 1995:26).

Further to these difficulties, this “instrumental view” of technology can be criticized for its technological deterministic bias. Technology should not be viewed as a tool because the relationship between user and technology is complex and does not occur in a singular direction. For example, technologies may be used in quite different ways to what it was designed for and technology may change the user’s surroundings and / or experiences (Burbles and Callister, 2000:5-6). The researchers highlight the

benefits of the “relational perspective” where technology is viewed as just one part of a complex range of relations where all factors have influences on each other. As they state:

In our view the implications of new ICT for education offer a mixture of transformative possibilities and deeply disturbing prospects, not a “benefits and costs” to be weighed against each other, but as inseparable dimensions of the types of changes these technologies represent.

(p.7)

Despite these issues, institutions across the globe are currently investing a great deal of resource into web-based teaching, with little evidence to base these decisions on. It is likely that many innovators do indeed see the WWW as a kind of tool or as a way of achieving something within their teaching and learning. For example, using the technology makes their job more interesting, or improves an aspect of learning for the students, or saves them time. Any educational benefit that may occur through the use of the WWW is just another factor in the whole picture. Thus, indications of the educational benefits for these cases (which is as much as this study can do) can, and should, be discussed within the context of a range of other factors. This is not to support a technological deterministic perspective or to provide a cost benefit analysis, but to discuss an area that is important in studies about higher education within a range of other issues. Educational benefits will be considered under the second proposition in this sub unit. This will be achieved through exploring the relationships between lecturer’s intentions, design of the website and students opinions. This issue is discussed further in chapter 8.

This chapter has located the current research within the range of debates concerned with the study of the relationship between society and technology, and outlined and justified the research propositions used to guide this study through analysis of current literature. In the following chapter the philosophy and methodology of the research design is discussed.

3. Research Philosophy and Methodology

This study can be located within the pragmatist paradigm, and uses a parallel mixed model design. The research is primarily exploratory, and aims to consider a variety of different aspects of the use of the web in teaching and learning in higher education. In order to achieve this goal, a case study design utilising a communications framework to organise, conduct and analyse the research was adopted. The central purpose of this chapter is to set out the philosophy and methodology of the three main stages of the research process, i.e. the type of investigation and study design, the selection and use of methods, and the analysis of the data. The more practical aspects of the research, such as, the methods selected to study the research question, the design of the instruments, the collection / construction of the data and the analytical techniques employed are outlined in chapter 4.

The first two sections of this chapter describe the type of investigation and study design used for the research. The first justifies the choice of a pragmatic research paradigm and the type of mixed model study. The focus of the second is on the use of the case study for this research, i.e., the reasons for choosing the case study approach, the type of case study design, the issue questions and the cases and units of analysis. The third section of the chapter explores the selection and use of methods, specifically, the justification and purpose of the selection of a multi-method approach. In the fourth, the way in which the use of the mixed model influences the analysis of the data collected and constructed is summarised. These latter two sections are fairly brief as actual methods and analysis are discussed in chapter 4. In the fifth section the ethical concerns of the study are highlighted. Issues of validity and reliability are discussed throughout the forthcoming chapters.

3.1 Research paradigms, the pragmatic approach and mixed model studies

This section is split into two areas: the first explores the debates around the paradigms found in social sciences and the approach adopted here, and the second outlines the mixed model design utilised.

3.1.1 Paradigm debates

While noting that it is difficult, if not impossible, to assign research into specific categories or paradigms Oakley (2000) describes the two broad methodological paradigms in social science research. The first is the “(logical) positivist, scientific, and quantitative” paradigm and the second is the “naturalist, interpretivist and qualitative” paradigm. These paradigms have been defined by using the descriptions most often used by researchers to discuss them. She puts forward twenty-four attributes, including: aims, purpose, approach, method, data analysis, and image of reality to compare and contrast these two paradigms (Oakley, 2000:26-27). These methodological paradigms are apparent in all areas of the social and behavioural sciences and are often written about as two paradigms in complete contrast to each other, and “at war” as researchers argue over which opposing paradigm is “the best”.

The different perspectives that can be identified in these two research fields have often been shaped by paradigm shifts in the social sciences. For example, in mass communication research, ideas about society and the individual helped to shape research into mass communication (DeFleur and Ball-Rokeach, 1982:14). It is generally argued that there are two main paradigms in mass communication research: the “dominant” and the “alternative” (or critical) paradigm (McQuail, 1994:43-48). The dominant paradigm can be associated with the “(logical) positivist, scientific, and quantitative” (ibid) paradigm. Crudely, the dominant paradigm arose out of the mass society theory and is associated with the liberal-pluralist model of society and functionalism. Media effects research is typically associated with this paradigm and employs more quantitative research using social surveys, social – psychological experiments and statistical analysis (McQuail, 1994:44). The “alternative” paradigm in mass communications research can be associated with Oakley’s “naturalist, interpretivist and qualitative” paradigm. Researchers from this paradigm are opposed to the “value neutral” research that is linked with the dominant paradigm and rejects direct effects of the media. Researchers tend to explore issues of power within society and use more cultural and qualitative methodology (McQuail, 1994:48). These two definitions are similar to the “World View 1” (closely resembling the dominant paradigm) and “World View 2” (closely resembling the alternative paradigm) discussed by Littlejohn (1983) cited in (Gunter 2000:1-3).

For supporters of the incompatibility thesis the two paradigms are considered to be opposites, as in general, they are based on different philosophies and methodologies. In contrast, supporters of the compatibility thesis argue that it is possible to break down the barriers between the two paradigms, and can lead to productive research if conducted in an appropriate way. This is a relatively new area, and as Gunter (2001) notes, while there is now support for cross-fertilizing between different approaches, it is more difficult to determine the best way of achieving this (p.9). This research supports the compatibility thesis and aims to contribute to this debate.

Researchers who argue for compatibility between the two “warring” paradigms suggest that there are similarities between the two different camps. For example, the underlying philosophy between the two paradigms is not as clear cut as some discussions suggest, qualitative research can be used to test hypotheses and similarly quantitative methods can be used for hypothesis and theory generalisation (Hughes, 2003). As Hammersley (1992) notes, the two paradigms are not clearly opposing, researchers can, and do, adopt a variety of positions on different parts of the research process that is not congruent with only one of the two supposedly contrasting paradigms (pp51-52). Supporters of the compatibility thesis highlight the primary importance of the research question, not a particular allegiance to a philosophy or methodology when carrying out the research (Brannen, 1992:10; Hammersley, 1992:51-52; Punch, 1998:239-241). Such researchers can be referred to as pragmatists or those who work within the pragmatist paradigm (Tashakkori and Teddlie, 1998:5). The pragmatist paradigm is viewed as distinct to the other two paradigms in the social sciences. The paradigm can be characterised by the use of: 1) both qualitative and quantitative methods; 2) deductive and inductive logic; 3) objective and subjective viewpoints; 4) the important role of values when interpreting results; 5) the acceptance of choosing explanations of the research that produce desired outcomes and; 6) the exploration of causal linkages, but the belief that while an attempt will be made to make linkages they may not be defined precisely as data can lead to a number of explanations. Thus, these kinds of explanations will reflect researchers’ values systems but not be predicated with 100% accuracy (Tashakkori and Teddlie, 1998:23).

This study is based in this pragmatist paradigm. The research question was central to the way in which the study was conceptualised and carried out. It contains all of the

six features of the pragmatist paradigm described by Tashakkori and Teddlie (1998) above. In the following section the mixed model design that was utilised in this study is discussed.

3.1.2 Mixed model studies

Three categories of methodological approaches can be identified throughout the history of the behavioural and social sciences: 1) the monomethod, dating from the beginning of social science through to the 1950s; 2) mixed methods apparent from the 1960s – 1980s and 3) mixed model studies that began life in the 1990s (Tashakkori and Teddlie, 1998:15). The move from mixed method to mixed models highlights the recognition of the need not just to use quantitative and qualitative methods, but to consider the epistemological assumptions associated with these choices and how this may influence all aspects of the research process (Tashakkori and Teddlie, 1998:16).

Tashakkori and Teddlie (1998) provide a taxonomy of mixed model studies (cf. Patton (1990)). Their taxonomy of eight simple models (six of which are mixed) considers three stages of the research process: 1) type of investigation – either exploratory or confirmatory; 2) qualitative data collection and operations versus quantitative data collection and operations; and 3) qualitative analysis and inference versus statistical analysis and inference. Simple mixed model studies are those where one stage of the research process uses a technique or idea that is often associated with the opposite paradigm to the other two stages of the research. For example, mixed type 1 is a confirmatory investigation, using qualitative data / operations and statistical analysis and inference (Tashakkori and Teddlie, 1998:51-58). The researchers identified two further types of mixed model designs that were based on “multiple applications of approaches”, i.e., where there are components from both the quantitative and qualitative paradigms at one stage of the research process. For example, the researcher could have both confirmatory and exploratory investigations, or could use a mix of quantitative and qualitative methods to collect and construct the data, or analyse the findings.

This study is best described as a parallel mixed model design. The primary type of investigation is exploratory. The central research question has been broken down into a number of questions / areas to be explored, but is not confirmatory, as no

hypotheses that predict a certain outcome have been made. The study has primarily made use of qualitative methods of data construction but has made a small amount of use of quantitative methods of data collection (see chapter 4). Both these kinds of methods were carried out at the same time to study the research question. Finally, the research has made use of both qualitative and quantitative analysis and inference. To a great extent these techniques have related to the type of method, for example, statistical analysis on questionnaires, but some overlapping has occurred, for example, a small amount of quantitative analysis when carrying out the qualitative analysis of the data constructed and the use of inductive and deductive logic.

In summary, this study tries to overcome some of the constraints of “belonging” to one or other methodological paradigms by using the methods and approaches that are most appropriate to the research issue. The study is best described as a parallel mixed model design, based within the pragmatist paradigm. The case study approach utilising a communications framework adopted here is particularly useful in fulfilling these aims. It is a flexible and diverse approach that can overcome some of the divide often found in quantitative versus qualitative debates (Rose, 1991:190). For example, it requires the use of multi-methods (if not always both quantitative and qualitative) and can sit within interpretivist /qualitative approaches (e.g. the work of Stake, 1995) or more within the scientific method (e.g. the work of Yin, 1993). Section 3.2 focuses on the use of the case study as the research design.

3.2 *The case study as research design*

In this section the use of the case study as research design is explored and is split into two parts. In the first the use of the case study as the research design is justified and in the second the design and type of case study utilised here is outlined.

3.2.1 Justification of the case study as the research design

There is a variety of different definitions and types or categories of case study. According to Yin, “a case study is an empirical enquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident, and in which multiple sources of evidence are used” (Yin, 1981a, 1981b, cited in Yin 1989).

Yin (1989) argues that the case study should be selected as a research strategy where: the question the investigator wishes to explore focuses on what, how and why questions; where the researcher has no control over the research environment and the phenomena of interest is a current event (Yin, 1989:16-20). This project fits all of these criteria. As can be seen by the propositions in section 3.2.2.2 the research primarily focuses on how and why questions. The researcher was not involved in any of the modules that were the focus of study and accordingly, had no control over the research environment. The modules of interest are a current event as the study has followed the modules from start to finish over one university semester. The case study method is also an appropriate research design for this study as it is exploring an aspect of education research that can be viewed as a process (Anderson 1998:152). As argued in chapter 1, the use of the web for teaching and learning in a university module can be viewed as a communication process and the study is primarily concerned with process issues.

A case study design is also useful where context, as well as the phenomenon that is the focus of the research, is of interest. Context can be significant because the distinction between phenomenon and context is not clear and/or the context may impact on the phenomena of interest (Yin, 1993:31). Louis Smith, one of the first educational ethnographers, conceived a case as a “bounded system” (Stake, 1995:2). Adelman, Jenkins and Kemmis (1984) describe this “bounded system” as a situation where relationships within the system and the relationships between the system and its context may be of equal importance (Rose, 1991:191). Here, the study of the use of the WWW as an educational innovation may be viewed as a type of “bounded system” because a university module does not operate in a vacuum. Context factors, such as human and physical resources, support from senior staff, and pressures on academics to achieve certain goals, e.g. the RAE, can all influence an individual module. This inclusion of the context has several implications: there will be more variables than data points, there will be multiple sources of evidence (that may be quantitative or qualitative), and distinctive strategies are required for the research design and analysis of results (Yin, 1993:3).

At the same time, it is important to note that the case study as a research strategy has often been criticised. The two main criticisms of the case study approach are: 1) lack of representativeness, therefore, the results cannot be generalized to a wider population; and 2) lack of methodological rigour in the collection, construction and analysis of data and the resulting bias introduced to the results (Hamel, Dufour and Fortin, 1993:23). In addition, case studies may be criticised for being too long and thus inaccessible for the reader (Yin, 1989:21). These criticisms are acknowledged and have been considered throughout the design, implementation, analysis and reporting of the research. The problems with generalizability in this study are accepted and discussed in chapter 9. Throughout the study attempts have been made to minimise the potential bias that may arise, and where bias is thought to have occurred this is highlighted in the relevant chapter. This issue is discussed further in chapter 4 and throughout the results and discussion chapters where appropriate. As noted in chapter 1, the results chapters, particularly 6 and 7, which report the findings for each case study module, are long. However, a balance has been struck between length and the necessary detailed reporting of the research findings in order to contribute to the understanding of this under researched area. In part 3.2.2, the case study design utilised in this study is examined.

3.2.2 The design and type of case study

This section explores: 1) the type of case study employed; 2) the research propositions that were developed; and 3) the cases and associated units of analysis utilised in this study.

3.2.2.1 The type of case study

There are a variety of different types of case study, and different authors describe these differently. For example, distinctions have been made between: ethnographic; evaluative; educational and action research (Stenhouse, 1985:49-50), as well as intrinsic vs. instrumental cases (Stake, 1995:3), or theory-seeking and theory testing; story telling and picture drawing; or evaluative (Bassey, 1999:62-63), or exploratory, descriptive and explanatory case studies (Yin, 1993:5). It is important to note that categorization is always difficult and case studies may fall into more than one category (Bassey, 1999:64). This study can best be described as descriptive, as it aims to provide a complete description of the phenomenon and its context, and exploratory, as the research is intended to be used as a preliminary to further research in this area (Yin, 1993:5). This is an appropriate design due to the limited amount of

existing literature on this topic (Hakim, 1987:61). Thus rival theories or predictions of cause and effect relationships could not be made (Yin, 1993:60).

3.2.2.2 *The research propositions*

As noted in chapter 2, a series of propositions were developed from the existing literature on the use of the WWW in higher education and more general debates about society and technology. Propositions can be defined as a statement of one specific aspect that will be explored within the case study that helps to guide data collection (Yin 1989:30-31) and the nature and specificity of these propositions will differ depending on the type of case study (Yin, 1993:4). Similarly, in referring to case studies that Yin would be likely to describe as exploratory Stake uses the term “issue questions” to define primary research questions, which help to sharpen the focus and organization of the research (Stake, 1995:16-17). In a more qualitative approach, these propositions tend to evolve throughout the research (Stake, 1995: 20-25). In more “scientific” approaches the propositions are developed at the beginning of the study. The theory structures what is to be looked at and the data to be collected. However, important information that is found outside the predefined scenario can be collected and analysed, nevertheless the initial framework provides the main organizing feature of the research (Yin, 1993:24).

The case study design utilised here is based in the pragmatist paradigm and thus uses ideas from both “warring paradigms.” Here, general propositions / issue questions at the start of the study were developed, principally to help with the organisation of the research and to assist comparability between cases. It also made explicit the thoughts and beliefs of the researcher investigating the study. These issue questions were not set in stone, and were expected to (and did) change throughout the research process (see section 11.2 of the appendix for the initial list of propositions). Indeed, the contrast that is typically made between studies from the qualitative and quantitative paradigms, where the first use inductive reasoning, going into the field with few pre-conceived ideas of what to look for, and in the latter, where researchers use only deductive logic, is too simplistic. For example, it is not realistic to assume that qualitative researchers will not be in some way influenced by previous research they or others have done in this area (Brannen, 1992:8). As Hammersley (1992) comments:

Indeed it seems to me that all research involves both deduction and induction in the broad sense of those terms; in all research we move from ideas to data as well as data to ideas. What is true is that one can distinguish between studies that are primarily exploratory, being concerned with generating theoretical ideas and those which are more concerned with testing hypotheses. We need both. Nor need the former be quantitative and the latter qualitative in other senses of those terms.

(p.48)

A great deal of the propositions developed for this study focus on what or how questions, with no null or alternative hypotheses. The research is primarily about process. It is recognised that, in the main, policy makers and key individuals are primarily interested in outcome measures. Critics of this study may argue that outcome measures (e.g., student achievement) should have been measured. As discussed in chapter 2, this was not possible in this study due to: the link between these kinds of questions and a technological deterministic view; a lack of control over the research environment; and the difficulties of defining and measuring student achievement (e.g. exam scores, competence in the workplace two years later, improved communication skills, computer literacy or the ability to learn independently). This issue is discussed further in chapter 9. Principally studies of process are vital in this area, because there is such a small knowledge base and without such studies it is impossible to know the possible reasons why an innovation may work or fail in different contexts. For example, in the future a large scale RCT may find that the use of web-based discussion boards for linking students on clinical placements does not lead to improvements on students' workplace scores. While valuable, this says little about the reasons for this, for example, the fact technological failures led to a lack of use, students did not know how to use the medium, it was not valued by staff or the institution and that these reasons could vary within the context the technology was part.

To provide a complete and accurate description of the use of the web as a teaching and learning tool twenty propositions were developed (see section 11.2 of the appendix). The propositions were open to refinement, rejection and development. In the final analysis, fifteen propositions were investigated, and were divided into the four subunits of analysis: context, production, content and audience. They were:

Social context

- What pressures are universities in England currently facing?
- How is the nature and role of universities changing in response to these pressures?
- In the two universities studied here how are the institutions and departments responding to these changes in role through the support of technological innovation in teaching and learning?

Production

- What are the main motivations and/or incentives for academics to use the web in teaching and learning?
- What are the main barriers university staff face when trying to use the web in teaching and learning?
- What are the main motivations and/or incentives for innovators to use the web in teaching and learning?
- What are the main difficulties innovators face when trying to use the web in teaching and learning?
- Why did the producer (of the case study module) use the web for that particular course/component of a course?

Content

- How were the case study sites produced?
- What educational purpose(s) are the case study sites designed to fulfil?
- How are the sites presented and how does this influence usability?

Audience

- How do students use the website? (E.g. amount of use, and the features they use the most)
- Why do students use the website in this way? (E.g. perceived / actual benefits, and or / barriers to use)
- Are social relationships (with other students/lecturers) altered by using the web in teaching and learning? If so, how?
- What are students' opinions on using the web for greater amounts of teaching and learning, and / or replacing more "traditional teaching"?

3.2.2.3 Defining the cases and the units of analysis

This study utilises a multiple case design with embedded (i.e. multiple) units of analysis (Yin, 1989:46). There are six cases, three modules from two universities and each module has four subunits of analysis (social context, production, content and audience). In chapter 1, the reasons why the two universities and the six modules were selected are discussed and the relevant characteristics of each of the universities are described. The fieldwork took place over one year from January 2001 to 2002, with each module followed for one semester from start to finish.

Figure 3.1 illustrates the multiple case design employed and the units and subunits of analysis for this study. The primary unit of analysis of this study is the module, not the university, which is perhaps unusual, especially as some of the research is at the institutional level. This decision was made because the primary unit of analysis is defined by the principal research question (Yin, 1989:31). The focus of the study is exploring the process of using the web for teaching and learning and it is argued that a study that was focused at the institutional level may not be capable of demonstrating the diversity that is likely to be apparent in using the web for teaching and learning. This may occur in a number of ways as the way that the web can be used in teaching and learning is potentially very varied and the contexts within which the students and staff operate in schools and departments is likely to be different. However, while the focus is at the module level, the university as a whole is important, though it is only one component of the picture that is explored.

A communication model is utilised in this research to help aid the organisation, collection and analysis of data. As Anderson (1998) explains:

A framework is a model which allows the researcher to explore the relationship among variables, in a logical and prescribed fashion. It clarifies questions by relating questions and their constituent sub questions and it summarizes the overall concept being investigated.

(p.58)

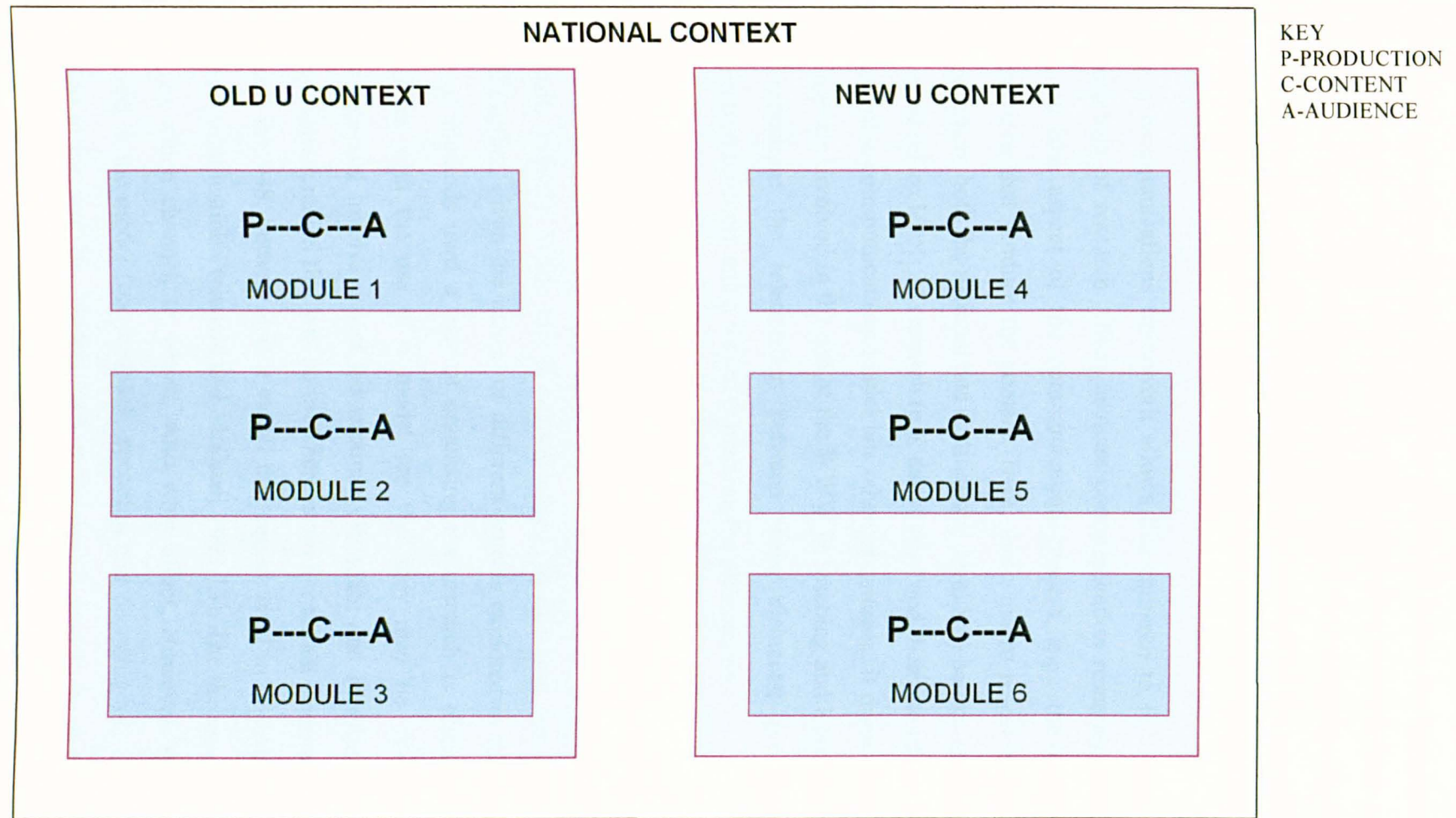


Figure 3.1 The cases and the associated units and subunits of analysis

It is felt that a communications model is particularly useful in this case. Though there have been a variety of different models developed to describe the communication process in a number of different contexts and media forms, for the purposes of this study, a specific model will not be used to guide the research (nor will one be developed). Yet the general features of most mass communication models will be utilised primarily as organisation function for the research as the use of the Internet in teaching and learning can be likened to models of mass communication.

Using a communications framework allows this research to link both micro and macro levels of research. Often in mass communication research, studies tend to focus on one aspect of the communication process, e.g., the audience or the organisations that produce the content. Here, more macro research (i.e. the social context where both the national and institutional level will be explored) is combined with more micro levels of research (e.g. the student and their use of the innovation). The use of a communications model has other advantages: it draws attention to the main aspects involved in the use of the WWW in teaching and learning; it may help to demonstrate the relationship between these elements; provides a useful organisation function; and a way of explaining the phenomena.

However a number of difficulties have been identified with such models, as they can limit what is explored and may narrow the researcher's perspective (Windahl and McQuail, 1993:2). While this is acknowledged, in this case the approach is still broad. Further, given the variety of different aspects explored in this study and the range of methods used a way of organising the research is essential. Two other difficulties with the use of a model are that they may be oversimplified and incomplete and involve covert assumptions (Windahl and McQuail, 1993:3). The communication model that will be used here is similar to that classically proposed by Lasswell in 1948, because it is a model that can be used in organizing discussions about communication (Windahl and McQuail 1993:13). The theory states: who, says what, in which channel, to whom, with what effect. However, the other factors neglected in the model (i.e. feedback, encoding and decoding and context) are also included in the analysis. Models such as Lasswell's tend to be associated with the dominant paradigm of communications research and are associated with discussions about the persuasive nature of the mass media and thus omit issues such as feedback. However, use of this model does not imply the research supports effects theories of

communication. As discussed in chapter 1, while using the web for educational purposes is viewed as a planned communication, new technologies can alter the sender receiver relationship as the teacher can communicate to the students, but often the web can enable students to communicate more with the teacher or communicate with other students. A diagrammatical presentation of how the communication model will be used to organise the research is shown in figure 3.2.

In the next section the second phase of the research process, the development and use of research methods, are briefly described. The discussion below focuses on the philosophy of using a mixed methods approach. The actual methods used are summarised in chapter 4 (see figure 3.2 for a brief summary of the methods used).

3.3 *The selection of quantitative and qualitative methods*

As noted in section 3.2 the methods utilised in the case study approach can be both quantitative and qualitative. As a rule, the method that is selected reflects the epistemological assumptions of the researcher. Broadly speaking quantitative methods are associated with the scientific paradigm and qualitative methods with the interpretivist paradigm. For example, if a researcher were exploring the content of a television programme, researchers from the dominant paradigm would be likely to use content analysis. This is because the dominant paradigm tends to assume that the intended meaning can be read by the researcher and/or expressed in quantitative terms. However, a researcher from the alternative/critical paradigm thinks meanings are not as straightforward and is likely to use more qualitative methods (such as focus groups) to understand the meaning of the text (McQuail, 1994:276).

In the pragmatic paradigm both quantitative and qualitative methods can be used. This study, while primarily qualitative, uses a mix of methods that were selected because they were believed to be the most appropriate to the specific research proposition. There are a number of different approaches to combining qualitative and quantitative methods. For example, the use of qualitative methods to provide information to develop hypotheses for quantitative methods; or to use quantitative techniques for sampling purposes for a qualitative study to help with generalizability; or to add to the overall picture by measuring different aspects of the

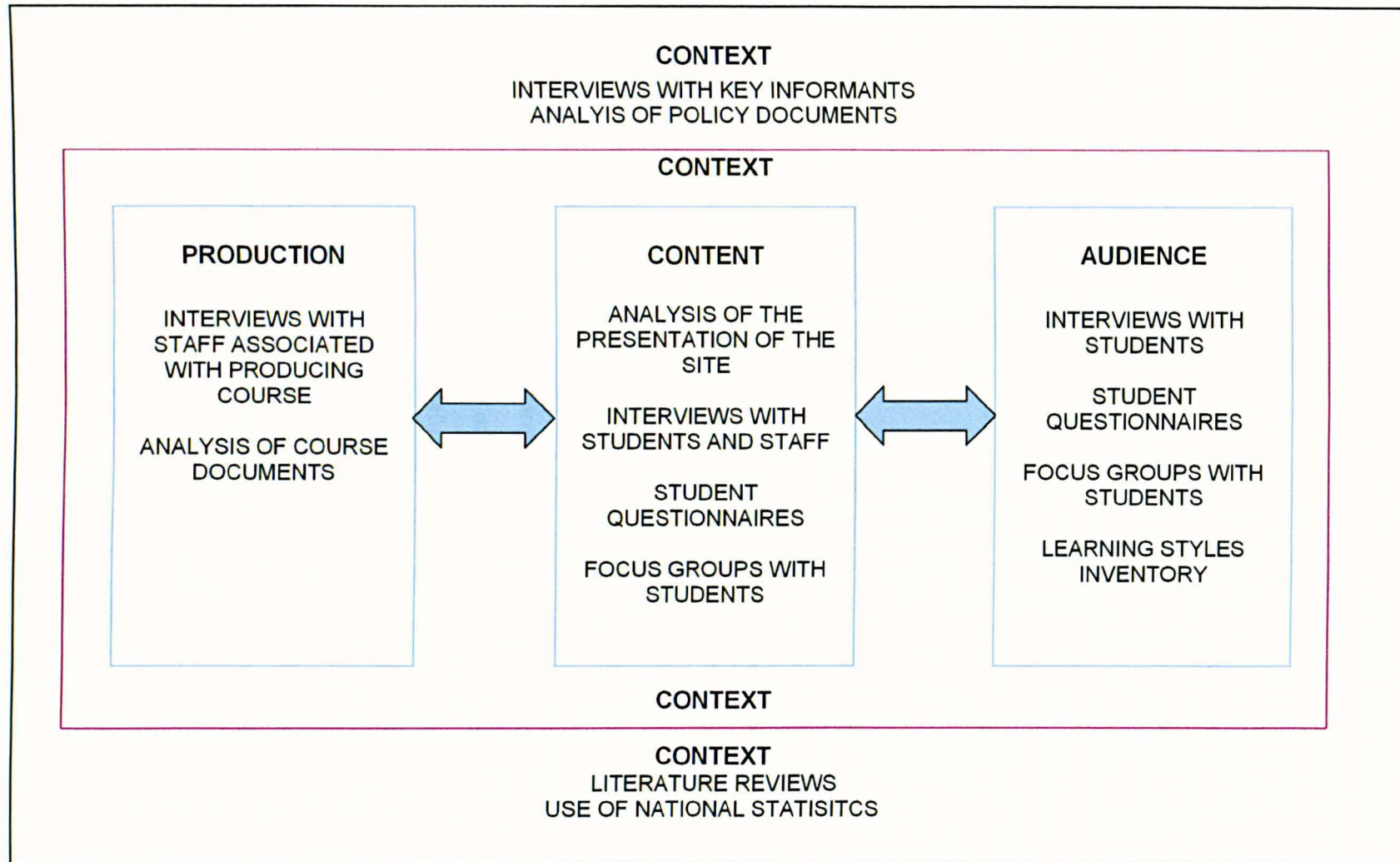


Figure 3.2 The communications model and the research methods employed

phenomena and/or to compensate for a lack of time or resources to look at the whole picture purely by qualitative means (Punch, 1998:247; see also Brannen, 1992; Miles and Huberman, 1994). Whatever approach used, the use of multiple qualitative and quantitative methods must only be employed appropriately to enhance the research (Bryman, 1992:69). In the main, the quantitative and qualitative methods utilised here measure different aspects of the same phenomenon to contribute to the overall picture of the use of the WWW in teaching and learning. Data from each method was analysed separately with respect to various issues of validity and reliability associated with each approach and then brought together in the analysis. As Rose (1991) notes, "The methodological issues associated with the case-study approach are as much matters of conduct as they are matters of principle. It is therefore left to the researcher who adopts the case-study approach to do so in the spirit of critical self endeavour." (p.201).

Whatever approach is used, whether qualitative and quantitative methods are used in sequence or in parallel, an important consideration is if the findings are used in combination, or as a comparison, to answer the research question. When using a combination of quantitative and qualitative approaches triangulation can be used to enhance validity. Brewer and Hunter (1989) argue that the use of a variety of methods with different weaknesses contribute significantly to the strength of the research compared to the use of one method. However, combining or triangulating a number of methods must be done carefully, ensuring each method measures what it is intended to measure and error for each method is minimised (pp.17-18). For triangulation to be achieved successfully each method must be independent of the others and very closely tied to the same research question. If this is not the case triangulation as validation cannot occur because agreement may be due to slightly different questions being the focus of the study. Other cautions when triangulating data include ensuring each method does not have the same bias (Brewer and Hunter, 1989:83-84).

It is assumed that using a number of methods with different weaknesses and strengths will somehow cancel each other out and agreement on the results will be reached (Bowker, 2001:para 1). However, triangulation of data from quantitative and qualitative methods is difficult, because they are based on different epistemological assumptions and are likely to answer different questions (Patton, 1990:464-467). For

example, triangulating in the way described above implies that there is only one “correct” reality to be found, neglecting the very different beliefs on which the two assumptions rest (Bowker, 2001:para 6-9). Bryman (1992) also points out problems of triangulation in practice, for example, what does the researcher do when the qualitative and quantitative data do not support one another? It is likely that one will be privileged, but why does this happen and how might it be justified? Further, what does conflict between the two data types mean? For example, are they inconsistent or does one flesh out the other? (Bryman, 1992:63-66).

Thus here, triangulation to enhance validity is not the purpose of the study. For the most part, different methods are designed to explore different aspects of the research, and to obtain responses from different parts of the population. For example, to gain understanding about the basic characteristics of the student population questionnaires were used, but understanding of students experiences of using the technology were constructed in the main through qualitative analysis of the data from focus groups and interviews with students. However, there were some overlaps. Thus, the different data sources were analysed separately and then compared in order to provide a more detailed picture. Indeed, in support of this argument, Brewer and Hunter (1989) who support triangulation of multi methods to enhance validity when appropriate, argue that for exploratory studies, different methods may be required to ascertain certain variables that may be significant in constructing theory as one method will not be able to determine them all. Further, response rates for different methods will vary but non-response may not be identical for each method and this can be a strength of multi method research. Therefore, comparability, not combining, data sources may be appropriate in exploratory cases (Brewer and Hunter 1989:88-90), and this will be the approach utilised here.

The issue of triangulation leads on to how the data was analysed, the philosophy and justification for the methods used are briefly summarised in section 3.4 below.

3.4 Analysis of data

The use of mixed models allows for qualitative analyses to be carried out with data collected from quantitative methods and vice versa. Here, in the main, qualitative data analysis was used for data constructed from qualitative methods and similarly quantitative methods of analysis was used for data collected from quantitative means.

Thus, the quantitative data from the questionnaires was analysed using descriptive statistics such as frequencies and calculation of median scores. To explore relationships between variables Kendall's Tau test and the Chi Squared test were used where appropriate (see chapter 4). Analysis of the data constructed from the focus groups and interviews encompassed the three general components of qualitative data analysis, that is: data reduction, data display and conclusion drawing and verification (see chapter 4). Themes identified and explored from analysis of the qualitative data were created both through analysis of the data and the pre-conceived propositions. Indeed, the use of both deductive and inductive reasoning is supported by the pragmatic approach (Tashakkori and Teddlie, 1998:24-25). Support for this kind of pre-structured design is supported by Miles and Huberman (1994:17) who endorse, Wolcott's (1982) advice that it is, "impossible to embark upon research without some idea of what one is looking for and foolish not to make that quest explicit" (Wolcott, 1982:157). While this approach may mean that some themes that are not significant are explored in detail and that other important factors are ignored the approach has several advantages. It helps organisation and comparability and makes explicit the conceptual ideas at the start of the research. Further, indications of frequencies were given for themes that arose from the qualitative data and this technique is more traditionally associated with quantitative analysis. Indeed, there was some qualitative analysis of quantitative data. As Fielding and Fielding (1986) note, all data is analysed to some degree qualitatively, even closed response questionnaires, because at some point in the research process interpretation takes place (p.12).

It is appropriate here to consider the issue of validity and reliability. A number of qualitative researchers reject the notions of validity and reliability, as they are not in accordance with the underlying philosophy from which such research can be associated. For example, validity is primarily concerned with the extent to which the

observation reflects a specific reality and qualitative researchers believe there to be no one true reality and each piece of research will give a different version of events. Similarly, reliability is concerned with the extent to which the study can be reproduced and generate similar findings, but for qualitative researchers two separate studies would lead to two different observations and conclusions (Trochim, 2002). Thus, qualitative researchers use alternative criteria to judge the research. For example, if the research is credible, i.e., the extent to which the results are believable according to those who participated in the research and if it is transferable, that is, the extent to which the findings of the study can be used by others to translate into other situations, are used as opposed to concepts of internal and external validity respectively (Lincoln and Guba, 1985). However, there is some debate as to whether these definitions need to be used to evaluate qualitative research, as all research (regardless of its underlying philosophy) aims to be carried out as carefully as possible, with findings that are best or closest to addressing the research problem (Trochim, 2002). Here, the study has been carried out as carefully as possible at every stage of the research process, considering issues of validity and reliability or credibility and transferability and dependability, as appropriate. Further, in accordance with the pragmatist paradigm it is thought that the analysis of data can lead to a number of explanations and the findings of this study are not value neutral. These issues will be discussed throughout the forthcoming chapters.

3.5 Ethical issues

Further considerations that must be incorporated into the research design are the potential ethical issues involved. Ethical guidelines should be developed at the beginning of the project (Bassey, 1999:68-69). Unfortunately, in this study no formal ethical guidelines were drawn up at the beginning of the research as it was assumed that the topic area and the methods utilised did not pose a threat of any kind to the individuals involved. Indeed, a great deal of literature on this topic tends to focus on covert research or on areas with far more obvious ethical difficulties than this one, for example, where psychological distress may be caused or where an “interested” party funds the research. As Rees (1991) states, “the ethical problems which will be encountered in a project cannot, or certainly cannot always, be foreseen and prepared for at the start, even if some topics and methods can be seen in advance to carry greater risks than others” (p.147). On reflection more thought might have been given to this issue at the beginning of this study. There were two main difficulties that were

encountered in this research that could have been minimised if thought through earlier in the project. First is the issue of informed consent and second the issue of confidentiality.

“The essence of the principal of informed consent is that the human subjects of research should be allowed to agree or refuse to participate in the light of comprehensive information concerning the nature and purpose of the research” (Homan, 1991:69). Anderson (1998) identified six factors that should be accounted for when asking subjects for informed consent and the majority were achieved in this study. They were:

1) an explanation of the purpose of the research and the procedures that will be used; 2) a description of any reasonably foreseeable risks and discomforts to the subjects; 3) a description of any benefits that may reasonably be expected, including incentives to participate; 4) a disclosure of any alternative procedures that might be advantageous to the subject; 5) an offer to answer any questions concerning the procedures; and 6) a statement that participation is voluntary and that the subject is free to withdraw from the study at any time.

(p.19)

In this study, all the participants were told about the purpose of the research and the methods that were to be used. At all points of data collection (interviews, questionnaires and focus groups) there was an offer to answer any questions and the researcher tried to be as open as possible about the study. However, as Homan (1991) pointed out language can sometimes be an issue. Some international students did have difficulties with understanding the project and it was difficult to ensure that participants understood the research fully (p.71). In addition, it was not felt that the research methods used put participants at risk or caused them a great deal of discomfort. It was also felt that participating in the research could potentially benefit the individuals involved. This was particularly true for the staff that ran one of the six case study modules, as they had access to all the data and reports of the findings. It was hoped that students would benefit as their opinions could shape future work in this area, they found out their learning style, and had the opportunity to reflect on their learning. Indeed, while conducting interviews around 40% of students said that they had found it a useful experience to talk through the whole website and find out what was available.

However, point six on Anderson's list has caused the most difficulties when asking students to participate. Although participation was voluntary it is a concern that the students who participated in this study were to a degree pressured in to taking part by virtue of the circumstances. There are a variety of difficulties with ensuring the researcher has gained informed consent. All of the questionnaires except one in one case; all the student approaches to learning inventories and two of the focus groups were conducted in class time. In some ways this was extremely beneficial; recruiting people to fill in questionnaires is generally difficult, and handing questionnaires out in class ensured a high response rate. Students were always told they did not have to participate. However, students are likely to feel pressured if everyone around them is filling in the questionnaire, and they are not given alternative work to do. Further, the student is likely to feel some pressure due to the lecturer asking students to participate.

For other parts of the research, i.e. the interviews and some of the focus groups, students were paid for their time. This was seen as a realistic way to encourage students to participate and as a gesture to indicate that the time they gave up was appreciated. However, is it "right" to pay someone to participate in the research (Homan, 1991:71)? For this study, it was felt that paying students was appropriate, even with payment not many students wanted to take part in the qualitative aspects of the research and perhaps a one off payment of £7.00 for one hour is not enough of an incentive to take advantage of anyone. At the end of the interviews around 50% of the students said that although they had actually quite enjoyed it (they were surprised) the money was a good way of getting people involved. However, it is important to note that these issues were complicated further by some of the lecturers trying to persuade more students to take part in the interviews and focus groups that took place outside class time. While in some ways the lecturer and researcher working together is helpful and helps to validate the research in the students' eyes it makes the issue of the power relationship between teacher and student, and researcher and student more complex. This issue will be discussed further in chapter 4.

A further problem with consent in this study is that the lecturer gave permission to access the WebBoards and access to student records (i.e. student ID numbers) to use in the analysis. Though student confidentiality has not breached in this study consent

was not obtained from the students (Anderson, 1998:21). While it was not ideal that student permission was not obtained, it is considered acceptable since all students' responses to any part of the research is completely confidential.

Confidentiality was also an important issue that was not resolved at the beginning of the study. Initially, it was thought that the two universities could be named and although the name of the modules would not be used, the faculty, subject area and year of students were going to be included in the writing up of the report. In addition, the level of confidentiality was not agreed with the lecturers who were responsible for the six modules that were the focus of study. As Anderson notes, confidentiality must be ensured and a clear understanding of how that will be maintained in publishing the data must be determined (Anderson, 1998:20). The main reasons for this were that lecturers were keen to publish the results and the topic matter was not thought to be that controversial. However, as the study progressed it was clear that the topic was far more controversial than initially anticipated. A number of staff, not necessarily those specifically involved with a case study module, were speaking out against the institution, and while in the original conception of the writing the report no one would be identified by name the identity of participants needs to be hidden more than was originally anticipated.

This chapter has outlined the philosophy and methodology of this study, with consideration of the main features of the research process, i.e., research design, selection of methods, analysis of data and the associated ethical considerations. In the following chapter the practical details of each method and the analysis that took place are discussed.

4. Research Methods and Analysis

As stated in chapter 1, the focus of the study was to explore the complex range of relations that are involved in practical instances of educational innovation, adopting a case study approach using a communications framework. The research explored and compared specific examples of the development and implementation of the use of the web in teaching and learning at two universities, using three modules from each university. The time frame for the research was from January 2001 until January 2002, with a pilot study from November 2000 to January 2001. The pilot was used to develop and test some of the research tools that were used for the main research project. The methods used for each subunit of analysis are summarised in figure 3.2. This chapter is split into three sections: in the first, the methods that were selected to collect data for this study are justified; in the second, details of each approach is outlined and the strengths and weaknesses of each method are summarised and evaluated; and, in the final section the techniques employed to analyse the data is discussed.

4.1 Selection of methods

The case study approach utilises a number of methods to collect a variety of different kinds of information (Hamel, Dufour and Fortin, 1993:45). To outline the methods that were utilised in this study the discussion is divided into the four subunits of analysis (context, production, content and audience) and justifies the methods used for each proposition within each subunit. As discussed in chapter 3, the development of propositions had several purposes, and an important one was to aid the researcher in developing the most appropriate methods to answer the relevant research question (Gillham, 2000:17). Typically, the different methods employed measure a different feature of the phenomena under investigation.

4.1.1 Context

In chapter 2 each of the propositions developed for understanding the social context were discussed. In brief, the context was explored at two main levels, at the national and institutional level. The two main aims of exploring the social context were firstly to examine the external (social, political, technological and economic) factors that may have contributed to the changing role of the university and the increasing use of

the web for teaching and learning. The second aim was to explore the social context at the institutional level to explore the influence this may have if, and how, the web is being used in teaching and learning. The methods to explore the social context are: semi structured interviews; literature reviews; document analysis of national and university publications; and use of national statistics. The methods that will be used for each proposition are summarised below:

What pressures are universities in England currently facing?

- Literature review
- National policy documents
- Official statistics
- Semi-structured interviews with university staff (all levels)

How is the nature and role of universities changing in response to these pressures?

- Literature review
- Analysis of university policy documents and statistics
- Semi-structured interviews with university staff (all levels)

In the two universities studied here how are the institutions and departments responding to these changes in role through the support of technological innovation in teaching and learning?

- Analysis of university policy documents
- Semi-structured interviews with university staff (all levels)

In section 4.2, the development of the interview schedules, methods for carrying out literature reviews, analysing policy documents and the use of national statistics are discussed. These four methods are the most appropriate for exploring the social context in this study for a number of reasons. Firstly, there has been a significant amount of literature in recent years that explores the role of the university at both national and institutional levels. Reviewing this literature will provide a valuable insight into the external pressures that universities are currently facing. Secondly, the use of national statistics and national policy governments will provide a further viewpoint. Thirdly, the analysis of university policy documents provides information about the institutional policies on using the web for teaching and learning. Finally, semi structured interviews with staff are often used in research such as this where the

opinions of key informants are important, in depth information is required, the population is fairly small and a high response rate is valuable (Anderson, 1998:169). Each method can provide a unique perspective in this area, thus comparing the evidence from these four sources will provide a more in depth study of the institutional and national context.

There are a variety of other methods that could have been used to explore the social context, for example, questionnaire surveys and observation. However, it was felt, given the time and resource constraints of this study, interviews with those who were involved in some way with either the development or implementation of web initiatives and/or those who used the web for teaching and learning would provide the most comprehensive and useful data. A questionnaire could be targeted to a far larger number of people but they may not be as closely involved in web-based initiatives, less detailed information would be obtained and the response rate would be lower. Although observation is a very useful technique, observation was not a method that could be easily incorporated into the research design. This was because a number of the web initiatives and modules of interest were already developed/ set up when the study began, and therefore it was difficult to know what could be observed that would contribute a great deal to the study. Nevertheless where possible, the researcher attended seminars, discussion groups and workshops at each university to obtain greater insight into the institutional context and to enhance her existing knowledge of working within a university.

4.1.2 Production

The second sub-unit of analysis, production, explores issues such as the motivations and incentives for staff to produce courses, the support they received, and how the materials were actually developed. The propositions in this subunit are examined in detail in chapter 3. The methods used to explore the production process of the web for the six modules are semi-structured interviews, analysis of university documents and documents relating to the relevant modules. The methods used for each proposition are outlined below.

What are the main motivations and/or incentives for academics to use the web for teaching and learning?

- Semi-structured interviews with lecturers (from each case) and staff who have developed web-based teaching and learning materials
- Analysis of university and school/departmental policy documents

What are the main barriers university staff face when trying to use the web for teaching and learning?

- Semi-structured interviews with lecturers (from each case) and staff who have developed web-based teaching and learning materials
- Analysis of university and school/departmental policy documents

What are the main motivations and/or incentives for innovators to use the web for teaching and learning?

- Semi-structured interviews with lecturers (from each case) and staff who have developed web-based teaching and learning materials
- Analysis of university and school/departmental policy documents

What are the main difficulties innovators face when trying to use the web for teaching and learning?

- Semi-structured interviews with lecturers (from each case) and staff who have developed web-based teaching and learning materials
- Analysis of university and school/departmental policy documents

Why did the producer (of the case study module) use the web for that particular course/component of a course?

- Semi-structured interviews with lecturers (from each case)

Semi structured interviews and analysis of institutional and school/departmental documents were the most appropriate methods for exploring the production process of the six cases. A review of the relevant documents provided insight into the university and school/departmental policies on using the web for teaching and learning, gave useful background context and some understanding of the motivations, incentives and barriers involved in producing web-based materials. The data from the semi-structured interviews offered detailed information from those at

the heart of developing the courses. Indeed, interviewing is a primary method employed in production research (Newcomber, 1995:100).

As in section 4.1.1 an alternative method that is often used in studies of media production is observation. However, as the websites had already been developed it is argued that interviews, asking the interviewees to reflect back on their experiences was the most appropriate method available, given the time and resource constraints of the study.

4.1.3 Content

In the third subunit of analysis the presentation of the site was explored. The main propositions to guide the research of the content of the web-based component of each module are discussed in chapter 2. The main methods utilised were: an application of a framework to analyse the site, semi-structured interviews with staff involved in the case study module, and semi structured interviews, focus groups and questionnaires with students. The research methods for each proposition are summarised below.

How were the case study sites produced?

- Semi-structured interviews with lecturers and technicians (for each case)

What educational purpose(s) are the case study sites designed to fulfil?

- Semi-structured interviews with lecturers and technicians (for each case)
- Analysis of site (for each case)

How are the sites presented and how does this influence usability?

- Analysis of site (for each case)
- Interviews with students (for each case)
- Student questionnaires (for each case)
- Student focus groups (for each case)

A literature review was carried out to identify and evaluate a variety of methods employed to analyse the presentation of courses delivered via the web. From this review, a qualitative framework was developed. The framework is discussed in section 4.2 and provided in the appendix, section 11.1. Semi-structured interviews with the case study lecturers added a further dimension, to view the presentation of

the site from the producer's perspective. Student interviews, focus groups and questionnaires provided an audience perspective.

The other most often used method of analysing content is through usability analysis. Asking individuals to "think aloud" is often used in usability tests (Dillon (1994) cited in Hara and Kling, 1999:9). The thinking aloud method can be very useful in user interface design as reactions by participants were very different to those anticipated by the designer (Jørgensen, 1990:502). As Jørgensen (1990) explains:

The thinking-aloud method consists in having a user working with a computer system (prototype, paper mock-up or documentation) while "thinking aloud", i.e., spontaneously (or prompted) verbalizing ideas, facts plans, beliefs, expectations, doubt, anxiety etc. that comes to mind during the work. Typically a scenario is developed for the tests, i.e., an artificial work context with specific tasks that can be accomplished by means of the system.

(p.502)

Thinking aloud was attempted in the pilot study, but did not work well, simply because the students found it a very difficult, unnatural task to do. Problems occurred due to students feeling uncomfortable, e.g., not reading sections properly as they felt they were taking too long and also because some students tended to work off line when required to do a task, such as when preparing a message for posting on a conference board. As a result it was felt that observing students, in a situation where they felt uncomfortable and asking them to do tasks online when they would normally do them off line was neither valid nor reliable. If a person is being studied and knows that they are being observed their behaviour can be effected. In addition, if they know why the researcher is interested in observing them this may also influence their behaviour (Wilkinson, 1995:227). Further, one case study lecturer objected on ethical grounds to her students taking part in this type of research. Thus, semi-structured interviews carried out with students as they looked at the computer screen, providing them with the opportunity to talk about the website, was considered to be a more useful approach. The other methods used for this subunit of analysis, i.e. student questionnaires and focus groups, are discussed in section 4.1.4 below.

4.1.4 Audience

The final subunit of analysis concentrates on the audience, i.e., the students. In recent years, the audience has become the main focus of study for a great deal of media

education research. The issues that were the main focus of this research included how much students used the site, what they used the site for, and their opinions about using the WWW for teaching and learning at university. Details of each proposition are in chapter 2. The methods used in this study were: semi structured interviews, focus groups, questionnaires and on-line contributions where appropriate. The methods employed to explore each proposition are outlined below.

How do students use the website? (e.g. amount of use, and the features they use the most)

- Focus groups with students (for each case)
- Semi structured interviews with students (for each case)
- Student questionnaires (for each case)

Why do students use the website in this way? (e.g. perceived / actual benefits, and or / barriers to use)

- Semi structured interviews with students (for each case)
- Focus groups with students (for each case)
- Student questionnaires (for each case)

Are social relationships (with other students/lecturers) altered by using the web in teaching and learning? If so, how?

- Semi structured interviews with students and staff (for each case)
- Focus groups with students (for each case)
- Student questionnaires (for each case)

What are students' opinions on using the web for greater amounts of teaching and learning, and / or replacing more "traditional teaching"?

- Semi structured interviews with students and staff (for each case)
- Focus groups with students (for each case)
- Student questionnaires (for each case)

For this study two short questionnaires were developed, one at the beginning and one at the end of the module to collect information about: student characteristics, expectations of using the web and actual use and opinion of the site. Both questionnaires were developed with assistance from previous work by the

Programme on Learner Use of Media (PLUM) at the Open University and evaluations that had taken place at New U. Each questionnaire contained both closed and open questions and were used to gain some insight into the thoughts and experiences of a larger sample of the student population and to obtain information not gathered by other methods, e.g. basic student characteristics. Indeed, questionnaires are an appropriate method to use in research such as this when there is a need to reach a large number of people and obtain categorical data that can be analysed in terms of different sub groups of the population, e.g. age or sex (Anderson, 1998:169).

Semi structured interviews were carried out with a smaller group of students to discuss usability and the design, the parts of the site they used and why and their opinions about the use of the WWW in teaching and learning. This was to obtain more in-depth information than would be obtained from the questionnaires, highlighting issues of importance to the students and gaining a greater understanding of the wider student experience. As the interviews took place whilst going through the site, more detailed information about which parts of the site students used and why could be obtained than was available from focus groups. In addition, individual interviewing may produce different responses to how people act in a group. Contributions to discussion boards were also collected where appropriate/ applicable to determine the extent to which students used the boards and the aim of the discussions.

Focus groups with students were conducted to gain a greater insight into their opinions and experiences of using the web for teaching and learning, how they used the resource and the reasons for this. Indeed, the use of the focus group is a method frequently employed in audience reception studies (Lunt and Livingstone, 1996:79). It can be argued that group interviews are closer to real life than one to one interviews as people tend to talk to others when interpreting media content (Gunter, 2000:227).

As discussed above, students may use the web-based resource in a variety of ways. At the start of the study, this was thought to be, in part, due to the approach to learning the student employs for the module, which could influence how educationally effective the resource is for the individual. In order to explore these

issues students were asked to complete a learning style questionnaire, the approaches and study skill inventory for students (ASSIST). The inventory is a 52 item, Likert-style questionnaire and aims to identify how teaching methods are influencing students' approaches to learning (Tait, Entwistle and McCune, 1998:269). Where a student's learning style and learning preferences are matched with the appropriate teaching strategy, the student's achievement and satisfaction for the course is greater (Kolb, 1984, cited in (Fung, Ho and Kwan 1993:12-13). In this study, the ASSIST was given to students, but not then used in the analysis. This was due to the development and refining of the research propositions during the process of data construction and analysis. As is discussed in chapters 8 and 9 students use and opinions of using the web for the case study module are due to a variety of interrelating factors and it was not felt that meaningful observations / relationships could be ascertained between learning style scores and other data that was constructed and collected as part of this study. This is discussed further in section 4.2.

Again, observation is an alternative method that could be used to explore the students' perspective. Indeed, it is important to examine the social and physical context in which learning takes place (Kirkwood, 1996:48). However, while it is important, this was not possible as the web was used as a resource outside class time, and could take place anywhere. One way of observing students would be to use overt one to one observation. However, given how uncomfortable students were about usability analysis in the pilot, observation of this kind was not likely to yield very valid data. Despite not undertaking any formal observation the researcher visited each group of students in their learning environment (to give out the questionnaires and the ASSIST) at least three times during the semester and the interviews with students took place in the computer room they most frequently used to access the site. A further useful method would have been data from tracking students' use that can be collected when using an MLE. Unfortunately, this information was not available for this study, in the main because of the lack of case study lecturers who had the facility or recorded the data and the difficulties of gaining consent.

Thus, this study used a range of methods to collect an array of information about differing aspects of the use of the web for teaching and learning. In some cases this was to obtain data that was not collected / constructed in any other way (e.g. the use

of questionnaires to collect information about student characteristics specific to each module) and in others to add to the overall picture through comparing different sources of data (e.g. student views on replacing traditional teaching with the use of the WWW in interviews and focus groups). In the next section, specific details are provided about each method utilised.

4.2 Research methods

This section provides the details about each method used in this study. It is split into nine areas: literature reviews, document analysis, statistical analysis, interview schedules, student questionnaires, website analysis, learning styles inventory, focus groups and conference contributions. The focus here is on the schedules that were refined and developed after the pilot. The changes from the original pilot materials are discussed where appropriate in the sections below. In this research, the pilot study was used to test the questionnaires, ASSIST inventory, interview and focus group schedules to ensure that they worked well, and that valuable results were likely to be found from the main study (Anderson, 1998:3). Throughout this section, specific problems encountered with each method and improvements that could be made are suggested.

4.2.1 Literature reviews

The literature reviews for this study have been extensive and took place throughout the research period. To obtain relevant literature a number of databases were searched. These were: Web of Science, Bath Information and Data Services (BIDS), the British Education Index (BEI), the Educational Resources Information Centre (ERIC), the Social Science Information Gateway (SOSIG) and the UK Official Publications database (UKOP). Internet searches were also carried out on the search engines Altavista (<http://www.altavista.com>) and Google (<http://www.google.com>). Additional literature was found through citation searches, traditional library catalogues keyword searches at the University of Birmingham, City University and the British Library and general browsing. Searches were carried out using established “good practice”, i.e. using key terms from the research question and using both subject headings and keyword searches where possible.

4.2.2 Document analysis

There are a number of different types of documents that can be analysed, for example, official publications, organizational records, correspondence and personal diaries (Patton, 1990:10). In this study national policy documents, university and school/departmental documents were analysed. Using these kinds of documents are particularly useful for finding out background information, for example, the current national higher education context or the history behind the development of a module (Patton, 1990:233). When analysing these kinds of documents a number of questions were considered, including: the reasons why the document was written, the intended audience and what implications this has for the documents as an information source. For example, “facts” about the university contained in a university policy document, may not be unproblematic, it is important to consider the gloss or spin that may be put on the document dependent on its aims, and what may be stressed or underplayed / ignored. For example, the teaching and learning strategies discussed here, are written in order to gain funding from HEFCE as well as provide the university with some direction (Finnegan, 1996:143-144). Further considerations include how the document relates to previous and later documents and what other sources have to say about the document under analysis (Blaxter, et al., 2001:208). When such considerations are considered, these kinds of documents provide a useful insight from a specific perspective on the use of the web for teaching and learning in higher education and have been included in the analysis.

4.2.3 National statistics

The use of national and institutional statistics in this study has been used to provide a perspective on the current contexts within which the cases are based, e.g., student numbers and funding in higher education. Indeed, national statistics provide information on a scale that often cannot be achieved by other bodies due to the practicalities of financial constraints. Statistics are useful in order to obtain the “bigger picture” within which this research is located, yet there are limitations with such data and these have been considered in this research. Statistics are not value neutral or objective as the categories of data and the way that data is collected reflects pre-conceived values and beliefs about the particular phenomenon. Further, the statistics are likely to reflect the government’s agenda to some extent (Levitas and Guy, 1996:1-5) and are often designed to address past, not current concerns (Thomas, 1996:122-129). The extent to which these issues are problematic are likely

to vary with each data set. Here, the specific problems encountered are detailed in chapter 5, but the main difficulty was the change in definitions of various data points, e.g. staff student ratios, that make it impossible to compare trends over time with any accuracy.

4.2.4 Interview schedules

In this study interviews were used with key informants from across the university, and with the lecturers and the students from the six cases. The interview schedule differed depending on who was being interviewed and for what purpose. See section 11.3 in the appendix for the schedules.

In this study, semi structured interviews were utilized because: it encourages similar coverage of questions by respondents and thus analysing data is easier than an unstructured interview; and validity / reliability can be enhanced as the schedule can be analyzed by others (Patton, 1990:281). However, this approach is not as flexible as unstructured interviews and reduces spontaneity (Patton, 1990:281). Further what people will say they do in an interview is often not the same as what people actually do (Gillham 2000:13), interviewees may lie in order to avoid personal questions, to hide ignorance or to avoid embarrassment (Shipman, 1997:82) and they can be time consuming and difficult to analyse (Anderson, 1998:168).

While some of these threats to reliability and validity need to be considered when analysing the results some steps can be taken at the development of the schedule and at the interview itself. Three main factors will be discussed here; the use of the pilot in planning and development, the relationship between interviewer and interviewee and the way the data is recorded.

A pilot study may help to identify some of the problems with the questionnaire schedule (Shipman, 1997:81). Factors that may effect the reliability and validity of the interview/questionnaire include if the question is understood in the same way by the participant and the researcher, and how and where the questions are asked (Shipman, 1997:83). Researchers should reflect on the way in which they are asking the questions and the content and revise if necessary in the beginning stages of the research (Jones, 1991: 205). Two interviews were carried out in the pilot study with members of staff and two interviews with students after the think aloud method was

found to be unworkable (see section 4.1). The main alterations to the schedule were a reduction in its length. In terms of interview style several alterations were made: the researcher familiarized herself with the questions to the extent that a schedule prompt was barely necessary to enhance communication; more information about the aim of the study was provided in the introductory stages of the discussion in order for the interviewee to know more about the focus of the interview; and finally the tape used to record the interviews was not switched off until the researcher had left the participant as it was found discussions tended to continue after the interview had supposedly finished.

The rapport between the interviewer and interviewee will affect the quality of the data collected and this can be affected by aspects of a person's identity such as gender, race, age and status (Jones, 1991:211-212). Historically, researchers were encouraged to be objective when conducting interviews, but more recently discussion has focused on the importance of developing rapport with the interviewee (Jones, 1991:203). In this study, rapport was enhanced with staff through being as open about the research as possible and offering all participants access to the results/papers, discussing previous positions as a researcher in a university prior to beginning the PhD to demonstrate areas of common ground, and being fairly young it is doubtful that the researcher was perceived as "a threat" and thus people were more open. Rapport with students was enhanced through less formal discussion and dressing more casually.

However, there were still difficulties arising from the relationships between the researcher and the interviewee. As the case study lecturers had very kindly made it clear to students that they valued and supported the research project this made students uncertain of the relationship between the researcher and the case study lecturer. Thus, some students were uneasy about issues around confidentiality or offending the researcher if they criticised the site. While it was stressed to the students that this was not the case, some remained wary. Further, interviewing the case study lecturers was also complex; particularly as by the time the discussion took place the researcher had met and talked to the lecturers informally about many of the issues covered in the interviews, thus occasionally the questions felt as if they were being asked merely for the benefit of the tape. Yet, this had to be done, as a decision had been made fairly early on in the research that it would be unfair to formally use

any private informal discussions in the write up of the study, as this had not been agreed with participants at the start of the project.

All interviews were taped. Although this can affect responses and make people uncomfortable, in this case it appeared that individuals tended to forget about the tape, or had previously anticipated it. Similar to Gilliam (2000), taping interviews was helpful in the interview as note taking was felt likely to interrupt the flow of discussion, it was the only way of getting a complete account of what was said, and helped with the analysis (p.69). Indeed, the interviewer showing that they are listening can enhance validity because the interviewee will feel more secure and respected (Anderson, 1998:196).

4.2.5 Student questionnaires

In the study, two questionnaires were given to the students, one at the beginning and one at the end of the course (see section 11.3 for the schedules). The questionnaires contained a mix of closed and open questions, to gain some basic descriptive data, e.g., age, gender, year of study, and opinions and experiences of using the WWW. As stated above, the questionnaires were designed, in the main, to collect data on specific propositions and to gain an insight into the thoughts and opinions of a larger number of students than was possible through focus groups and interviews.

Questionnaires are useful because they can be distributed to a large number of people but a low response rate is possible (especially when posted) and similar to interviews, problems may occur if respondents do not understand the question (Anderson, 1998:168). Various steps were taken in the development and implementation of the questionnaires to overcome some of these difficulties. Handing out questionnaires in class, and making them non-threatening to fill in helped overcome a low response rate. The questionnaires were designed to be short (each took about ten minutes), were laid out appropriately and did not ask very controversial questions in order to make them less threatening. The questionnaires were logical in terms of topic, questions of the same format were placed together, included an introductory paragraph about the research, and the start of the questionnaire was easy to complete (Anderson, 1998:178). However, contrary to Anderson, questions about personal issues, e.g., age were asked at the beginning of the questionnaire rather than at the end. This is because questions that follow a tick

box format about age, gender etc. were thought to be easy to complete and would not be that threatening as the questionnaire was confidential.

To overcome some of the difficulties of misunderstandings between the researcher and participant most of the questions were pilot tested in one questionnaire. The main changes from the questionnaire in the pilot to the actual study were the separation of the questionnaire into one before and one after the module, changes on spacing, less detail about where students were from, increased number of categories on some tick box questions (e.g. age ranges) and a greater number of open response questions. In addition, the researcher was always available when questionnaires were filled in to answer any problems or queries the participants may have had.⁴

Despite these considerations there were still some problems with the questionnaires. Some of the students may still have found some of the questions ambiguous, for example, in some cases (despite being told in the introduction and by the researcher) that questions about the web were about the use of the case study site, students interpreted them as questions about the use of the web in general. A further example is students' interpretation of the word home, i.e. either family address or term time address. The second questionnaire was also too long / contained too many open response questions, leading to questionnaire fatigue and thus a lack of complete responses. Finally, it was felt that some of the questions asked could be improved and made more specific. For example, the Likert style questions on questionnaire 2 were useful as they provided a measure of opinion and were convenient for students to fill in, yet statements, such as, "*I could always access the web for this course when I wanted to,*" could have been separated into smaller questions, e.g. about difficulties with finding a computer, difficulties with accessing the specific site, problems with passwords etc.

4.2.6 Website analysis

A framework was designed to analyse the website for each case study. It covered seven key areas: aim, content, features, structure, navigation, presentation and accessibility of the site. The framework was based on literature from three different, but overlapping and related areas: usability analysis, criteria to evaluate / categorize educational websites, and principles of good learning and teaching that can be

⁴ This was not true in one case where the first questionnaire was sent via email – see section 6.3.

applied to the web. The framework was intended to be broad and qualitative in approach. It was not a rigid framework, based on a specific theoretical perspective (e.g. behaviourism or constructivism) that was imposed on each site. This is because the sites were not developed based on a particular theory, all the courses and students were different, and the intended role the web played in each course varied. In addition, it is felt with this new medium there is no “ideal” which all sites are/ should be measured against. A description of the framework is provided in section 11.1 of the appendix.^{5,6} Where appropriate, the framework was considered alongside findings from student questionnaires, semi structured interviews with the case study lecturer and students, and focus groups.

While the framework was a useful way of analysing the website, two main problems occurred. The first was that the same researcher interviewed the lecturers and analysed the site, thus the aim of the site could be biased by the researchers prior knowledge of speaking to lecturers. Reliability may also have been improved if more than one researcher had analysed the site (though this was not possible due to the resource constraints in this study). The second difficulty was the creation of a map to provide an understanding of the structure of the site, which, while useful, should not be viewed as objective. Decisions were made about where the website began and ended, which pages were illustrated and how the pages were linked to one another. For clarity, each diagram was represented in a hierarchical form with some links almost represented as secondary through the use of dotted lines yet this merely reflects the way the researcher would navigate the site. However, it does provide some insight into the complexity and design of each of the case study websites.

⁵ Factors such as the credibility of the author etc are typically important when analysing any website. However, in this case the websites are from known authors and for particular courses, thus such criteria are not necessary.

⁶ Other areas that have been raised by authors but have not been considered in this study are: language, cultural background and students with disabilities. Some researchers have called for web designers to have increased awareness of the diverse cultural backgrounds of students who may be using the website (see for example Wild and Henderson, 1997 and Collis, 1999). Indeed this is particularly the case for distance learning students, and researchers have suggested changes in site design to help overcome this problem. Other factors to consider when exploring web design are the needs of disabled users. Use of frames, use of pdf files, tables, and colour schemes can all make it more difficult for disabled users to use the site (Sloan, 2001:3). However, at present there is little literature on this particular topic and few designers have considered these problems (Sloan, 2001:23).

4.2.7 Learning styles inventory

A learning styles inventory was given to the students half way through the semester (see section 11.3 of the appendix). This was intended to be used to explore the relationship between learning styles and opinions/use of the website. There are many inventories that can test students' learning characteristics. The ASSIST was chosen for two main reasons. It is a short and simple schedule that takes only about ten minutes to fill in. It was felt that this could be important to ensure that students do not get too bored and fail to complete the inventory, and it also does not take up too much class time. Secondly, there already exists some interesting literature on the relationship between approaches to learning and the use of the web, using similar inventories, which it was hoped this study would add to. However, the results were not used in the final analysis as it was not felt that relating a student's score on ASSIST to aspects of student's use and opinion would be meaningful. For example, while correlating the amount of time students spent on the website with their ASSIST score may lead to some relationship, it says nothing about why this relationship occurred, for example what parts of the site the student was using, if they had problems with access, if it was assessed etc. In the future, studies could be designed to carry out multiple variable analyses on a number of relevant data points but these were not available in this study.

4.2.8 Focus groups

In this study, focus groups took place with students at the end of the module. Focus groups can be useful as when people talk in a group it can enhance recall and demonstrate different opinions in one group, and, like the interview, it provides a rich source of data. However, it is logistically quite a difficult and potentially time-consuming method that relies on a good facilitator for it to work well. In addition, the analysis of data is not straightforward (Anderson, 1998:168).

Again, some threats to validity and reliability should be considered when preparing for and conducting the focus group. These include the composition of the group and the resulting impact on individuals' participation, the researcher's rapport with the group, and the development and testing of the schedule.

The composition of the group of participants is important. It can be argued that focus groups and other qualitative approaches such as interviews have a higher ecological

validity than experimental methods carried out in laboratories. However, while they take place in a natural environment, other factors, such as the fact that people know they are taking part in the research, how well the group know each other and how comfortable they feel expressing their opinions will have an impact. Researchers must consider the group composition for the focus group in terms of, age, sex and whether people know each other or are strangers (Gunter, 2000:44-46).

In this study, the composition of the group was determined by who wanted to take part. In some cases the students did know each other well, as they had small classes together, or were a seminar group, others were in larger groups and did not know each other well, but still had been taught in the same group over at least one semester. Some researchers argue that although a group must have something in common an intact group is not desirable as the participants will not benefit so much as they would from the ideas of strangers. Further, the group will already have a life of its own, and responses may be affected if participants are worried about what their friends think (Anderson, 1998:203). However, as the focus groups were about a particular module, the group had to be based on those students from that module who volunteered to take part. In this study this type of convenience grouping was impossible to avoid and the effect of this will be considered when analysing the results. To a great extent these are signalled in chapters 6 and 7 where appropriate, for example, the prevalence of dominant characters in case 4 (midwifery) (see section 7.1).

The size of the group is also important; six to twelve participants are typical although three to five can be used if the topic needs to be explored in great depth (Anderson, 1998:203). Morley (1980,1981) used focus groups varying in size from three to thirteen people (cited in Gunter, 2000:45). In this study, the composition of the groups were arranged to be between three and twelve students. To an extent this was due to the size of the student cohort for each case study (e.g. there were only four students in total in case 5 (German) but was also based on the number of students who wished to take part.

Similar to interviews, the researcher's rapport with the participants is important. Rapport may help the researcher when facing difficulties of dealing with dominant individuals within the group and may also help to encourage quieter members of the

group (Gunter, 2000:44). The researcher had no previous experience of focus groups, but had a number of years experience of small group teaching for which similar skills, such as encouraging discussion from all participants and dealing with dominant individuals, are required. The student - student relationship, may also have helped rapport. In addition, by the end of the module all the students had seen the researcher at least three times in the one semester.

The focus group schedule is in section 11.3 of the appendix. It is reasonably structured, but includes a series of open questions for the participants to discuss. This type of approach has similar advantages to using the semi-structured interview. By using a list of pre prepared open questions, analysis of the data is easier as comparisons of responses can be made between groups (Gunter, 2000:43). To increase the validity and reliability of this method the schedule was developed and tested in the pilot. However, the schedule was not changed for the main part of the research.

4.2.9 Analysis of contributions to web-based discussion boards

All of the case study websites had some form of discussion / bulletin board and were used to a greater or lesser extent depending on the aims of the WWW for the module. Where appropriate these have been included into the analysis depending on what the discussions were used for. Analysis of web-based discussion can be carried out in a variety of ways including: observational (e.g. amount of postings and when posted); examination of content/topic (e.g. Nickerson, 1994:117); as a process of communication (e.g. Postmes et al., 1998:689) and as a way of categorising students understanding and thinking about a particular topic (e.g. Salmon, 2000:143). In this study analysis has been at a descriptive level, i.e., discussing numbers of postings and the selection of pertinent examples. Further in-depth analysis, for example the level of students understanding of a particular topic, has not been carried out as the researcher is not a subject expert.

4.3 Analysis of Data

In this section, methods used for quantitative and qualitative data analysis are summarised and factors effecting the interpretation of the results arising from the study design are highlighted.

4.3.1 Quantitative data analysis

The quantitative data collected through questionnaires was analysed in the traditional quantitative tradition. Descriptive statistics used were examination of frequencies and calculation of median scores. To explore relationships between two Likert style statements on questionnaire 2 Kendall's Tau test was used. This is appropriate because the data is ordinal, i.e., one cannot be certain if the intervals between each number on the scale strongly agree (1) to strongly disagree (6) will be the same (Jaccard and Choi, 1996). To test two variables where categorical data was utilised the Chi Squared test was used. See results chapters 6-7 and section 11.4 of the appendix.

4.3.2 Qualitative data analysis

The analysis of the qualitative data constructed through open response questions on questionnaires, focus groups and interviews was carried out in accordance with the principles from the qualitative tradition. Miles and Huberman (1994) describe the general components of qualitative data analysis as: data reduction; data display and conclusion drawing and verification. Data reduction is where the data is reduced in a variety of ways, e.g., through coding the data into themes and this takes place prior, during and after data collection. Data display is where the researcher uses some form of diagram, e.g. chart or matrices, to help them see an overview of the current state of the data. This process is carried out during and after data collection. The third component, conclusion drawing and verification, is where the meaning of the data is considered and conclusions are developed and demonstrated. This process takes place throughout and after data collection, although final conclusions are typically only reached when all the data is collected. These three components of data analysis interact with each other and the process of data collection throughout the research (Miles and Huberman, 1994:10-12).

In accordance with Miles and Huberman (1994), in this study a subset of the interviews were selected and categories were identified through repeatedly reading through the transcripts, noting down topics or categories or anything surprising, and due to the pre-conceived thoughts from the development of the research questions and background reading. Then, different sections of the transcripts that related to a similar theme were placed together. This process was aided through the use of NUD*IST. Initially, many categories were developed without concern about how

they related to the original research question. Once the categories were exhausted, the text in each category was compared and used to confirm the definitions of the categories and to develop sub categories or relations among categories. Further transcripts were introduced and the process was repeated and over time the final themes were used as part of the research findings. This continual process of developing new themes and refining and developing previous themes was greatly helped by NUD*IST, particularly given the large data sets that were sometimes involved (Boulton and Hammersley, 1996:289-292). This analysis process had elements of quantitative and qualitative approach to the analysis of data, using both themes arising from the data and acknowledging those that came from the research propositions (although these were general and open to change). In addition, the importance of each theme identified from the qualitative data is indicated in the results chapters 5-7. In qualitative analysis, description comes first and must be separate from interpretation, the second stage of analysis (Patton, 1990:375). Description was the primary concern in chapters 5-7 and interpretation of the findings came after when comparing findings in chapters 8 and 9.

4.3.3 Considerations effecting interpretation

In section 4.2, concerns specific to each method were highlighted and throughout the forthcoming chapters attention is drawn, where appropriate, to factors that need to be considered when interpreting the findings. In this section the focus is on issues that arose from the research design that were considered when interpreting the findings from data collection / construction. These were the order and number of the research methods, comparability between cases, and the nature of the relationship with the case study lecturer.

As is clear from the discussion above, a number of methods were used throughout the module to obtain an understanding of the students' viewpoint. However, three problems arose from this approach. Firstly, the research required a fairly significant amount of student involvement over one module and this may have led to student fatigue or disinterest in the latter stages of the project. Indeed this did happen to some extent, with fewer completed questionnaires returned for the second questionnaire compared to the first (though this may also be due to the nature and length of the questions on the schedule). Secondly, the order of methods may have influenced students' responses in the latter parts of the research. For example,

interviewees may respond differently to questionnaire 2 if they had participated in an interview compared to how they would if they had not had a discussion with the researcher. This could have been overcome through using different members of the population for different parts of the research (Brewer and Hunter 1989:85). Also, while the timing of the focus group and qualitative interviews were similar in each case the attitude of the students may vary according to other events happening at the same time, for example, midwifery students were doing their exams at the time of the focus group and these kinds of circumstances may affect responses. Fourthly, relationships between each student on different methods could not be made as students tended to use nicknames / forget their student number and matching responses was too difficult. Finally, as the whole research took place over a year period the researcher's skills (particularly in interviewing) improved.

Comparing the case studies of interest is useful as it adds to the strengths of the findings when similar themes are found in each. It was also reasonably easy to achieve as the research was carried out over a short period of time and by the same researcher. In general, the methods used were conducted at the same time throughout each module; for example, questionnaire 1 was always given to students at the beginning of the module (see chapters 6 and 7 for exact timings). However, there were some exceptions in case 3 (English) the first questionnaire was delivered to students via email and the ASSIST inventory was given to students at end of the module. In case 4 (Midwifery) and case 5 (German) the focus group took place after questionnaire 2 and there was no focus group for case 6 (Cultural Studies). Care was taken to consider differences within each case that may make comparison more complex and where these are felt to significantly effect comparability / interpretation of the findings are highlighted in results chapters 6 and 7. Though it should be noted that the questionnaire delivered via email in case 3 was felt to encompass the greatest problems for comparison and this is acknowledged in chapters 8 and 9. A further issue may be that the themes identified by the researcher when analysing and reporting the first case may have had an impact on the themes identified in analysis of the next case(s). As each case was analysed without reference to the others until the end of the analysis this bias was minimised as far as possible. These issues are highlighted where relevant in chapters 6-7.

The relationship between the researcher and case study lecturers was complex. Each lecturer was incredibly helpful and supportive and his or her participation was essential to the success of the research. However, problems arose as in some ways the researcher was seen (and was a willing) supporter and advisor to some of the case study lecturers, and was one of the few academics interested in their work. This involvement in their work meant that the researcher wanted the initiative to be a “success” and found it difficult to feedback more negative findings. Thus a great deal of care was taken throughout the analysis process to try to ensure this bias was minimised.

The data from each method was analysed separately and then brought together at the end of the analysis to consider the main themes apparent in each case and this stage took place independently for each case. As noted in chapter 3, this is particularly difficult in mixed method research utilising both qualitative and quantitative methods even when using them principally for a comparative purposes, for example, the different mindsets and philosophies required for each approach (though it was felt it has been achieved here with some success). It was at this stage of writing up and analysing each case that decisions were made as to the data that would be utilised in the report. These decisions were sometimes practical, for example the response rates in the questionnaires were too low or the question thought to be too ambiguous thus the data from these areas would be discounted, but was also based on what the most important themes were considered to be, indicated in the qualitative data through the numbers / amount individuals discussed particular issues and high frequencies in the quantitative data or significant relationships between variables.

Thus in this chapter, the practical issues concerning selection and use of methods and analysis of the resulting data have been considered. In the following three chapters the results of the research are discussed.

5. Results Chapter 1 - The Institutional Context

This chapter considers major themes emerging from the forty-one semi-structured interviews conducted with members of staff and analysis of national and university documents.⁷ The chapter is divided into five main sections, corresponding to one of the following areas highlighted by the analysis of data:

1. Changes within each university over the past decade.
2. The motivations for universities to use the WWW in response to some of those changes.⁸
3. Motivations and / or barriers for academics to adopt the use of the web in teaching and learning.
4. Initiatives and other factors at each university that may increase the use of the web in teaching and learning.
5. Interviewees' predictions about how their institution would change over the next five years.⁹

5.1 *Change in the university*

Interviewees¹⁰ who had been at either institution for over ten years were asked what main changes they had seen within that university while they had worked there. The main themes were similar for both universities and are discussed below: 1) changes in the size and nature of the student population; 2) reduction in funding for the higher education sector; and 3) the change for New U from a polytechnic to a university.

⁷The interviews took place with academic staff across both universities who have used the web as a teaching tool and with those who are responsible for encouraging all staff to use the WWW in their teaching (such as senior staff who form policies and support staff). Potential interviewees were contacted via email in the first instance. In general, the response rate was reasonably high, on average the response rate at Old U and New U was 70% (19/27) and 70% (16/23) respectively (the lowest response rate was from senior managers with around 55% of senior management agreeing to participate at each university). To ensure anonymity numbers were chosen to represent names and merely reflect the order in which they were entered into NUD*IST. Further details of the analysis process are discussed in chapter 4.

⁸ Obviously, as has been noted in chapter 1, the use of the web is not seen as the only possible way of tackling these changes but this issue is the focus here.

⁹ Due to the number of interviews that took place at each university, it is not possible to comment with any detail on the level of activity or the different policies, motivations or barriers at the faculty, school or departmental level. While this is to some extent problematic, this level of detail had to be sacrificed in order to analyse all the different levels of the educational process as set out in the introduction.

¹⁰ In this section, responses relate to 8 respondents who had been at New U for ten or more years (5 senior managers, 2 middle managers and 1 innovator) and 9 respondents who had been at Old U for ten or more years (4 senior managers, 2 middle managers and 3 innovators).

5.1.1 Changes in the size and nature of the student population

For both New U and Old U the most frequently discussed change that interviewees had seen while working at that university was the rise in student numbers. This trend is apparent across all universities. From analysis of the student population of all universities in the UK in 1980/81 and 1990/91 the Department for Education and Skills calculated that there were 827000 and 1175000 full time and part time undergraduates and postgraduate students in the UK respectively. By 2000/2001 this had risen to 2068000 (DfES, 2001)¹¹. As the Dearing Report noted the number of students in Higher Education has much more than doubled over the past 20 years. This increase is set to continue, as set out in the White Paper, *The Future of Higher Education*, where the number of students entering Higher Education is set to increase to 50% of 18-20 year olds (DfES, 2003).

While numbers of students at both institutions have risen, there appear to be few changes in their characteristics. New U students are typically local, often over twenty-one (particularly in the case of part time students), disparate in class origins, and likely to be studying vocational courses, often on a part time basis. University documents regarding student statistics support these descriptions identified from the interviews. Old Us' students are typically eighteen to twenty one, from the higher social classes, study full time on traditional academic courses and are nationally recruited. While very few interviewees at Old U commented on the characteristics of the students this description is supported by the available university documents, such as the university strategic plan and statistics produced by the relevant department at Old U.

It is possible that the characteristics of students at Old U may change more noticeably in the future. The Learning and Teaching strategy for Old U, submitted in May 2000, notes the likely changes in its student population, which already comprises an increasing number of part time students, and highlights widening participation and lifelong learning agendas. A small number of interviewees did discuss the change in the "markets" of students they were trying to attract (e.g. those wishing to study part time courses and / or vocational courses, CPD and distance learning opportunities). Others did comment on the increasing demand from students

¹¹ These figures include both home and overseas students, students from the Open University and were calculated in the December of each academic year.

for more vocational subjects, which had led to some concern about the future of subjects that were perceived to be less vocational.

At both universities several interviewees felt that the students who were coming to both universities had more demands / educational needs than previous cohorts. As one respondent explained, if you previously taught a course with 100 students but then had to take 200 students for the same course,

Students 101 to 200 are unlikely to be as bright or as motivated as students 1 to 100, are they?

Respondent 1, Senior Manager, Old U

However, the majority of interviewees did not raise this issue at all and a minority of those who did disagreed,

I mean a lot of people moan about the competence of the students but I don't think that's changed at all...really I personally don't think there is that much difference in the quality of the students we are getting in.

Respondent 2, Innovator, Old U

5.1.2 The reduction in funding for the higher education sector

One trend in higher education that can be seen in many policy documents is the steady reduction in funding. This is clear by looking at the funding per student in England that has steadily fallen. As the Department For Education and Skills notes the, "HE sector's unit funding per FTE student decreased in real terms from £6,660 in 1991-92 to an estimated £4,860 in 2000-01, a fall of 27 per cent," (DfES, 2001:para 34). Further, the Dearing report noted that in the past twenty years the public finding for education had decreased in real terms by 45% and noted the need for more investment in the higher education sector (NCIHE, 1997). The consequences of this reduction in funding were apparent throughout many of the themes that were discussed by interviewees.

An issue raised by participants from Old U was increasing staff student ratios. The ratio for the whole university has not been centrally recorded since 1997, perhaps because the ratio has changed significantly. From the existing documents, the staff student ratio has risen from 1:12.34 in the academic year beginning in 1992 to 1:14.44 for the academic year beginning in 1997. Some interviewees gave off the record staff student ratios for the academic year 2001-2002. The average ratio for the

whole university was reported to be 1:17 and another respondent discussed ratios of 1:28 for staff to personal tutees in a particular school. It is likely these ratios will vary from department to department. This is a similar pattern to the trend in all UK institutions where the staff ratio has risen from 1:9 in 1980 to 1:17 in 1998 (DfES, 2003a).¹²

Some interviewees at both universities felt that the potential increase in numbers of students with higher educational needs / demands than previous intakes combined with a decrease in funds led to problems. As one senior manager commented:

You are getting loads of people in universities who in the past wouldn't have been able to get into university. So simultaneously with having less money to actually teach them you have actually got students who have often greater demands in terms of actual learning.

Respondent 3, Senior Manager, New U

5.1.3 Change from a polytechnic to a university

Obviously, one significant change that a number of interviewees noted who had been at New U for over twelve years was the change from polytechnic to university. However, for the majority of respondents becoming financially independent from the LEA while still a polytechnic was probably a more significant change. As one interviewee commented,

Following incorporation which I think was in 91 and the period immediately before that when the polytechnics were taken away from the local authorities and were funded as the universities were directly from central government, rather than local government, that made a significant change here...and certainly watching what has happened in the intervening period with what became [New U] taking responsibility for itself, becoming a university, beginning to improve the quality of the site and buildings and the infrastructure, you could see how significant that was rather than relying on the LEA.

Respondent 4, Senior Manager, New U

A small number of interviewees felt that the move from a polytechnic to a new university had made academics more conscious that they were in direct competition with other older universities. However, for the majority of interviewees the change

¹² It is important to note that it is very difficult to compare official staff student ratios over time because the criteria keep changing. Further, some argue that due to the differences in fees from overseas and home students it is funding, not number of students that are relevant. However, the statistics can still give an indication of the changing picture.

from a polytechnic to a new university did not mean a change in philosophy, and this is supported by some of the aims outlined in the Learning and Teaching Strategy at New U, to enhance the employability of graduates and to make links with the local community. As one senior manager commented,

I think New U is, has kept, in a sense the polytechnic tradition alive in many respects; vocational, access, participation, interfacing with the community...and we are very comfortable with that. That's what we are, we are not a traditional university and we will never aspire to be.

Respondent 5, Senior Manager, New U

5.2 Motivations for universities to respond to changes in role through the adoption of the web for teaching and learning

All interviewees from each university were asked what motivations there were for their university to increase the use of the web for teaching and learning and the reasons why their university may not choose to do so. This section is divided into two parts, the first outlines the main motivations (i.e. dealing with increased numbers of students with less funding, flexible delivery and distance learning) and the second the lack of incentives (i.e. funding and evidence).

5.2.1 Motivations for using the web in teaching and learning

At Old U the main motivations to use the web in teaching and learning discussed in order of importance were: distance learning; to enhance campus based learning; and to help overcome the reduction of funding and teaching increasing numbers of students. At New U the motives were similar, but the emphasis was on enhancing campus based learning as oppose to distance learning (which was a lesser theme). A few participants at New U thought that there was not a motive for New U to use the web for learning and teaching and this will be discussed below in section 5.2.2. Other motivations at Old U and New U included: lifelong learning, governmental policy and to maintain a reputation as a “good” research university and keep attracting students; and governmental policy respectively.

5.2.1.1 Increasing student numbers, changes in student characteristics, and reduction in funding

The rise in student numbers, the fall in funding and the possibility of changes in the characteristics of students who may have more educational needs than previous cohorts, had led some within the university to think the web may be able to assist with some of these trends. Some respondents felt the web may help to reduce costs such as reproducing course packs, or that it might increase efficient use of accommodation. Alongside these more practical considerations, the web may help to teach larger numbers of students. As one interviewee commented.

So there is something of an incentive to look at how IT can support assessment or access to materials for teaching, you know, all gamut of things to make life for students and staff more acceptable really, because big groups can be quite tough to teach and to be part of.

Interview 13, Senior Manager New U

There was a sense that while the web could help with the increasing numbers of students there had to be a fundamental change in the way students were taught at university.

I think that what we have tried to do as numbers have expanded and the workload has increased is to do more of the same. Doing more of the same isn't actually physically and mentally possible.

Respondent 6, Middle Manager, New U

I think our students get through our course despite what we do half the time I really do.... The academics are over stressed and over stretched. We are chasing our tails half the time and what learning really goes on of any value in classrooms? I strongly suspect that a lot of us are busting our guts for very little but I am hoping very much that initiatives [using the web could help with this].

Respondent 7, Innovator, New U.

At both universities there was a move to do things differently to try to enhance teaching and move away from didactic methods that were not felt to be all that effective and also perhaps no longer possible to use effectively.

At both Old U and New U a potential advantage of using the web for teaching and learning was that it could assist in the development of modules with a more student centred approach to learning. Linked to this theme was the value of the range of resources the Internet could provide access to. In addition, the use of the web was thought to be likely to appeal to some students more than others and at New U in

particular the way the web could help students who had problems with more “traditional” methods was highlighted. For example, the use of a discussion board instead of discussing face to face in a seminar may be helpful for students who find it hard to express their views verbally, perhaps due to shyness (one lecturer gave the example of a student who was ashamed of his strong accent) or dominant individuals who were negatively effecting group dynamics.

The importance of more student centred approaches to teaching and innovative curriculum models were highlighted in the learning and teaching strategy documents at Old U and New U respectively. Indeed, the use of the web to enhance current teaching and learning was apparent in many discussions with participants. However, exactly how that enhancement could be achieved, without increasing as oppose to decreasing costs was unclear. As one innovator commented:

And I think there is still a long way to go in understanding how the technology can be used. Rather than using it [as a] replacement using it as a kind of adjunct is much better probably but it doesn't bring cost savings, which is what drives the sector.

Respondent 8, Innovator, New U

Interestingly, respondents at both universities thought that senior managers would believe that the use of the WWW would help cut costs. However, while at Old U some senior managers could see financial benefits of distance learning opportunities the majority of respondents at both universities believed it would cost more to use the web for campus based learning than current costs for traditional teaching. Therefore financial savings were not considered a strong motive of the institution for campus-based teaching. As one senior manager commented:

The various techniques that they [the Open University] use, the assumption that those things save you money is completely false they are always more expensive. The cheapest way of providing education is one tutor, twenty students and a library - easy. That's the cheap way of doing it. The more you increase the means of communication the more people will use them, the more they use them the more interaction is required from the recipients and so on, you know, so it is more time it is not less.

Respondent 9, Senior Manager, New U

5.2.1.1.1 Flexible delivery

A further motivation to use the web related to the issue of changing student characteristics and enhancing campus-based teaching was to help satisfy student demand for the flexible delivery of courses. At New U this demand was from undergraduates (who were increasingly working and thus taking part time degrees) as well as those on postgraduate or CPD courses. The demand was also there for this type of delivery from employers who didn't want training/education to interrupt work commitments. As one interviewee commented:

I suppose when you develop anything what you want to do is improve your service to the customer...the traditional chalk and talk and the way that you facilitate learning through those traditional methods is --- doesn't meet their needs. We have got a lot of part time students and they are here one week, the next week they have been sent to Germany with their company and they might be off for three weeks and then they come back again; or you have got the traditional full time student, you know, they say, well, I can't have a lecture at that time because of my job.

Respondent 5, Senior Manager, New U

Some interviewees at Old U also saw flexible delivery as a useful feature of web-based learning. However, this was less often associated with the current campus based full time undergraduate and more often discussed in the context of CPD and distance learning.

5.2.1.2 Distance learning

A further motivation for using the web in teaching and learning was for distance learning purposes. While this was seen as a motive for both Old U and New U it was particularly apparent at Old U. At Old U there was also some discussion about the use of dual mode packages that could be used both on and off campus, and using the web for CPD and lifelong learning markets. As a senior manager at Old U commented:

So let's say it's three days a year for CPD. Well I think the sum works out, if you take three days a year for all the professional people that is a market as big as the entire undergraduate population in the country. So it's a big market, a big market and for us not to be in it would be very foolish. So it's a question in some areas we already do it and there are some courses that are very successful in Old U already that are aimed at the CPD market but we are just scratching the surface.

Respondent 10, Senior Manager, Old U

From examining the universities teaching and learning strategy documents it appears that the use of ICTs at New U are primarily one means to enhance innovation in teaching and learning and also could be used as part of an innovation that would lead to research on teaching and learning. At Old U the WWW is used to enhance campus based learning through increasing emphasis on student centred approaches, as a way to deliver distance learning to non traditional students and accommodate the different needs of such students, and to develop online modules and programmes for CPD and distance learning markets. While, each school will have also created a similar document, it appears at the institutional level that there is more of a push at Old U for such initiatives compared to New U.

5.2.2 Motivations for universities not to use the web for teaching and learning

At Old U and New U the two main difficulties for the university to use the web for teaching and learning were the potential educational dangers of such a move, financial constraints, and the lack of evidence around this topic. At Old U and New U there were also concerns expressed by a number of interviewees about the use of technology for technology's sake and the need to consider how the web could be used appropriately. Comments included,

So people can be entranced and captured by the technology without thinking how can we apply it to what is actually quite a difficult human process taking place when students learn and lecturers lecture.

Respondent 15, Senior Manager, New U

I guess the other thing I still feel we need to be careful with is making sure we use the right technology for appropriate purposes and not throwing everything else out.

Respondent 4, Senior Manager, New U

A further significant theme was concerns about the potential reduction in contact if the web was used for increased amounts of teaching and learning. This was viewed as particularly problematic as students currently demanded more contact, not less, and the campus based students expected to have contact with lecturers and other students. Further, a lack of contact was believed to negatively effect students' motivation to learn. Related to these two themes was the belief that the web was only appropriate for teaching and learning about specific areas. In general, it appeared to be seen as a medium that could be used to provide students with basic facts, such as

aspects of anatomy, but could not be used when the focus was more vocational aspects such as dealing with patients for those studying to be in the medical profession or abilities such as critical thinking, developing arguments and points of view.

A second problem facing the universities in using the web for teaching and learning for campus-based students was the financial investment that would be required (e.g. for staffing and technical infrastructure) for it to be successful. This was a large financial risk for a university to take, given the lack of research available on the effectiveness and cost effectiveness of the use of the web in teaching and learning, and the difficulty of predicting the future of higher education. These issues are discussed further in section 4.4.2. At New U there was a feeling by some that until these issues were resolved it would be unwise to promote the use of the web. As one participant commented:

There is a place you don't want to be you either want to be at the cutting edge which we are not or you want to be way way behind it when it is all sorted out because the thing that comes behind the cutting edge...is the bleeding edge and that is where all the pain is.

Respondent 12, Innovator, New U

5.3 *Motivations for individual academics to adopt, or not to adopt, the use of the web in teaching and learning.*

In this section the main motivations and lack of incentives for academics to use the web in teaching and learning are discussed. The discussion is divided into three areas: reasons for academics not to begin using the web; motivations for innovators to use the web; and barriers innovators had encountered while using the web.¹³

5.3.1 Reasons for academics not to use the web for teaching and learning

All interviewees were asked what they thought the main reasons preventing academics from beginning to use the WWW in teaching were. The issues raised most (in order of amount discussed) at Old U were: lack of time, lack of interest in using technology/ changing current method, lack of technical skills, lack of technical support, course constraints (i.e. length of time to gain approval for changes in assessment or changing timetabling to suit delivery of some teaching via computers)

¹³ As stressed throughout the research the web is not viewed as the only way to innovate in teaching and learning nor is it seen as the "solution" to the various problems universities are facing.

and role changes. Similarly at New U the themes discussed were: fear of role change, lack of time, lack of interest in using technology/ changing current method, lack of technical skills and course constraints.

Time was an important theme. While a small number of innovators felt that using the web had helped them to save time, the majority felt it had been far more time consuming (especially when used as supplementary to existing teaching methods). The issue of time was often discussed in the context of staff who were already overworked and simply had no “space” to take on any additional work. As one senior manager commented,

I think time is a big factor; some people say, well it's more work, for some people it's more work in an already crowded day and it won't happen, because they are just too busy.

Respondent 5, Senior Manager, New U

A further important theme, particularly by those at New U, was the potential changes in role that using the web in teaching may bring. This was partly because a professional's identity was felt to be wrapped up with lecturing and also the fear that using technology often meant a loss of control over the learning situation (due to its suitability for student centred approaches). It was also felt that academic staff were resistant to change (particular more senior members of staff). As one middle manager commented:

So we have got a lot of new staff, a lot of enthusiasm for trying to develop new things but I also think we have a number of staff who are threatened by change in the sense that they ---I guess in part it's about losing control isn't it? If you go into a lecture room you need to deliver a certain amount of content in a couple of hours you have absolute control effectively over what happens. If you set students free to discover it for themselves in a variety of ways and then set up support sessions, you may not have as much control.

Respondent 6, Middle Manager, New U

Interestingly, role change was perceived as a more important factor at New U than Old U and technical support at New U was seen as far less of a problem than at Old U. This may perhaps be due to teaching being more germane to the identity of staff at New U and central technical support was simply not available and therefore not seen as an option at New U. Other lesser themes raised by both Old and New U included: a lack of evidence as to its efficacy, the dislike of having private teaching material on public view and an inadequate technical infrastructure.

5.3.2 Main motivations for innovators to use the web in teaching and learning

All the innovators who were interviewed were asked what their main motivations were for using the WWW in their teaching.¹⁴ The responses could be classified into three main areas: teaching and learning issues, personal rewards and institutional rewards.

The large majority of responses in both universities related to teaching and learning issues, such as trying to augment existing teaching, promoting independent learning, providing extra resources to enhance learning and improving the learning experience for increasing student numbers. A small minority of respondents felt that the use of the web had helped save time (e.g. with course organisation and photocopying).

The other main theme that was discussed in the interviews related to the personal rewards people received for using the technology. In the old university respondents often cited a particular interest in using the technology as a motivation and respondents from the new university discussed their interest in teaching issues, often prompted by a CertEd or similar course. Some institutional rewards, such as the occasional additional teaching and learning responsibility or post, and funding available for central projects, were mentioned. However, it was evident that these institutional factors were not of great importance in motivating these members of staff at either institution.

5.3.3 Main difficulties for innovators to use the web for teaching and learning

Innovators who were interviewed were also asked what their main difficulties had been when using the WWW in their teaching. The main barrier for both innovators in both Old U and New U was time. While a small number felt that the web had saved them time, many innovators gave examples of how much time using the web had taken up, as one innovator commented about his/her experiences of using a discussion board for forty students,

¹⁴ 9 members of staff at Old U and 9 members of staff at New U were categorised as an innovator for this study. These figures include the 6 case study module lecturers from Old U and New U.

A terrible week would be something like twenty hours and a light week would be something like four so on average what's the difference oh I don't know something like ten hours a week is average...some of the heavy weeks have probably topped even twenty to be quite honest with you.

Respondent 7, Innovator, New U

There were also some problems with technical infrastructure in both universities. Interestingly, in the old universities innovators identified two other difficulties as being the lack of synergy between departments involved in the MLE¹⁵, such as student records systems and other central information services, and a lack of recognition of teaching within the institution. As one innovator commented,

Well, no it's difficult because I think with general academic contracts, academics are supposed to engage in teaching, engage in research and engage in administration...The post of reader is completely excluded, or rather teaching only people are excluded out of readerships, and professorships will tend to be given, if not on clinical or academic research, possibly on administrative contributions...with the US and elsewhere, there is a culture of having the associate professor level, which is a teaching academic post...until there is formal recognition and a promotional structure for [innovative teaching] then it will always be stymied.

Respondent 24, Innovator, Old U

These two factors were not identified in the new university. At present the new university does not have an approved MLE. The second issue regarding recognition of teaching is perhaps not as apparent in the new university as a lecturers' role is likely to be more focused on teaching than research. Other factors identified to a smaller extent in the old and new university were copyright issues (i.e. who owned teaching ideas/materials if placed on the university MLE, protecting content, and gaining permission from other sources).

5.4 Initiatives to promote the use of the web for teaching and learning at Old U and New U

In the following section, various initiatives and factors that may help to promote the use of the web in teaching and learning at the university and individual staff level are discussed. However, while all of these initiatives may contribute towards adoption of new technologies their influence is not simplistic, direct or necessarily positive.

¹⁵ A Managed Learning Environment (MLE) is a piece of software that encompasses all the features that a student would need to learn online (e.g. course content, email and discussion boards) and is integrated with other systems (such as student records) on campus

Central policies will have different impacts on faculties, schools, departments and individuals in a variety of ways.

Both Old U and New U had a devolved structure, with a great deal of financial and managerial responsibility being left to the schools or faculties respectively. This type of structure had implications if the university as a whole wished to increase the use of the web in teaching and learning. As one interviewee from Old U commented,

Well Old U is an old university, I mean it's not as old as Cambridge and Oxford, anything like that, but it is quite an old university in that the structures and its level of autonomy that it places at school level is really quite high, which means that the centre is not as strong as say it is in a new university, which can dictate --- this is how we are doing things.

Respondent 13, Central support, Old U

Contrary to the opinions of the individual above, New U had a similarly weak central structure. As one senior manager commented,

The university probably doesn't have plans in that sense because we don't run it in that way. Individual faculties are likely to come up with strategies and policies and the university's role is to provide the infrastructure to enable them to do it if they want to do it.

Respondent 15, Senior Manager, New U

Despite both universities having a similar devolved structure there appeared to be more of a move towards the use of the web at a university wide level at Old U compared to New U. This was apparent in the number and presence of the central initiatives and in the teaching and learning policy documents discussed above. This may be because at Old U all schools within the university had a similar goal, i.e. to be a well known, traditional, research based university (with high RAE scores) and the web was seen as important to maintain that reputation. In contrast, the faculties at New U may have different objectives and definitions of success (although the quality of teaching is evaluated centrally it is quality not delivery method that is considered important). Senior managers at New U described the culture of the university as a, "...flotilla of various sized ships.." (respondent 9, senior manager, New U) or, "...slightly anarchist..." (respondent 15, senior manager, New U). Thus it was not necessarily appropriate to have a university wide strategy.

The central initiatives for Old U and New U are discussed in section 5.4.1. The uptake of the use of the web is also likely to be influenced by the school, for example, how much staff are rewarded / encouraged to use new technologies, such as availability of extra support staff, less time teaching, and the quality of the technical infrastructure for staff and students. Innovators may also play a role in influencing others to use the web in teaching and learning.

As stated above, it is not appropriate for this research to go into the school or faculty level at each institution in any detail. However, it is useful to note that at both universities some departments or schools were beginning to support academics to use the web for teaching and learning. In some cases this was the appointment of a web officer or other IT support who could help staff develop the appropriate technical skills or put content on a website on behalf of the academics. In some schools / departments there was also the introduction of a MLE - either a commercial package or developed in house - that was used as a way of organizing all the information for the students. In many cases where a MLE had been set up there was space for all academics to put basic information and/or teaching materials on the web. However, in the majority of cases it was entirely up to the lecturer if they wished to use the MLE. In only one case (perhaps significantly the computing school at New U) academics were required as part of departmental policy to at the very least have basic course information (e.g. aims and objectives and assessment details) on the web.

5.4.1 Central initiatives to promote change within the institution

This section is divided into two parts; the first describes the central initiatives at Old and New U to promote the use of the web (e.g. central projects, approved MLE, training and one to one support at Old U, and central projects and teaching fellowships at New U). The second half of the section explores what further factors identified by participants for increasing success of the adoption of new technologies (if this was a desirable move for each of the institutions). It is important to note that Old U appears (from documentary and interview evidence) to have a greater motivation, at least at university level, to try and promote the use of the WWW in teaching and learning than New U.

5.4.1.1 Central initiatives at Old U

5.4.1.1.1 Central projects

HEFCE provided many universities with a teaching quality enhancement fund, which have led to an increase in initiatives to try to find ways of enhancing teaching and learning. Old U used money from the fund to set up a central unit to fund projects to develop flexible ways of delivery and this often involved the use of technology or the web. Staff can bid for money up to about £22 000 for a project that fitted into their school's learning and teaching strategy. The general philosophy behind the projects was that staff could bid for money or equipment or whatever else they felt they required, but the results of the projects had to be long lasting and not disappear as soon as the project finished. Bids from staff that were successful tended to be bids for money to fund several academics to take part (eliminating the danger of the lone academic) and often for money to put systems in place to help ensure that the project would continue after the funding had run out.

Interviewees were asked what the main advantages of the central projects had been. For innovators, a principle advantage was the support they received. This included advice from central support and a project leaders' co-ordination group that met bi-monthly to discuss projects and share ideas. This was found to be very useful by innovators as the structure of the university had previously made it difficult for innovators from different disciplines to discuss their work. A second advantage identified by a few of those who had successful bids was using the money to buy out their time and a third advantage was the availability of training.

A primary advantage, thought by many who were involved in some way with the central projects, was the opportunity to develop a greater knowledge base for the university about the use of technology in teaching and learning. While the projects were in the early stages when this research took place, the plan was that the findings of the research would be disseminated via a project centre website. It was hoped that the results from the first round of projects could help inform future projects and apply to other subject areas.

While few problems / difficulties of this initiative were identified by interviewees the main concern was how great the change across the university would be as a result of the centralised projects. As one innovator commented:

I mustn't complain about [name of central unit] because it will be a vast step forward to where we have been in the past, but I am not convinced it's going to make a vast --- I mean even if I do that, how much impact that is really going to make on colleagues if we don't get better structures in place, I don't know.

Respondent 16, Innovator, Old U

5.4.1.1.2 The Managed Learning Environment

At the beginning of the research period Old U had recently decided to support a particular MLE across the university. September 2001 was the date the first students at the university would be using the MLE “officially.”

Having a university-wide MLE was thought to have a number of advantages. One major benefit would be that promoting a MLE university wide would help to encourage the use of the web in teaching and learning. For example, a university approved MLE would lead to integration of centralised systems (such as student records) to assist with IDs and passwords for students. In addition, if only one MLE is approved then it makes it far easier for the centralised support to assist schools, departments and individual academics. As one participant commented:

But one of the key things that I see, and I think it's crucial, is that whether it's Web CT or Learning Space or some other web enabled learning environment, I think the software is quite irrelevant really, because what you do is change the systems and roles of people.... It's like say, using different word processors, you end up doing the same thing, don't you?

Respondent 18, Innovator, Old U

Two main advantages of the university adopting a MLE were highlighted in discussions with staff at Old U: 1) a MLE is easier for academics to use and will require less time commitment than creating individual websites and 2) MLEs often have features such as tracking what pages students visit most often, which may also be of benefit to the academic. These factors may encourage people to develop web materials for their teaching. Other factors discussed by participants included, the use of a MLE may also mean less support staff are required to load things onto the web as academics could do it for themselves. Despite this, a small number of interviewees commented that if the use of the MLE was to become policy then technical support

would still be required for those academics who had no interest / time to use the technology. Finally, having a MLE is likely to coordinate the look and feel of learning resources across the university because currently the look was not standardized once users moved from the main website. This was because in the past academics were free to use the web and design web pages as they wished. However, Old U now wanted to have a more coordinated look.

However, the adoption of the MLE was not compulsory and use would not be forced on any academic. Nonetheless, it was promoted across the university on a school-by-school basis. It was unclear at the time of the research what would happen to schools or individuals who had developed different systems and in some cases their own MLE.

An important theme that arose from discussion with interviewees about the disadvantage of the MLE was that the choice of MLE had been rushed. It was felt by some that the decision had been based on factors such as cost and the need to progress things forward before Old U fell too far behind competitors. No one wanted to be quoted directly, but individuals felt that, while they could see the reasons for having to make the decisions, the final choice was not necessarily the best one in the long term for the institution. However, a smaller proportion of interviewees felt that it was irrelevant what MLE was chosen as any MLE would help to put the relevant systems in place to help cultural change. Nevertheless, changing MLEs may have training implications and academics may be reluctant to use a completely different package in five years time.

The introduction of the MLE across the university had been a consciously gradual process but despite this at the time of the research a number of interviewees commented there were still problems. The main themes discussed (in order of importance) were: lack of coordination of centralized systems, the MLE was difficult to use, and a lack of innovation in the way the MLE was used. Other less discussed factors included: the difficulty of getting academics to give material that would be put on the web by a technician, intellectual property rights, shelf life of package and suitability of package for different disciplines.

Although the difficulties were trying to be resolved, Old U had problems coordinating all the centralized systems for the MLE to work smoothly. Schools tended to keep different data sets (containing various different bits of information) and it was difficult to obtain data required for the MLE from central services. This led to difficulties in registering all students onto the MLE, which resulted in problems with academics trying to get passwords for their students, and could cause delays in students accessing the module websites (particularly if students decided to change courses).

Some users of the MLE did feel it had made things easier for them as they did not have to learn how to develop web pages and they liked the design. However, the majority of discussants felt that the MLE was still fairly difficult to use compared to other MLEs. This had led some to argue that despite the availability of the MLE, technical support was still required at school or department level to put materials on the site for academics.

A further problem was that the availability of a MLE did not necessarily result in a lot of academics using it in any major way to teach. There was a tendency that MLEs may encourage some material to be placed on the web, such as course notes and calendars, but nothing more innovative. As one innovator commented,

But we don't use [the MLE's] full capabilities and in a sense then it becomes just a place where notes can reside.

Respondent 22, Innovator, Old U

5.4.1.1.3 Training and one to one support

At Old U there was central support available to help academics use the web for teaching and learning. Academics could go on training courses run by the centre and/or ask for one to one advice in addition to, or instead of, the training. While the centre was responsible for various training courses and advice, here the focus will be on the university approved MLE. The central support largely responsible for training and one- to-one advice was split into smaller teams to work with different schools on the campus. Each of these teams worked slightly differently and had different relationships with each of the schools or departments they were assisting. This depended in part on the technical ability of the academics in each school and how long training and support systems had been in place for that part of the campus.

Training for the MLE tended to be delivered either on university wide programmes or in some cases on a school-by-school basis. When providing training for a school this was occasionally for all support and academic staff in a school or just a group of academics from the same school. The success of the staff mix to some extent depended on the culture and nature of that school. As was noted by training staff different academics had different needs both in terms of discipline, level and instruction; and training devoted to a specific school may help to overcome some of those problems. However, at the time of the research the level of the courses were fairly basic. Some trainers did feel they would like to show more advanced uses of the MLE, but this was problematic as it would lead to an increased workload and they simply did not have time a) to design the examples and b) deal with the further support for staff that wanted to use the web in a more complex way.

The process of providing training and then the follow up of one to one advice when required was viewed as fairly successful although the success rate did vary. The training was thought to be useful, but one further advantage was that staff found out who to contact in the university for assistance should they run into difficulties. This follow up was perceived as very important to the success of the training. The success rate (measured by number of academics using the MLE) varied. Some trainers reported almost 50% of academics that attend a training course continuing to use the MLE whereas some discussed rates of 15-20%.

Trainers were expected to be proactive, encouraging people to go on training and following up their progress afterwards, but this was often difficult in practice because there was a feeling that people could and should not be forced to start using the MLE (and, in particular it was harder to persuade senior members of staff) and also because of the very small numbers of central trainers available to support a very large number of academic staff. Indeed, while the approach described above appeared to be working, it was a very time consuming process. As one member of support staff commented,

To a certain extent I hope they don't find out about me because I could do without the extra work, occasionally I sort of put off contacting people in case they ask me to do something, which isn't really what should be happening and I really need to do more to sort of support people who want to put something on-line and look at the use of computers as another medium if you like in their teaching and there just isn't the time to deal with everybody.

Respondent 20, Central Support, Old U

To try to overcome this difficulty schools were encouraged to provide their own IT support as well. However, there was a general recognition from central managers that there needed to be more staff for the roll out of the MLE to be successful. However, given the current financial situation at Old U it was unlikely there would be more staff recruited. In addition, existing support staff required training to adopt to the new roles required of them, and similar to academics, the changes in role required could make staff feel uncertain and slightly threatened. There were moves within central support to overcome these problems through providing staff with relevant training and information about what their future role would be.

One particular staff shortage was the lack of instructional designers or staff who had the pedagogical knowledge about the use of technology in teaching and learning. Central support was trying to address this. However, at the time of the research, current IT trainers were not comfortable in offering pedagogic advice (that may be very difficult to separate from the teaching side).

5.4.1.1.4 Other initiatives at Old U

There were other initiatives / factors that may contribute to cultural change at Old U that were discussed by a small number of interviewees. Firstly, the development of a new framework for the Old U website which provided templates for schools and individuals to use for all forms of content they wanted to place on the website. This new system was customer focused, i.e. users would see different information that was specific and appropriate to them. Secondly, a research centre that was separate from central support that researched new technologies in teaching and learning. Schools could pay to join the centre and its findings may or may not be taken up and supported by central services and the university as a whole. Finally, research was also undertaken by central support into using technology and teaching. As will be discussed below research into this area was felt to be very important to ensure the

technology was being used most appropriately and that the university as a whole could move forward in a theoretically informed direction and remain innovative.

5.4.1.2 Central Initiatives at New U

5.4.1.2.1 Central projects

New U had a central unit, set up in 1994, to encourage the use of technology in teaching. It was funded in part from money from HEFCE. Staff could bid for money and the unit also carried out its own research and was allowed a great deal of freedom to use the money as appropriate.

The bids submitted to the unit had to be in line with the learning and teaching strategy. Academics could bid for money to buy out time or buy equipment in order to put systems in place so that the project would not stop when the funding finished. However, for some innovators while buying out time would have been very useful it was not achievable, because of a lack of part time / casual lecturers working in that particular field and the time it took to prepare the replacement lecturer.

One person in the unit ran some training sessions for staff from all faculties and offered one to one training. The unit also offered support and advice when required. This was perceived as an important benefit by those innovators who had used the resource. As one innovator commented,

It is quite isolating and if I hadn't had [head of unit] downstairs I think I would have folded a long time ago. I would have said, "oh, this is hopeless".

Respondent 7, Innovator, New U

It was hoped that the central projects was one way of encouraging appropriate use of technology in teaching. This was achieved through only funding projects that were thought likely to add value to students learning and rejecting projects that were unlikely to add a great deal – such as placing lecture notes on the web.

The unit ran a number of sessions and produced publications to discuss the results of projects and to help others in the university to become interested and perhaps begin to use new approaches to their teaching. It was felt that the use of projects was a more useful way of changing the culture of the institution than more top down processes, though it would be a gradual process.

To try to increase the adoption of the use of the web to enhance teaching there were a number of interest groups at different levels, and a variety of publications / newsletters that were disseminated across the university. Innovators ran their own interest groups to disseminate more directly in their faculty (see interest groups below). There were also university wide meetings held by the unit and chaired by the pro vice chancellor for teaching and learning. These were felt to be useful, as one participant explains:

Because there is always the risk of --, I mean [name of central project]...was very much a bottom up approach, get staff on the ground level enthusiastic and the others will see and follow because so many times top management meetings have ended up with good noises being made by people who have been in the meetings, but it never filtered down. So bottom up seemed to be the best way, but if you can actually get all levels involved and all levels talking to each other, you know even better. And that seems to be the way the learning and teaching forum is going, it is a mixture of people who are interested and who seem to get things done, and who seem to be listened to as well. It seems to be a good group.

Respondent 25, Central Support, New U

However, as with Old U, for others the projects had not had as great an impact as they would have liked. Some innovators felt this was due to the lack of rewards for people to take part and lack of time (as discussed in section 5.3). The unit was also very small and the workload for the two members of staff who provided all support, coordination and training for all the projects across the university was very high.

5.4.1.2.2 The Managed Learning Environment

New U was still considering what, if any, MLE the university should adopt. However, while there was no university wide MLE some individuals and schools had adopted one.

Although only a small proportion of interviewees had knowledge / experience of a MLE one main advantage that was highlighted was the possibility of integrating all the management systems and making it easier for the university to support academic staff with the appropriate technology.

A second main advantage was how easy the MLE was to learn and features, such as tracking, that an academic might find helpful to determine which parts of the site students used the most and aid in development of the site. Indeed, ease of use was

one of the reasons why some innovators had used a MLE. One innovator made the point that as it was easier and thus less time consuming to use a MLE than building an individual website. Thus, academics would find it easier to drop an idea if it was not working or try something out and build on it if it was successful:

I talk about using different levels of granularity. You are actually working with large building blocks [when using a MLE] and because you work with large building blocks it's very easy to build something very quickly and try it out. If it works you continue with it if it doesn't work it's not a big loss. People who tend to do websites tend to spend a lot of time doing lots of individual bits of html and you then end up with the sort of scenario where they spend a lot of time on this and they are not prepared to throw it away because of all the time invested in it.

Respondent 26, Innovator, New U

However, not all academics would use a school-wide MLE to its full potential and often academics would use it as a place to put course information and nothing else. This may not be a major concern as the use of the web may not be appropriate for a particular module, due to factors such as content and student numbers, and if the students were part time or full time. As one innovator pointed out, optional use was the most appropriate way forward,

So you can chose to bring things in and out to meet the individual needs and there isn't anybody turning round and saying you must do it in a particular way and that approach actually I think works quite well and fits within the sort of problems of actually managing academics. Because as one of my colleagues said, to try and manage academics is rather like trying to herd cats and just down the line you don't really want to be putting too much pressure on but you can do it by osmosis.

Respondent 26, Innovator, New U

While the advantages of a university approved MLE were acknowledged; it was felt that the MLE should be chosen with care. As one innovator commented,

When we know our content and we have got the right generation of MLE creators or whatever the right software is, it has been tested, it's been proved, it's been evaluated, the students like it and it actually aids teaching, it aids learning and it does all the things that we want it to do and it's cheap then we can just start to push it...At the moment I don't think we are there.

Respondent 12, Innovator, New U

5.4.1.2.3 Other initiatives at New U

Further initiatives were teaching fellowships that were offered by the central unit. Teaching fellowships provided academics with an opportunity to apply for an extra incremental point for three years by providing evidence that they were a good teacher, were trying to teach innovatively and disseminate their findings to others in the discipline. Innovative teaching may not involve the use of technology but it had to facilitate the university's learning and teaching strategy. While those who had applied found it useful, others who had not applied felt it was too small an amount to be an incentive. As one participant commented,

A grand a year so, you know...they are hardly raining cash down.

Respondent 8, Innovator New U

Interest groups had also been tried by some innovators and some schools in order to encourage other academics to use the web or other innovative approaches in their teaching. Although they were thought to be useful there were difficulties. One was that not everyone would attend these types of sessions and it was often those who were already interested who attended. In one school interest groups had been made a more formal process by the school, i.e. individuals were arranged into groups, that had to meet on a regular basis and minutes were taken, but were considered by an innovator in that school to be artificial, and naturally occurring interest groups worked better.

5.4.1.3 Other factors that may influence adoption of new technologies for teaching and learning at Old U and New U

At Old U and New U participants identified several other factors they felt might encourage the use of the web for teaching and learning.

5.4.1.3.1 Staff

At Old U and New U interviewees felt that innovators, with their experience and enthusiasm, may be able to help promote cultural change by encouraging their colleagues to use the web and / or providing assistance because of their knowledge in this area. Often, innovators discussed only helping those who were already interested, but had a limited effect on the rest of the teaching staff. Furthermore, some felt innovators might not help encourage others to begin to use the web, partly

because the use of the web was then seen as someone else's job and also because innovators were viewed as some kind of elite by other members of staff.

Many interviewees at both universities felt that younger academics coming into university were more likely to adopt the use of the web in their teaching, and that it was harder for people who had been lecturing for many years to change their role and develop new skills. This increase in the use of the web by new academics may also have been encouraged through the PG Cert that new lecturers were required to complete. However, many thought this course would only be effective when staff actually wanted to go on it.

5.4.1.3.2 Students

At Old U and New U a factor that was thought could contribute to the increased use of the web for teaching and learning was student demand. Some participants thought that students tended to expect it when they came to university, though others thought the demand would only arise after using the web and seeing the benefits for their learning. This student demand would encourage more lecturers to use the web in their teaching. At New U a small number of interviewees suggested that students who were very knowledgeable about the use of the web may help and encourage the lecturers to use the technology in innovative ways.

5.4.2 What is required for increased adoption of the use of the web for teaching and learning?

As stated above, it is impossible to predict precisely what effect any initiative or factor at an institutional / faculty / school / departmental or individual level may have on the culture of the institution. Respondents at both universities discussed whether the university should have more top down approaches to encourage academics to use the web for teaching and learning, or if it should be more bottom up, or a combination of the two. Some respondents at Old U discussed the more top down and perhaps more successful approaches of other universities. However, as highlighted above a top down approach was unlikely to work given the nature of the institution, the lack of resources associated with policies to encourage academics to use the web, the unwillingness of staff to be told what to do, and the appropriateness of everyone using the web. Nonetheless, a potentially more top down initiative could

be effective on a large scale whereas bottom up change may be fairly effective on a much smaller scale.

It was clear from discussions with interviewees from both universities that if the university decided to move towards increased use of the web for teaching and learning then a mixture of bottom up and top down approaches would be the most desirable. As one middle manager from New U commented:

So what you can do top down is to provide a certain amount and to steer all the issues but in the end that won't work unless it's bottom up, and so I think what you have to do from the top is to try to create the environment for staff who wish to make developments are supported and it's not regarded as something that you have to do on top of your normal workload and never get any support for that, because if it's left like that it just won't work, it won't --- it won't happen.

Respondent 6, Middle Manager, New U

Essentially, for any central move in this direction to be successful then there was the need for significant resources to support the initiative. Resources were required for a number of different areas. Resources were needed for technical infrastructure, technical / support staff, and research in order for university wide policy to be encouraged. For example, one innovator explained at Old U that it was all very well to encourage academics to use the web in teaching, but this had to be "joined-up" with enough computers for students to use, technical equipment in lecture rooms to meet the demand and more support staff with a variety of different skills within the university were required. From a senior manager's point of view at Old U a possible model could be a team of people an academic could come to. The team could involve a technical advisor, the academic, a knowledge manager i.e. someone who knew about the resources in that subject area, a multimedia and video production team and an instructional designer.

As there is not a great evidence base for what works and why in using the web, there needs to be more research to determine if it is in fact worth the extra effort and costs in the short term for long-term benefit or enhancement of learning. As a senior manager at New U commented,

Web-based learning is unbelievably over hyped at the moment without any serious intellectual analysis of what aspect of e-learning is likely to be good and what aspect of e-learning is likely to be barking mad. It is the wrong way to use the technique and also we haven't examined well the nature of knowledge and the nature of how people learn so I think there is enormous amount of guff going on at the moment and the only sensible way through it is to allow a limited number of experiments to see if people learn from their failures as well as their successes.

Respondent 15, Senior Manager, New U

At Old U, a small number of interviewees thought one possible solution to the need for resources would be to go into partnerships to help fund developments and help to keep as up to date as possible. As one innovator commented,

I think it's a resources question at the end of the day. We are not going to get good programmes except by having serious amounts of time put into the development side. I am not convinced that we can do this locally or individually; we have got to look at levels beyond the university itself.

Respondent 23, Innovator, Old U

5.5 The future of the university

Each interviewee was also asked about the future of the university and where they thought the university would be in five years.

5.5.1 Old U

Interviewees from Old U felt that it was difficult to predict the future of Old U as the university was in a period of transition and many decisions had to be made, e.g. about the direction to go in and the amount of investment in technical infrastructure, so currently it was difficult to see the role of the web at Old U in the long term. However, in general it was felt there would be increasing use of the web for campus based students, but this would often be used as an enhancement to current teaching methods, to link up students on placements, and may help with providing more flexible degrees and more choice for students. The web would not have a great role to play in teaching and learning for the campus-based university:

Where I have more difficulty from either Old U or from my previous institution I worked in is to see whether e-learning will in a short period of time replace undergraduate full time study residentially based I don't think so. So I am not one that subscribes to the view that within a 5-year period we will have empty campuses and everybody will be sitting on their computers at home.

Respondent 10, Senior Manager, Old U

The look and feel of the Old U website would change and be compartmentalised for various customers (e.g. prospective students, current students) as described above over the next five years. In addition the approved MLE for the university may change.

It was expected that there would be an increasing amount of distance learning, particularly for students overseas via the web and the university would continue participation with other international collaborative initiatives in e-learning.

While many thought that there would be increased investment in areas to improve security systems, technical infrastructure etc, the financial circumstances of the university made this difficult.

5.5.2 New U

Similar to Old U, interviewees felt it was difficult to predict the future of New U, although again the web was not thought to have a major role in campus based learning in the next five years. It was likely to be used more to enhance campus based teaching and for assessment purposes. However, it would not often be used as a replacement. This was partly because of the demand for face-to-face campus based teaching as opposed to distance learning via a computer. One senior manager summed up the future of New U:

In terms of the nature of instruction I do not believe there will be any significant changes at all either 1st order, 2nd order or even 3rd order. There will be isolated parts of particular aspects of certain curricula that are taught in different ways and there will be improved access to data and information through the digital library and through web discussions and stuff like that. So to that extent I don't see any significant change. There will be limited growth in student numbers because I am running out of capacity...An interesting question is whether we will chose to grow student numbers or whether we will do other work for people who pay better...But I don't think the growth of this institution will be significant in undergraduate, traditional undergraduate entry I just don't unless the government changes the student support regime which it might ...So [New U] will remain stuffily solvent not looking to grow in full time undergraduate--try to be market responsive and does not believe it is going to get rich by plugging computers into the wall.

Respondent 15, Senior Manager, New U

From discussions with other participants looking at school and faculty level at New U the following themes were raised: increased collaboration with industry and other FE and HE institutions, increasing amount of online use as a supplement not a replacement to face to face teaching, increased flexibility, more distance learning and the development of a research culture and attracting more postgraduate students.

5.6 Summary

It is perhaps useful to summarise the themes highlighted in this chapter since they will be discussed in more detail in relation to the national context and the specific cases in chapters 8 and 9.

The main changes in both universities in the past ten years have been:

- Increases in student numbers and some changes in student characteristics
- Decrease in funding
- For New U the change from a polytechnic to a new university

The main motivations for universities to use technology in response to these changes:

- Dealing with increased numbers of students with less funding
- Flexible delivery
- Distance learning

The main reasons for universities not to use technology in response to these changes have been:

- Inappropriateness of technology
- Funding
- The lack of evidence
- Demands from students for more, not less, contact time with staff.

The main reasons for academics not to use the web for teaching and learning have been:

- Lack of time
- Fear of change in role (particularly at New U)
- Lack of interest in using technology/ changing current method
- Lack of technical skills
- Lack of technical support (particularly at Old U)
- Course constraints

The main motivations for innovators to use the web in teaching and learning were:

- Enhancing teaching and learning
- Personal reward – interest in technology (Old U)
- Personal reward – interest in teaching innovatively – often enhanced by a teaching qualification (New U)

The main difficulties for innovators to use the web for teaching and learning were

- Time
- Technical infrastructure
- Lack of synergy between departments involved in the MLE (Old U)
- Lack of recognition of teaching within the institution (Old U)

Initiatives that may help to promote the adoption of the WWW for teaching and learning across each university were:

- Central projects
- Approved MLE (Old U)
- Training and one to one support (Old U)
- Interest groups (New U)
- Teaching fellowships (New U)

Other factors that may help to promote the adoption of the WWW for teaching and learning across each university were:

- Innovators
- Teaching qualification
- Age of staff
- Student demand

Further factors that may be required if each institution is to adopt the WWW were:

- Mix of top down and bottom up policies
- A large amount of investment

In both universities the web was thought to play an increasingly important part in teaching and learning in the future, but would not replace current teaching methods.

In this chapter the institutional and national contexts have been explored. In the following two chapters the findings from each of the case study modules are considered. Chapter 6 summarises the main themes arising from the research of the three modules at Old U and chapter 7 the themes from each module at New U.

6. Results Chapter 2 - the Modules at Old U

In this chapter the results from each of the three case study modules at Old U are analysed in turn. The analysis is based on seven data sources. The process of data collection and analysis are detailed in chapter 4. In summary, the sources of data construction are:

1. Questionnaire 1 to determine student characteristics, prior experience of using the web and expectations of using the case study site for the module. Typically, this questionnaire was distributed to the students in a lecture at the start of the semester, after being briefly introduced to the website.
2. Questionnaire 2 to determine students' use, opinion and experiences of using the case study site for the module. Usually, the questionnaire was given to the students at the beginning of their final lecture.
3. The ASSIST inventory to determine if students employed a surface, strategic or deep approach to learning. Ordinarily the inventory was given to students in the sixth week of the semester in a lecture, but has not been used in the analysis (see chapter 4).
4. Semi-structured interviews with students to determine in-depth opinions and use of each section of the case study site. In general, the interviews took place in the second half of the semester prior to questionnaire 2.
5. A focus group to determine opinions and experiences of using the web for teaching and learning for the case study site and in general. The focus group took place at the end of the second semester, after questionnaire 2.
6. Semi-structured interviews with the case study lecturer, to determine the way the module was conceptualized and produced, the aims of the module, and the departmental context. The interview took place at the end of the semester.
7. Analysis of the website to determine usability factors, such as navigation and presentation, and content of the site.
8. Analysis of on-line contributions where appropriate.

The first section of this chapter explores the use of a MLE as a supplement to a module for students reading a degree in Law. The second section highlights the main themes that arose from the study of the use of a website for Dentistry students and the final section focuses on the use of a website as a supplement to a module for English students.

6.1 Case study 1

The case study website was developed for first year law undergraduates and designed as a supplement to a first year module. The lecturer, an enthusiast who had used technology in his teaching for over ten years, had developed the site as part of a successful bid to the central unit in the university (see chapter 5). The project aimed to place a variety of materials on the web for the module, and eventually to create similar sites for all the modules within the school. To assist with this goal, the lecturer had chosen to use the university approved MLE and had employed a computer officer to assist other staff in the school develop web-based resources. The research was conducted during the first semester the website had ever been used by students. The discussion below highlights the main themes identified from analysis of seven data sources:

1. Questionnaire 1 distributed to the students in a lecture at the start of the semester, after being briefly introduced to the website. The response rate was 84%
2. Questionnaire 2 given to the students at the beginning of their final lecture of the semester. The response rate was 40%.
3. The ASSIST inventory that was given to students in the sixth week of the semester in a lecture. The response rate was 83%.¹⁶
4. Semi-structured interviews with 12 students took place in the second half of the semester prior to questionnaire 2.
5. A focus group with 4 students that took place at the end of the semester.¹⁷
6. Semi-structured interview with the case study lecturer at the end of the semester.
7. Analysis of website.

The discussion below is split into six sections. The first explores the purpose of the WWW in the case study module with reference to the departmental and institutional contexts. The second summarises the basic characteristics of the student body. The third explores students' use and proposes some potential reasons why students use the web in this way. The fourth investigates the potential influence the use of the web

¹⁶ 151 students completed questionnaire 1, 72 students completed questionnaire 2 and 149 completed the ASSIST. There were a total of 180 students who took this module. Non-response occurred because students were not in the lecture.

¹⁷ Before the first questionnaire and the ASSIST inventory was distributed to the students, they were asked if they would like to take part in a semi-structured interview or focus group. 36 asked to take part in the interviews and 8 offered to take part in a focus group. All were contacted but due to inaccurate numbers and students not turning up when asked to, the final sample were as above.

may have on relationships between staff and students; and the fifth considers student demand for the use of the web in teaching and learning. The final section provides an overview of the findings.

6.1.1 Aim and content of the case study website

The website contained a comprehensive set of resources that covered all aspects of the module, e.g., information about the course, copies of materials given to students in lectures and extra resources including links to newspaper articles, relevant web sources, and study skills websites. The site was designed to be a supplement to the existing course; it did not replace any part of the module. The use of the website was not assessed. While students were expected to make contributions to the discussion board there were no consequences (in terms of assessment) if they did not use the site, though, students were aware that the lecturer could, and did, track their usage of the website.

The principal reason for the lecturer to use the web was to increase student interest in the subject and enhance motivation, by increasing the ease of access to a range of additional and varied resources. A further motivation was that, from previous experiences of using technology in teaching, he believed there to be some form of educational benefit for the students. Also, he enjoyed using computers.

The lecturer had decided to use a MLE because it would provide a means of integrating all the different resources on the web into one place and believed it would be an efficient, easy resource for the students to use. Also, institutional support was available to assist him in developing the site and to aid him in promoting the use of the MLE across the school. The website was not really designed to help improve the sense of community among students and staff in the school, yet he felt there might be a place for the MLE to overcome the likely social implications of teaching students in larger groups (due to rising student numbers) in the future.

While the lecturer acknowledged the benefits of the university approved MLE, there were also difficulties; from a designer's point of view the MLE was not straightforward to use and there were a lack of incentives for staff to use the technology (see chapter 5).

Figure 6.1.1 provides a map of the case study website. The site has fourteen main sections.¹⁸ For the purpose of analysis, each of these sections has been categorized into three areas: module information; text based supplementary learning materials; and interactive tools. Here, content refers to the specific features that are on the website, not to the accuracy or relevancy of the content. Distinctions are not discrete or clear cut and one section may fall into more than one category (e.g. lecture handouts provide information about the subjects to be covered, but also provide a supplementary text based learning material) but has been done to clarify reporting on this site.

6.1.1.1 *Module information*

Module information comprises: 1) *basic information*; 2) a *module outline*; 3) *projects* (that contains details of their assignment); 4) details of student *supervisions*; 5) a *calendar* of events; 6) a facility for students to determine their *marks*; and 7) a *resource* section including news related to the module and answers to FAQs about the course. These sections may be useful if the students have lost / not received the information elsewhere (e.g. on paper) and it allows them to access up-to-date information wherever they might be. They may help students organise their time and increase their awareness of the information / resources available to them. Further, this facility may save the lecturer time, as students can find out a great deal of information via the website as opposed to contacting the lecturer. This may be of particular benefit with a large number of students.

6.1.1.2 *Text based learning materials*

Text based learning materials comprise: 1) a *topic outline* that provides an overview of the module with links to other handouts / notes given to the students in paper based and web-based form; 2) a section on *exams and tests* including an exam paper database and self test questions (see section 6.1.1.3); 3) a *resource* section that contains information and web links on study skills (other parts of this section are

¹⁸ As can be seen from figure 6.1.1 there are 18 sections including the home page. Here, the two surveys have been analysed together, and the print and search facilities not considered in this section. The numbers along the top of figure 6.1.1 represent the following pages: 1) Home page; 2) Magistrates Survey; 3) Drink Drive Survey; 4) Exams and Tests; 5) Module Outline; 6) Topic Outline; 7) Mail; 8) UK Legal News; 9) Calendar; 10) Supervisions; 11) Print; 12) Rape and CJS; 13) Projects; 14) Resources; 15) Discussions; 16) My Marks; 17) Basic Information; and 18) Search. The remaining numbers in the boxes below represent the number of pages of a certain type that can be accessed from the previous page.

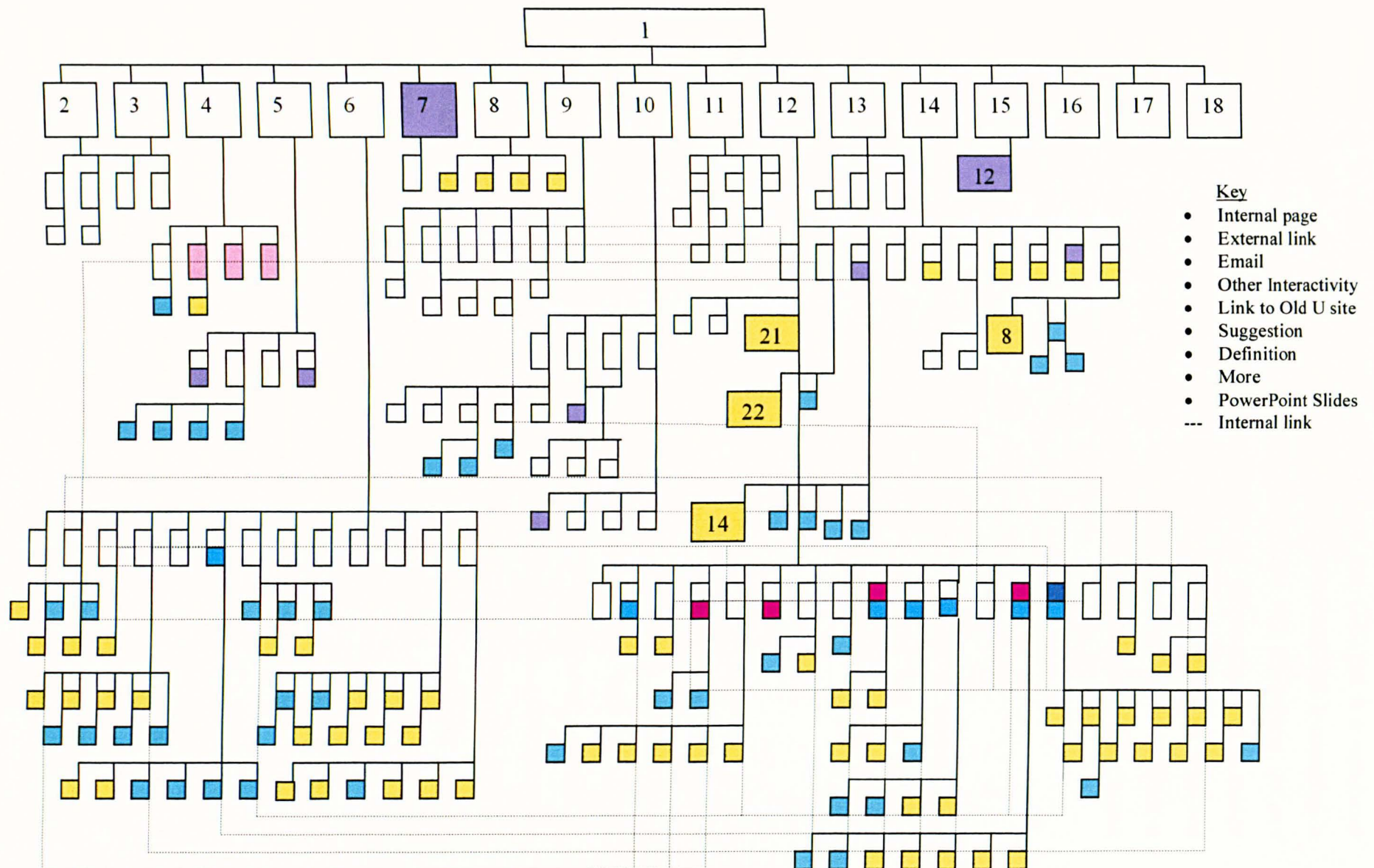


Figure 6.1.1 Map of case study website 1

discussed in 6.1.1.3); and 4) a section entitled, *Rape and CJS*, that is a web-based version of a paper based booklet containing details of the material that is discussed in lectures. The booklet is designed to be used in conjunction with the lectures, not as a replacement to them (the links contained in these pages will be discussed in section 6.1.1.3). These kinds of resources are helpful for students to prepare for class and enhance understanding of what they have learned in lectures and seminars (Bonk et al., 1999:12) and may help students who need to refine and develop new skills as part of their degree.

6.1.1.3 *Interactive tools*

Seven sections can be classified as interactive tools: 1) a set of external links contained on each of the *Rape and CJS*, the *UK Legal news*, and the *resource* sections of the website; 2) self test questions on the *exams and tests* section; 3) the *surveys*; 4) a *discussion* board; and 5) a *mail* facility.

The external links available on three sections of the site may be beneficial as they may encourage students to explore the topic in more depth, help them to gain an overview of the topic and stimulate personal interest in the subject, particularly as a consequence of the ease and convenience of access. The tutor encourages contributions from students and this may enhance a collaborative approach to learning (Bonk et al., 1999:6). The self-test questions on the exams and tests section of the website enable students to receive instant feedback, allow students to test their knowledge / understanding throughout the module and is useful for revision purposes. The site also contained two non-compulsory surveys that students were asked to fill in to help them to consider others' opinions on a particular topic. The mail facility allows students and staff to communicate with one another and this facility may encourage and enhance communication between students and staff.

Students are required to use the discussion facility at the beginning of the module to discuss their experiences of magistrates' courts and is restricted to the students and tutors on the module. The facility may: encourage student to student and tutor-student communication (Barron, 1998:364); help students who are shy in seminars to have their say (Chickering and Ermann, 1996:4); and encourage students to try their best as they are aware their work is on show (Bonk et al., 1999:8). In this case students were required to use the board, but their contributions were not assessed and

perhaps this is one way of ensuring issues are, to some extent, debated freely but encourages students to use the facility.

6.1.2 Student characteristics

As can be seen from table 6.1.1 the majority of students can be described as “traditional.” Of the 151 students who completed the first questionnaire 61% (92) of the students were female and 39% (58) were male. One student chose not to answer the question. The majority, 86% (128) of the students were aged between 18 and 20, and 14% (21) students ranged in age from 21-43. The details are provided in table 6.1.1. Two students did not answer the question. Prior to entering university the majority 89% (135) of students had completed A-levels, 5% (7) an access course, 0.5% (1) student had done a BTEC ND, (1) 0.5% student had done a degree and 5% (8) students had done an international qualification such as a Baccalaureate.

Age Range	Number of Students	Percentage
18-20	128	86%
21-23	8	5%
24-26	5	3%
27-29	2	1%
30-32	2	1%
33-43	4	3%
Total	149	100%

Table 6.1.1 Students age

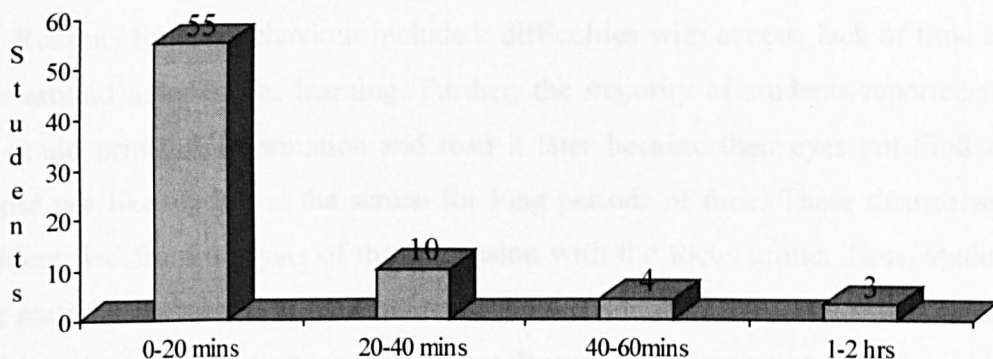
6.1.3 Student use

This section is divided into three areas: the amount of students use; reasons for use; and factors that may have affected students’ use and opinion.

6.1.3.1 *The amount students used the website*

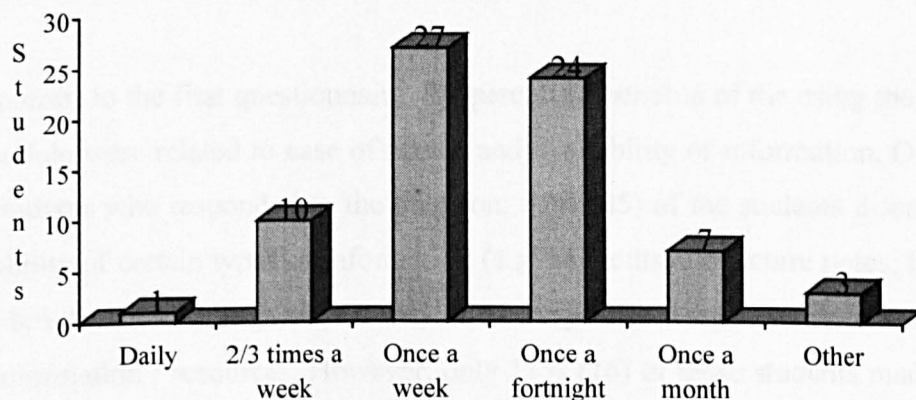
An important factor to consider is the extent to which students used the site, and how much they used the resource in relation to other available sources. As discussed in chapter 4, each method is used, in the main, to explore different parts of student use. Thus, in the sections below, the findings from each method are discussed separately to provide a comparison of the picture provided by each approach.

Questionnaire 2 asked the students to estimate the amount of time, on average, they spent each time they accessed the site. As can be seen from graph 6.1.1, typically students used it for short periods of time, between 0-20 minutes.



Graph 6.1.1 Typical period of time spent on-line for the module website per session

Respondents to questionnaire 2 reported using the site typically on a weekly basis. The results are summarised in graph 6.1.2.



Graph 6.1.2 Number of times accessed the case study website

From the questionnaire data, students reported using the site for brief periods of time, typically on a weekly basis. There was no relationship between the amount of time spent on the website per session and the frequency with which students reported accessing the case study website (see section 11.4 of the appendix). Self report data may be inaccurate, for example, it is based on recall over a period of time and students may exaggerate the amount of time they spent on-line for the module, yet it can still be assumed that the actual amount of time spent on-line is likely to be fairly small. The amount the interviewees reported using the site varied, but, in general, these students were more frequent users than the average reported from the

quantitative data.¹⁹ When discussing their on-line behaviour, half of the interviewees described browsing the MLE whereas others only went to the MLE for a specific need. Reasons for this behaviour included: difficulties with access, lack of time and issues around independent learning. Further, the majority of students reported that they would print off information and read it later because their eyes got tired and they did not like staring at the screen for long periods of time. These themes were also identified from analysis of the discussion with the focus group. Thus, students using material they have printed off from the website at a later date as opposed to working on-line may, in part, explain the small amount of time spent on-line.

6.1.3.2 *Students' opinion and purpose for using the site*

As noted above, the different methods employed to explore the students' perspective tended to measure slightly different aspects of the phenomenon. Thus, for clarity, the first part of the discussion explores the findings from the questionnaire, and the second examines the data constructed from the qualitative methods.

From responses to the first questionnaire, the perceived benefits of the using the web for the module were related to ease of access and availability of information. Out of the 149 students who responded to the question: 57% (85) of the students discussed the availability of certain types of information (e.g. handouts and lecture notes, links, and module information). Implicit in many of the responses was the value of module specific information / resources. However, only 11% (16) of these students made an explicit comment to this effect. A second important theme highlighted by 23% (35) of the students was the convenience of accessing information, in particular, the potential to access the web from home and the value of the resource compared to using library. A third theme suggested by 11% (17) of the students was that the web may lead to improved communication either between students and tutors or students and students. A related theme raised by 9% (12) of the students was the use of the discussion facility to see others points of view. 11% (17) of the students discussed the benefit of having lecture handouts on the web in case they missed a lecture, and 7% (11) of the students thought the MLE would be a useful way of reinforcing what

¹⁹It is acknowledged the amount of use may have been exaggerated in order to "please the researcher", although it is likely those who came forward for this part of the research would be more confident and frequent users of the website.

had been learnt in lectures and supervisions and provided them with an opportunity to work at their own pace.

On the second questionnaire students were asked what had been good about using the web. In order of importance determined by frequency these were: availability of resources; convenience; discussing and viewing others opinions; independent learning and enhancement of student–student communication. Due to a low response rate of this open response question it is not considered in detail in this analysis. Yet there are similarities between these and the themes identified from the responses to questionnaire 1.²⁰

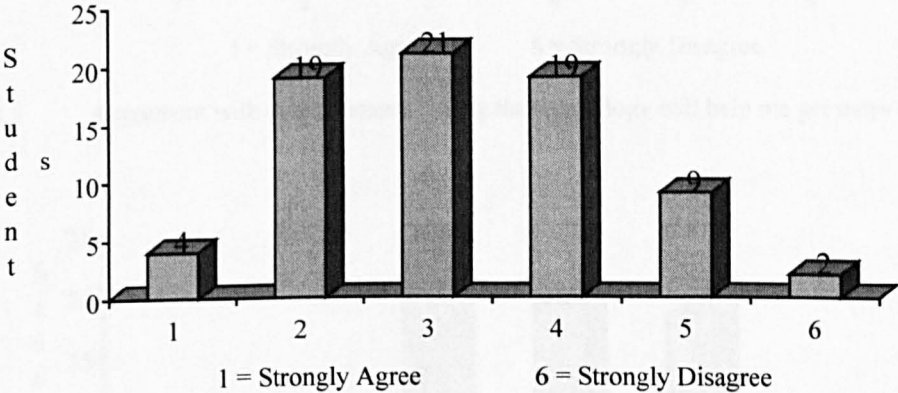
Responses to questionnaire 1 showed that the most common student concerns about using the web were the ability to use the medium and a lack of access to computers. Of the 131 students who completed the question using the system due to a lack of skills was a concern for 32% (42) of the students. 24% (31) of the students were concerned about access due to the limited availability of computers (e.g., that the computers would not work properly, lack of home access which put them at a disadvantage, and a lack of 24 hr access to the university computer facilities). 17.5% (23) of the students were concerned that they might miss important information that was on the MLE due to their inability to use the system either because of their own lack of skills or the complexity of the system; and because of difficulties of access. Lesser themes showed 9% (12) students had concerns about the type of information that would be available on the MLE, i.e., too much / excessive amounts of information to deal with, that the information would not be specific enough to be useful, and the questionable reliability of the information they would find. It is possible that some of these comments relate to the web as a whole and not the module. 5% (7) were apprehensive that the use of the MLE could lead to an over-reliance on the Internet and this was viewed negatively.

In the second questionnaire the students were also asked about what had been bad about using the web. Of the 49 students who responded to the question, the themes identified (in order of importance determined by frequency) were: access due to

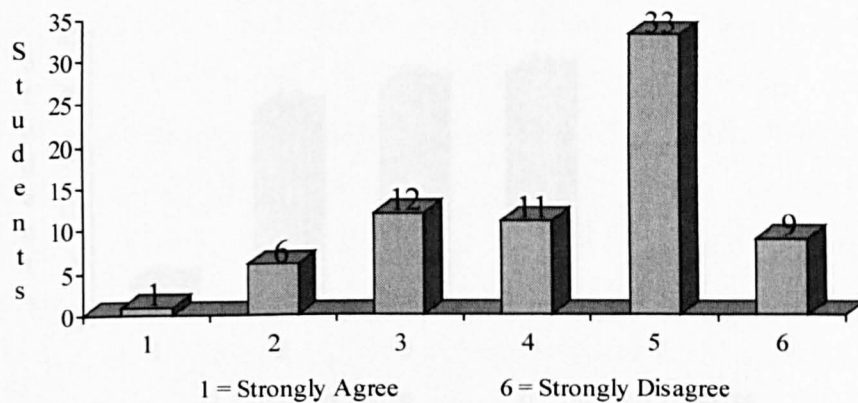
²⁰ Of the 72 students who began to answer the questionnaire only 49 students responded to this question. This may be due to a variety of reasons including questionnaire fatigue. As the number of students taking this course was 180. It is not felt that the response to this question can provide a suitable indication of the opinions of the whole group. Where the response rate on the second questionnaire is considered too low for this case is indicated throughout the remainder of this chapter.

availability of computers; access due to slow computers or computers that did not work; reduction in personal contact; and a minority of students did not find the kind of information available on the web particularly beneficial. Though the response rate is too low for any formal analysis this indicates that access due to the availability of computers was a concern expressed at the beginning of the module that was realised throughout the course, though initial concerns regarding skills did not appear to be a significant problem. Accessibility is discussed further in section 6.1.3.3.1. Indeed, problems with access may conflict with one of the main advantages of the medium, that is, convenient access to resources.

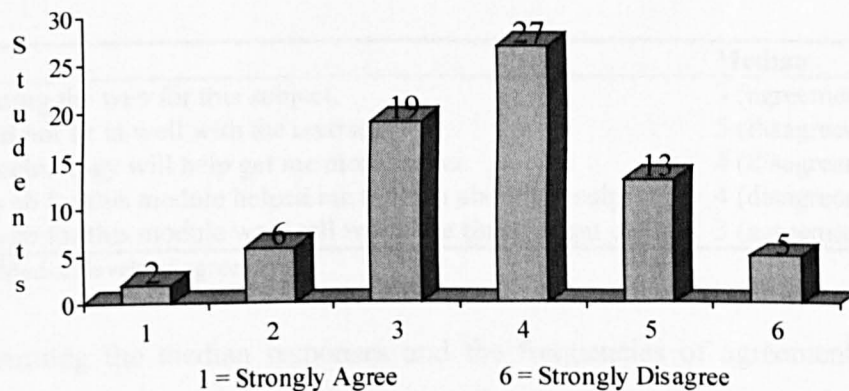
The second questionnaire gave students a series of statements and asked them to indicate their agreement or disagreement with each statement on a scale from 1 (strongly agree) – 6 (strongly disagree). In graphs 6.1.3-6.1.7 students level of agreement with the statements: *I enjoyed using the web for this subject; the web did not fit in well with the course; using the technology will help get me more marks; using the web for this module helped me to learn about the subject; and using the web for this module was well worth the time I spent on it* are summarised:



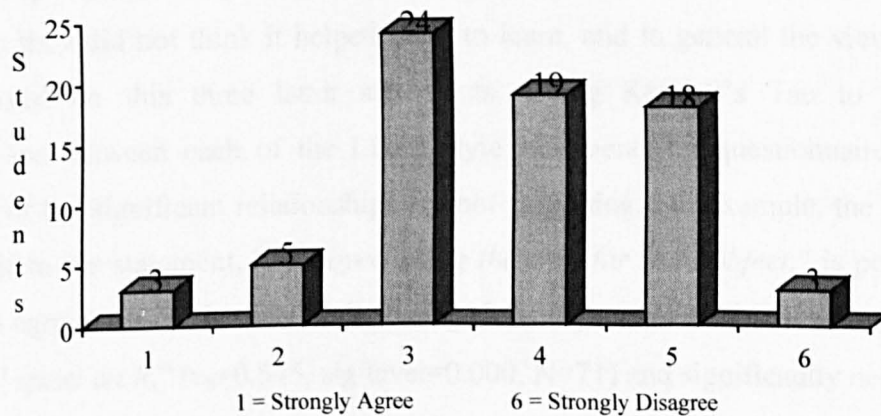
Graph 6.1.3 Agreement with the statement, “I enjoyed using the web for this subject.”



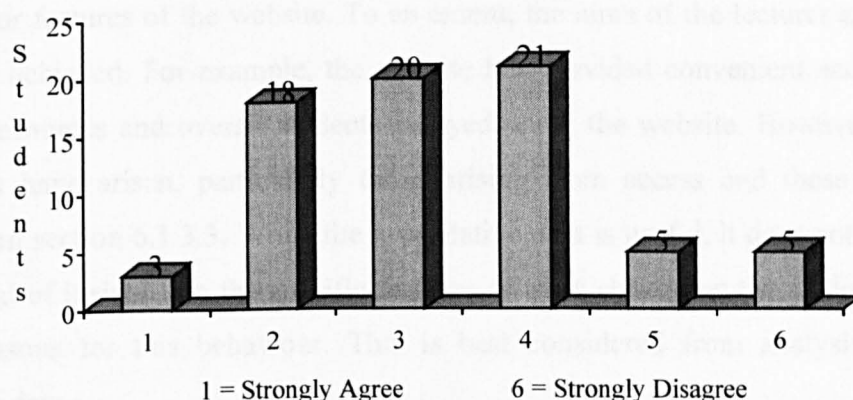
Graph 6.1.4 Agreement with the statement, "the web did not fit in well with the course."



Graph 6.1.5 Agreement with the statement, "using the technology will help me get more marks."



Graph 6.1.6 Agreement with the statement, "using the web helped me to learn about the subject."



Graph 6.1.7 Agreement with the statement, “Using the web for this module was well worth the time I spent on it.”

The median level of agreement for each of the statements is summarised in table 6.1.2.

Statement	Median
I enjoyed using the web for this subject.	3 (agreement)
The web did not fit in well with the course.	5 (disagreement)
Using the technology will help get me more marks.	4 (disagreement)
Using the web for this module helped me to learn about the subject.	4 (disagreement)
Using the web for this module was well worth the time I spent on it.	3 (agreement)

Table 6.1.2 Median levels of agreement

From examining the median responses and the frequencies of agreement to each statement the students typically did not think the use of the web would enable them to get more marks. However, they thought the web did fit in well with the rest of the course. They enjoyed using the web and thought it was worth the time they spent on it, though they did not think it helped them to learn, and in general the views were more mixed on this three latter statements. Using Kendall’s Tau to explore relationships between each of the Likert style statements on questionnaire 2, the direction of the significant relationships are not surprising. For example, the level of agreement to the statement, “*I enjoyed using the web for this subject,*” is positively related to agreement on the statement, “*using the web for this module was well worth the time I spent on it,*” ($\tau_b=0.545$, sig level=0.000, N=71) and significantly negatively related to, “*I don’t want to have more modules that involve the web,*” ($\tau_b=-0.485$, sig level= 0.000, N=71). Details of other significant correlations are shown in section 11.4 of the appendix.

Thus, from analysis of the quantitative data students appear to use the web for short periods of time, typically once a week and there may be off-line activity as a result of resources or features of the website. To an extent, the aims of the lecturer appear to have been achieved. For example, the website has provided convenient access to a range of resources and overall students enjoyed using the website. However, some difficulties have arisen, particularly those arising from access and these will be discussed in section 6.1.3.3. While the quantitative data is useful, it does not provide a great deal of insight into the specific features of the website that the students used or the reasons for this behaviour. This is best considered from analysis of the qualitative data.

As outlined in chapter 4, interviewees were asked to evaluate each feature on the case study website. Themes identified from the interviews, and where appropriate, the focus group data, are discussed below. Similar to section 6.1.1 the following analysis is categorised into three sections: module information, text-based learning materials, and interactive tools. Each of the sections are represented in figure 6.1.1.

Module information

Similar themes were identified in discussions about the sections of the site entitled, *basic information*, *module outline*, *projects*, and *supervisions*. In general, the majority of the interviewees had never used the information because they had previously received the information on a handout in lectures or from their supervisors. A minority did see a use for this information being placed on the MLE, e.g., if they lost the paper version and so they did not need to carry the paper based version around with them, yet few thought they would ever use the facility. Though handouts required for supervisions were useful for those students whose supervisor did not give them out in paper form. Features on these sections of the site that a minority of students thought they might use were: the facility to contact staff via email, timetabling information and a book list that enabled students to buy the books before the typical rush at the bookshop at the beginning of term.

The *calendar* was reportedly used or scanned by a minority of students prior to the interview. Students who had not used the facility explained it was because they were told the information in lectures or they did not realise the calendar was available. Interviewees were typically surprised by the amount and detail of the information,

but while many thought it was useful they were not convinced they would use it in the future, unless they were browsing the MLE. Some students suggested improvements to this part of the site: adding more information about events in the law school, for the facility to be updated more frequently, and for details about assignment deadlines to be included.

The final section, *my marks*, was difficult to use, a minority of the students had not used it because they did not know it was available, others had not because their marks were not available, or it was unclear. The majority of the students wanted some improvements: more instructions, up to date marks, and a summary of the marks for the whole year group as opposed to the sample available. Despite the current problems all except one interviewee thought this facility was extremely useful, and would be something they would use in future. As Saira commented:

I am quite a conscientious person so I want to know...I mean, that shows that I am in the whole majority and that makes me feel better...I think especially at uni there is no way of knowing how everyone is doing or how you are doing so, yes, that is really good.

Text based learning resources

Of the three sections of the site that can be categorised as text based learning materials. The majority of interviewees did not use the first of these, the *topic outline*, nor were likely to use it in the future because they already had the information on paper. Similar to sections of module information above, a few students thought the feature could be useful if they did not carry the handout around or if they had mislaid it but it was not viewed as a particularly valuable part of the site. In general, the study skills and FAQs components of the *resource* section were not used, interviewees considering it irrelevant and not useful, though they thought it could be beneficial to some students. No interviewees reported using the *news and announcements* section, though the lecturer reported usability statistics where this feature was one of the most used parts of the site, thus it is possible that students accessed this information via the *calendar* and did not realise it was the same feature. The remainder of the features contained in the *resource* section are discussed in the section below. A minority of students reported scanning the exam paper database available on the *exams and tests* section, primarily to find out what to expect from the end of term assessment. Currently no students had attempted to answer the exam

questions, as the feature was perceived to be more useful closer to exam time. As Hannah commented,

I looked at it originally just to sort of try to get an idea about where I was going and what I was doing but I am not really thinking about exams at the moment... I think it is a good idea that people know what they are going towards because...you come to university and everything is really unsure and you don't know what is going to be expected of you at the end, that is just another uncertainty, and so I find it quite useful to know that is what I am going to do and that is what I am aiming for.

Interactive tools

One feature of interactive tools, entitled *Rape and CJS* was used by around half of the interviewees who found it very useful for the links contained within the course handout. Students varied in the way they used the information, some made notes, some printed the information off and others simply read the extra sources to help clarify their understanding. The feature was also thought to be useful for essays. The remaining students who had not used it could see the benefit of the facility to increase the resources available to them, increase efficiency and help in assessment. Indeed, some stated they would make use of the resource in the future. Typically those students who had not used it and stated they would not use it in the future felt they already had enough information. A small number of students could not appreciate why the information should not be given to them on paper, although they could see how it would encourage people to use the MLE. In general, this facility was viewed as an interesting and useful resource.

The site also contained online *surveys* that students were asked to fill in (though this was not compulsory). The majority of the interviewees had filled in one of the quizzes and the summary of these responses covered in a lecture was perceived to be of interest, though they did not feel that this was particularly useful (in terms of assignments). The self tests available on the *exams and tests* section of the website had been scanned, but not taken, by a minority of the interviewees, primarily to find out what to expect from the assessment at the end of the module. The remaining students had not looked at the page yet because they thought the facility would be useful for revision purposes. Students were unlikely to do the tests prior to the exams due to other priorities such as assessed essays and a lack of time. Despite not using the facility at this stage many interviewees thought it was a useful facility that they would use in the future.

A fourth feature was the *mail* facility. Two interviewees had received a message but none of the other students had ever used it. The majority of interviewees reported a preference for using their own personal email as opposed to the one available on the MLE. This was primarily because people already had that address and they already knew how to use their own facility. While a minority of students felt that the MLE mail facility could be useful to contact students or lecturers none had used it. Other students discussed problems of understanding how to use it or its purpose. Of the two students who had used the facility, one had done so because he had been told by the lecturer to pick up a message, but had seen no point as the students also received the message on paper, the other student had received an email from a friend but communicated thereafter through his / her personal email account. In sum, the mail system appeared to be one of the least used and least valued components of the MLE.

The part of the *resources* section that was most frequently used and perceived to be the most valuable was the links to external sources. Interviewees typically explained this was due to the convenience and speed with which they could find relevant information. As Karen commented,

The links [are] all in one place...so you don't have to bother going on the Internet with the search engines that come up with random things.

A smaller number of interviewees were concerned with the quality of information on the web and appreciated the sources being “approved” by the lecturer. However, the majority of students thought as long as they referenced the source the quality did not matter. Similarly, links were considered to be one of the most useful parts of the site by the focus group. However, it should be noted that responses from the focus group might not relate specifically to external links on this page but links throughout the site.

Few interviewees had looked at the section of the site entitled, *UK legal news*, though the majority thought it was an interesting additional resource. Some had not used it because they did not realise the facility was available on the MLE, others because they preferred to read newspapers or would go to an online newspaper. Some students reported they would use it in the future, however, they thought this would be a facility they would use when using the MLE for another purpose. They would not come to the MLE purely to look at this part of the site. Despite not using

the facility many thought it was a positive addition to the MLE, e.g., it could save time, was relevant to course, and provided convenient access to a variety of newspapers.

When interviewed, students reported using the *discussion board* because they had to. Despite the compulsory element many said they had found it interesting to find out about others opinions and the feature was considered to be one of the most useful parts of the site. Similarly, students in the focus group thought that the opportunity to learn about others ideas was something they had gained from using the MLE. Not all students appreciated the discussion board; a minority of interviewees would have preferred face-to-face discussions. From interviews and the focus group, feelings about posting messages were mixed; about half felt nervous and self-conscious yet the others had no real problems, often describing it as something that had to be done. The majority discussed composing their messages more carefully than they would when emailing their friends, e.g., using appropriate language, grammar and checking spelling. As Saira commented,

I think it is intimidating to write something especially when you start university because you are not sure...if you are on the same level as everybody else or not. I remember [the lecturer] pointing out [a message] that was particularly good and ...you did think, oh well, mine wasn't as good as that, so you do feel a bit embarrassed.

Mike in the focus group noted:

I thought it was good with the discussion board because it was quite early on and you speak in a different way, you are not self-conscious, you just write it...it is good in that sense.

All of the students who were interviewed or participated in the focus group felt that the lecturer contributing to the discussion board was beneficial and desirable for a number of reasons. It was useful for him to ensure students were using the facility appropriately and were not going off the point. In a minority of cases students felt they would have liked more personal information / views from the lecturer. As an interviewee, Seema, and a member of the focus group, Becky, commented,

I think it is good he contributes. It makes it more official then doesn't it? If it was just by students...they end up like misusing I think...At least when [the lecturer] contributes you know he is reading everything and you are more likely to like be more careful about what you are writing and actually do the work when you have to do it.

[It shows the lecturer is] interested to know your opinion and [he is] not just here to teach you, they are actually interested in your thoughts and opinions.

The majority of the students who were interviewed or were in the focus group felt that it was good that contributions on the discussion board had been compulsory and had been checked by their tutor. This policy had forced people to use the MLE and many students felt they would not have used it if this was not the case. A small minority thought the discussions could be assessed (although noted this could be difficult) but many thought assessment would not encourage responses and would in fact lead to poorer level of discussion, and would be unfair given the difficulties of access. As Mike from the focus group commented,

The best way [is] to be informal about it. I think once you start...getting formalities involved it sort of it, I don't know, it's not as rewarding, not as expressive.

Seema suggested,

There is enough pressure to always do your work well because most of it is assessed. You should just have this time to, you know, actually discuss your subject without any pressure and just be able to freely express...what you are interested in without worrying...So I don't think it should be assessed at all.

The discussion board was also used to help organise group presentations though the value of the discussion boards in this case was mixed. Some interviewees found it a very helpful way to contact others while others simply discussed issues face to face and then placed things on the MLE because they were required to. Similarly, in the focus group these two views were evident and the value of using the boards in this way tended to depend on the familiarity of the different groups.

Although the vast majority of students had not used a discussion board before, the majority reported having no problems with it. A minority had some difficulties at the beginning of the term, but resolved these after using the system. The majority of the students in the focus group and interviews thought the number of messages were a problem, particularly as many said the same thing. Students suggested that this part of the website could be improved by altering the structure in some way so the

messages were manageable. None of the students appeared to be managing their messages within the system themselves.

Students in the focus group were asked what, if any, benefits the students thought there were in using the MLE. Becky suggested it would lead to an increase in knowledge. When asked if she meant information about the course or technology she replied,

Well both really because obviously you have got to use the technology to use it, but you learn more for the course because you probably wouldn't go to the library and search through loads of books whereas clicking on a link is easy and you read it because it is there.

Other benefits were the self-paced nature of the material and as Jon noted,

It made the course at the beginning a bit less daunting...it wasn't a case of...being thrown in at the deep end and be[ing] asked to find the information yourself. There was the links page to get you outside the site to see more interesting places the kind of places you are probably meaning to look for.

This section has provided some insight into the parts of the website students used the most and perceived to be the most useful. There may be a number of reasons for this behaviour, in addition to those discussed above, and these are considered in the following section.

6.1.3.3 *Factors that may influence student use and opinion*

There are a number of factors that may influence students' use and opinion of the site. Here, three issues are discussed: accessibility, usability and the student experience.

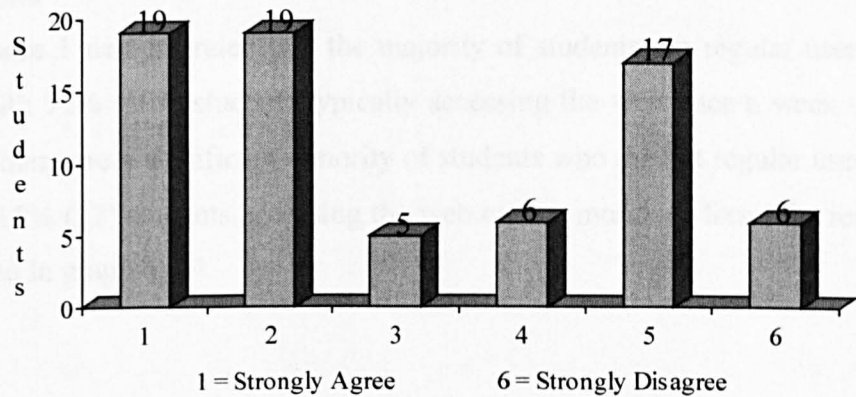
6.1.3.3.1 *Accessibility*

For the purposes of this study there are two important factors to consider when evaluating accessibility: 1) the ease with which the students can use the site, given the computer and printing facilities they are able to access and 2) the students Internet skills.

Availability of computers

36% (26) of respondents to questionnaire 2 accessed the website only from university, 54% (39) from university and home and 10% (7) students accessed the

site only from home. Further, at the beginning of the module 54% (82) of the students reported that they had access to the web from their term time address and 46% (69) did not. Thus, university computers are well used by the students and university computing facilities are important. In general, access was good, as can be seen from graph 6.1.8, the median agreement with the statement “*I could always access the web for this course when I wanted to,*” was a 2, although a significant minority experienced problems.



Graph 6.1.8 Agreement with the statement, “I could always access the web for this course when I wanted to.”

Half the students interviewed reported that access to computers was acceptable while others found access difficult due to the number of computers available to Law students. A minority of the interviewees also raised other problems: computer speed; difficulties with remembering passwords or how to enter them properly and printing difficulties. Similarly, problematic printing and complicated passwords were raised by the focus group. Other, more minor, themes identified by the interviewees were the cost of accessing the system from home, the environment of the computer room to work in, and difficulties accessing all the links from a home computer.

The lecturer was aware of these difficulties and the off-putting nature of problems of access in terms of availability and passwords although, in terms of passwords, using the MLE had meant fewer problems than in the past. The lecturer stated,

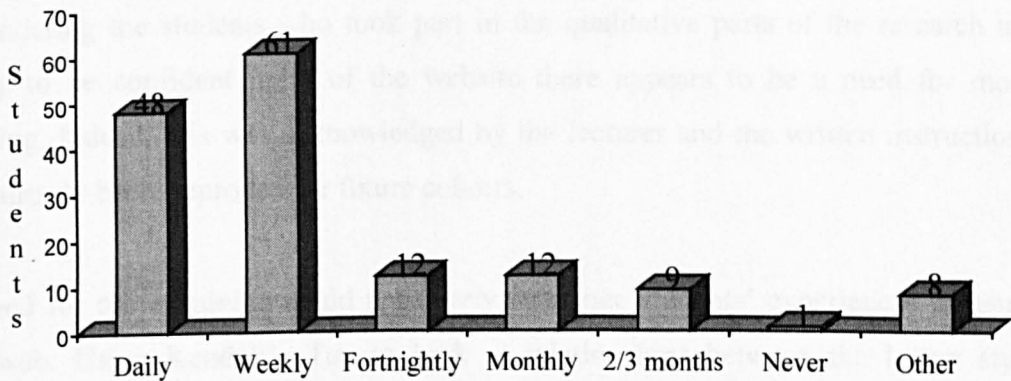
There aren't enough computers, the printer breaks down, and there was some difficulty in spite of the instructions.

Problems with access may negatively influence students’ use and opinion of the site. Indeed, from exploring relationships between the Likert style questions on

questionnaire 2, agreement with the statement, “*I could always access the web for this course when I wanted to,*” was significantly and positively related with, “*using the web for this module helped me to learn about the subject,*” ($\tau_b=0.328$, sig 0.001, N=71) and significantly and negatively related to agreement with, “*using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do*” ($\tau_b=0.299$, sig=0.003, N=71). Further significant relationships are provided in section 11.4 of the appendix.

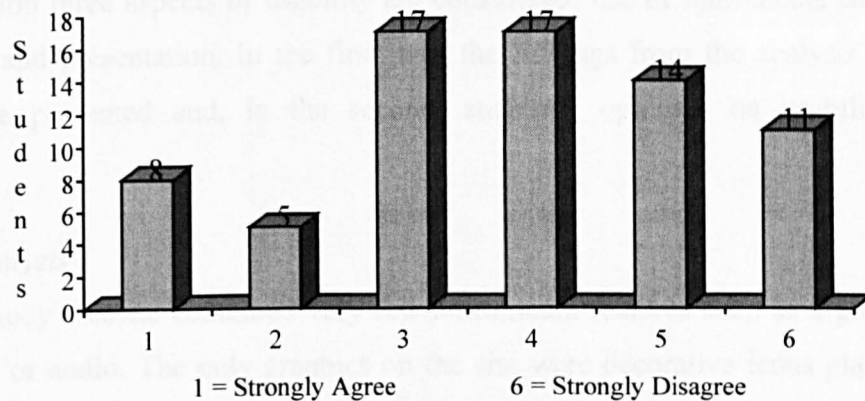
Internet skills

Questionnaire 1 demonstrated that the majority of students are regular users of the Internet with 72% (109) students typically accessing the web once a week or more. However, there are a significant minority of students who are not regular users of the web with 15% (22) students accessing the web once a month or less. The results are summarised in graph 6.1.9.



Graph 6.1.9 Frequency of access to the Internet prior to the start of the module

Frequency of access provides an indication of proficiency, but is not equivalent. The questionnaire data shows, at the start of the module 18% (28) of the students had received some kind of formal training in using the WWW. However, the majority 82% (123) of students reported that they had received none. At the beginning of the module students were given a sheet explaining how to use the MLE and the lecturer was available for some drop in sessions at the beginning of the term. This seems to have been effective overall, the median agreement to the statement, “*I would have liked more training in the use of the technology before I began this module*” was a 4 and response rates are summarised in graph 6.1.10



Graph 6.1.10 Agreement with the statement, “I would have liked more training in the use of the technology before I began the module.”

However, 42% (30) students would have liked more training. This demand is represented in the qualitative data, three of the interviewees expressed a desire for more training at the beginning of the module and members of the focus group, while noting the available training was helpful, thought more would have been desirable. Considering the students who took part in the qualitative parts of the research are likely to be confident users of the website there appears to be a need for more training. Indeed, this was acknowledged by the lecturer and the written instructions had already been improved for future cohorts.

A need for more training could negatively influence students’ experiences of using the web. Using Kendall’s Tau to look at relationships between the Likert style questions on questionnaire 2, agreement with the statement, “*I would like more training in the use of the technology before I began the module,*” is significantly and positively related to agreement with the statement, “*the website is difficult to operate*” ($\tau_b = 0.388$, sig level=0.000, N=72) and, “*I don’t want more modules that involve the web*” ($\tau_b = 0.279$, sig level=0.003, N=72). While these statements are useful, more details about the specifics, e.g. what training and what parts of the site were difficult to use would have been informative.

6.1.3.3.2 Usability

In this section three aspects of usability are considered: use of multimedia features, navigation and presentation. In the first part, the findings from the analysis of the website are presented and, in the second, students' opinions on usability are discussed.

Website analysis

The case study website contained very few multimedia features such as a graphics, video clips or audio. The only graphics on the site were decorative icons placed on the home page to enhance interest and presentation by representing each of the sections of the site. Plans were in place to create audio clips to enhance existing materials and the lecturer believed that the adoption of the university approved MLE would be useful in this respect as he could draw on others expertise. Additional graphics or the use of multimedia may enhance existing materials, but a trade off exists between the educational benefits of such features and the potential accessibility problems they may cause (Halliwell, 2000:125).

As can be seen in figure 6.1.1 the pages on the case study site have been linked primarily in a hierarchical fashion. The site structure enables students to explore topics at differing levels of depth and have some control over the way they navigate the site. This structure may be particularly appropriate in this case, as first year students are not used to learning independently or using the web as a resource and may miss important information if not guided through it, yet need to acquire higher order understanding, where learners can then make decisions for themselves (Oliver and Herrington, 1995:13).

In the case study site there were several tools to help the user navigate the system. When the students entered the site they were met with a home page. In the centre of the page each section name was placed under an icon that took students to that page. There was a menu down the left hand side of all the pages listing the main sections of the website. A "breadcrumb trail" at the top of the page enabled the user to see what page of the website they were on and the previous pages that linked them back to the home page. Also, students could use a course map, a search facility and back and forward browsers.

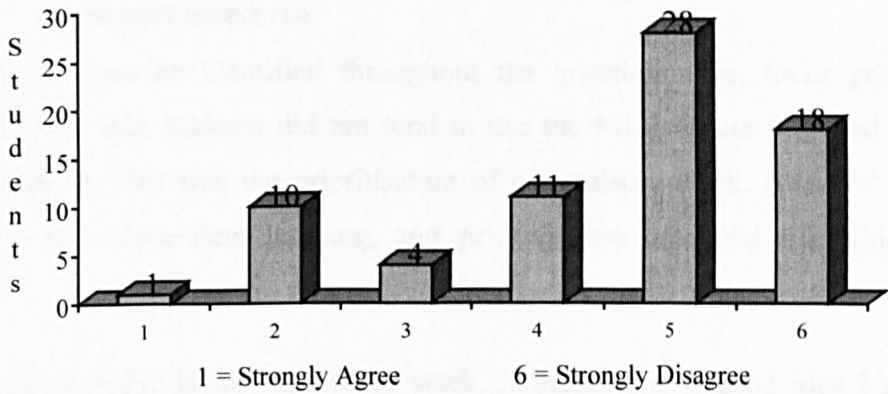
In accordance with web guidelines to enhance readability the colour combinations employed on the MLE did not strain the eye. There were a small number of complementary colours apparent on the site with a white background and a large contrast between the text and the background screen. The layout of the text on each page was very clear. Headings / subheadings / important points were highlighted through the use of larger fonts and/or bold and/or colour. Spacing is used appropriately and the site does not feel cluttered. The screen presentation is consistent throughout and can be described as “frame-based”, i.e., some pieces of the page are static, such as the header and the side menu and only the main section moves when the user operates the scroll bar. This makes it easier for the user to see where they are, though a great deal of scrolling can be frustrating, problems occur because it is more difficult to print and the time for pages to download is increased (Barron, 1998:358). Indeed, for the users of a standard university computer scrolling will be necessary on the majority of pages. In sum, from the website analysis the website has a high level of usability, with clear navigation and presentation and appropriate use of multimedia features.

Student views

The interviewees had a similarly positive view of the website. All thought that the website was, in general, clear, attractive and easy to use. They appreciated the graphics on the home page and thought they worked well, though a minority of students requested more graphics to enhance pages with a large amount of text. Yet, as over half the students who completed the second questionnaire reported that they used the web at home the introduction of multimedia, which may take a long time to load, must be considered with care. When discussing ease of navigation with the interviewees the majority reported that they did not get lost and found the MLE easy to use. Around half the students interviewed reported using the back and forward browser as the main way they navigated the site, the other half used the menu bar down the side. As Hannah who had not previously used computers a great deal explained,

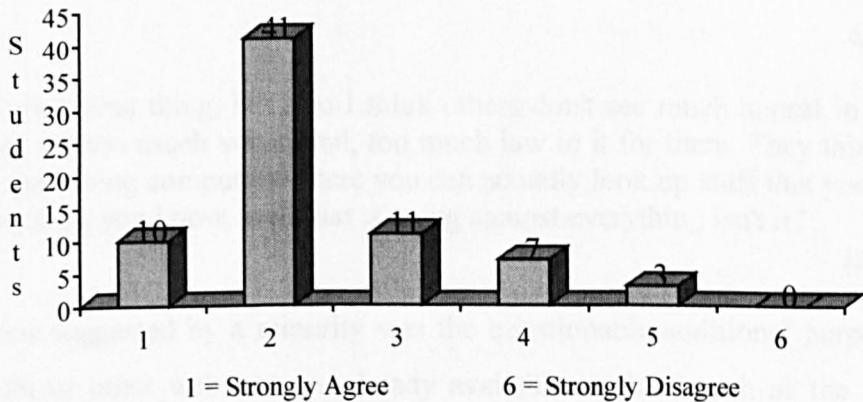
It is really clear, and it is useful and easy to understand, normally it is quick as well. They don't try to over complicate it, which for a lot of things in law they have to do. It's quite simple and easy to understand which is what you need when you just want the basic facts.

As can be seen in graph 6.1.11, the majority of the students who responded on questionnaire 2, disagreed with the statement, “the website was difficult to operate”, with a median level of agreement of 5.



Graph 6.1.11 Agreement with the statement, “the website was difficult to operate.”

Similarly students felt the website was well presented. The median level of agreement with the statement, “the website was well presented” was a 2. The results are summarised in graph 6.1.12



Graph 6.1.12 Agreement with the statement, “the website was well presented.”

Usability issues may also influence students’ opinions and use of the site. For example, when exploring the relationship between responses to the Likert style questions on questionnaire 2, agreement with the statement, “the website was difficult to operate,” is negatively and significantly related to, “I enjoyed using the web for this subject” ($\tau_b=-0.260$, sig level=0.008, N=71). Similarly, agreement with the statement, “the website was well presented,” is negatively correlated with agreement on the statement, “I don’t want more modules that involve the web,” ($\tau_b=-0.287$, sig

level=0.004, N=71). See section 11.4 of the appendix for other significant relationships. Thus, in general the usability of the site was good, and for the most part is unlikely to negatively influence students' use of the site.

6.1.3.3.3 Student experience

A theme that can be identified throughout the questionnaires, focus group and interviews was that students did not tend to use the MLE unless they had to. The main reason for this was the prioritisation of compulsory work, students' lack of experience of independent learning, and prioritisation of social life. Comments included:

All it does really is just add more work...I mean it is a good idea I think whoever thought of it knew what they were doing but unless I have to I won't use it.

Kendra

I think at this stage because it is early on in the course it is difficult to come for a very specific purpose unless it is actually written on a handout refer to [MLE] or they explicitly say to you you know go to [MLE]. Otherwise, there are so many other things to take your own initiative on at this stage...[the MLE] is going to be something quite trivial that you would probably use later on in the year.

Saira

I think it is a time thing, but also I think others don't see much appeal in it. I think they see too much vocational, too much law in it for them. They think if you are seen doing computers where you can actually look up stuff that you are not required to, you know, well that is going against everything isn't it?

Jamie

Other reasons suggested by a minority was the questionable additional purpose the MLE had above other web sources already available to them such as the student Intranet and subject specific resources provided by the library; and time to use the MLE due to the pressures of the course. Interestingly, the lecturer was aware that first year students in particular might not use the site to its fullest potential.

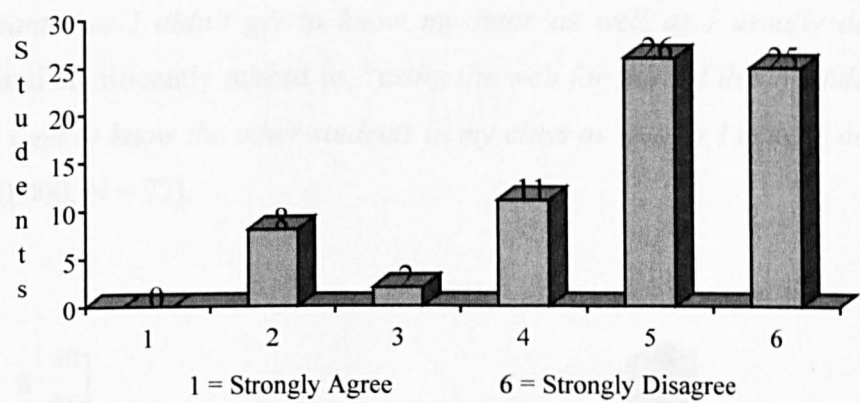
Thus, usability, accessibility and the prioritisation of compulsory work may all influence students use in a variety of complex ways (see chapter 8). In the following section, how the use of the web may influence student-staff relationships are explored.

6.1.4 Student-staff relationships

This section is split into two parts: 1) student – student and 2) student – staff relationship.

6.1.4.1 Student - student relationship

The use of the web did not appear to have a negative influence on the student-to-student relationship. As can be seen in graph 6.1.13, in general, students disagreed with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,” with a median response of 5.



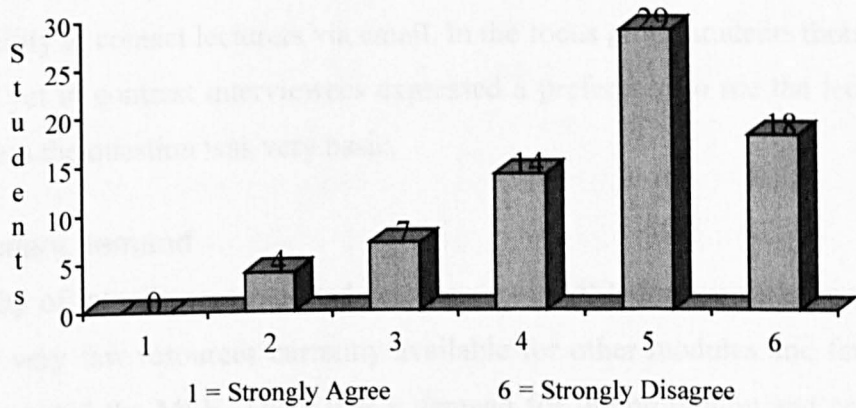
Graph 6.1.13 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

The web may have a positive influence on student – student relationships as the web was used to find out about other’s opinions. From the qualitative data the way individuals discussed how they chose which messages to read differed. The majority of students in the focus group and interviews tended to pick out messages because they looked interesting; a minority looked at comments that their friends made and/or those who had replied to what they had written. Just over a third of students mentioned that they noticed names of individuals they did not know but who had made interesting / many comments to the discussion board. However, only one student reported that this had helped her when meeting people for the first time after seeing the names on the MLE, the others felt the group was too big and they would be unlikely to meet the individuals they had noticed on the discussion board. Just fewer than half the group did not feel the discussion board would enhance student-student relationships. However, a minority felt the facility had the potential to achieve this goal in the future. In general, the students in the focus group did not

discuss the on-line discussions in face-to-face situations. On-line and off-line experiences appear to be quite separate and this may be why little or no change occurred in the student – student relationships.

6.1.4.2 Student - staff relationship

As can be seen in graph 6.1.14, students generally disagreed with the statement, “using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,” with a median level of agreement of 5. Thus, typically students did not think the web had a negative influence on their relationship with the tutor. It is likely that those who did find there was a negative influence on their relationship with the tutor also felt there had been a negative influence on the relationships between students. Agreement with the statement, “using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,” was positively and significantly related to, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,” ($\tau_b=0.48$, sig= 0.000, N = 72).



Graph 6.1.14 Agreement with the statement, “using the web for part of this module meant I didn’t get to know the tutor as well as I usually do.”

It is possible that the web may have enhanced relationships between the students and the lecturer. For example, a third of interviewees spontaneously recalled an example where the lecturer had posted an amusing message on the discussion board. Though, students were not sure if this translated into them knowing the lecturer any better. As Daniel commented,

I don't know. It showed he had a life which is more than some of them and...he is...the only supervisor that had been on to the discussion...[the lecturers] were all supposed to but no one actually bothered to.

Indeed, many of the interviewees noted that the lecturer was the only one who contributed and made a significant effort in the development of the MLE. As discussed below, many interviewees felt that all lecturers from all modules should use and promote the MLE. When the focus group were asked if the lecturer should contribute to the discussion board, the following discussion took place:

[It] takes some of the distance away between lecturer and students.

Louise

It is different from school there is a big, big gap between lecturer and student little things like that when you have a discussion with the lecturer it helps sort of bridge the gap really. It's not like a teacher..[but] they are not friends, but you talk to them informally which is important. I think you need to be able to talk to your lecturers informally.

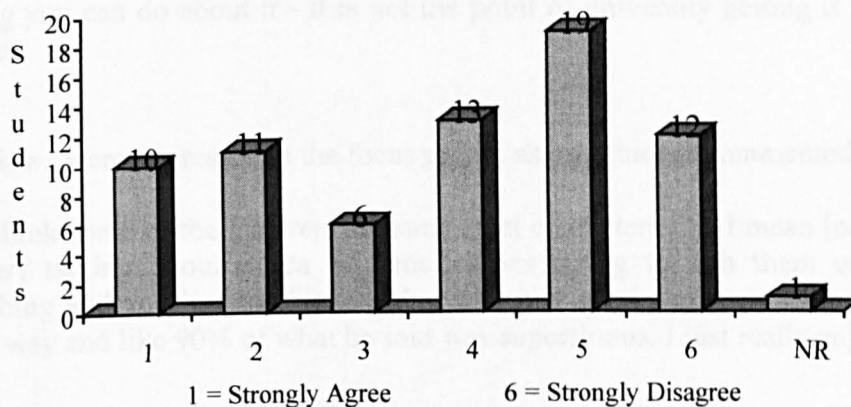
Mike

When asked if the use of the MLE meant that they had a different relationship with the lecturer half the group commented that they felt they knew him better than other lecturers who were "quite aloof." Further ways to enhance student communication was the facility to contact lecturers via email. In the focus group students thought this was useful yet in contrast interviewees expressed a preference to see the lecturer in person unless the question was very basic.

6.1.5 Student demand

The majority of interviewees reported only using the MLE for one other module, as there were very few resources currently available for other modules and few tutors used or promoted the MLE. There was a demand for the promotion and use of the MLE for all modules. This view was supported by the focus group. The lecturer also appeared to be aware of the demand from some students about other modules using the MLE and hoped to expand the MLE to all modules. However, as noted in 6.1.1 he was well aware of the difficulties of encouraging more tutors to use the resource. Similarly, as can be seen in graph 6.1.15 the majority of the students disagreed with the statement, "*I don't want more modules that involve the web*"²¹ with a median response of 4.

²¹ One student did not respond to the question (indicated by NR on the graph).



Graph 6.1.15 Agreement with the statement, “I don’t want to have more modules that involve the web.”

However, agreement with this statement indicates students’ problems with or dislike of using the medium. For example, agreement with this statement is significantly and negatively related to, “*using the web for this module was well worth the time I spent on it,*” (τ_b) = -0.494, sig level = 0.000, N = 71). See section 11.4 for other significant relationships.

There was scarce demand for the MLE to replace traditional teaching primarily because the interviewees preferred learning in a face-to-face situation because they did not feel they would learn as well from the web, they wanted interaction with a member of staff and because they felt they learned more from traditional methods. Other reasons included: they did not like using computers, lacked the motivation to learn independently and some felt this was not what university learning should be about. Examples of interviewee’s comments include,

I would hate it. There is not enough interaction. Even if you have got somebody standing there just talking at you in a lecture at least it’s a person and at least it’s into a timetable so you would actually go. If it was on here I do not think anybody would bother doing it. I mean, it just requires too much of your own motivation, it is all down to you. It is too much responsibility and at least when you are in a lecture the person they are more interesting to watch because quite a lot of [the] lecturers are funny and they want to have a discussion and people can ask questions on the spot and, you know, I would not like this style and I would not learn much either.

Saira

At least you can put your hand up and say, "I don't understand it." Whereas if you are just reading it off the screen and you don't understand it there is nothing you can do about it - it is not the point of university getting it off the Internet.

Karen

Similar views were expressed in the focus group, as one student commented:

I just think some of the lecturers are such great characters like I mean [name of lecturer] talking about a sea of beneficiaries trying to fish them out and everything and you had the bloke today who just speaks in such a beautifully prolix way and like 90% of what he said was superfluous. I just really enjoy it.

Mike

Thus, there is little demand from these students for the replacement of traditional teaching with the use of the web and this will be discussed further in chapters 8 and 9.

6.1.6 Summary

It is useful to provide an overview of the findings from this module.

The use of the web for the case study module was intended to:

- Enhance motivation and interest in the subject through easy access to a range of resources
- As a supplement to the existing module providing a range of module information, text based learning materials and interactive tools

The use of the website was developed within a departmental context where:

- There was a move towards increasing use of the university approved MLE across the whole department
- The case study lecturer was supported, to some extent, by the department (e.g. the appointment of a computer officer) and central projects
- The case study lecturer was an enthusiast motivated by personal interest and enjoyment, and belief in educational benefits for students
- There was some resistance / lack of involvement from some staff due to a lack of incentives to use the technology and a lack of support

The student cohort can be defined as:

- Traditional, i.e. majority took A-levels prior to coming to university, aged 18-20
- Regular users of the WWW

Students used the website:

- Typically, for short periods of time (i.e. 0-20 minutes) on a frequent basis, often once a week or more

Students' opinion of the website from the questionnaire data:

- At the beginning of the course thought that convenient access to a range of resources were the main benefits²²
- At the end of the course, thought the web fitted in well, worth time and enjoyed it but would not help them get more marks, or help them learn
- Main perceived and actual problems were due to access (both availability and ability)

Students' opinion of the website from the qualitative data:

- The external links to resources and discussion board used the most and perceived to be the most useful, assessment was an important factor
- Convenience of access to resources had several benefits: it encouraged students to look at more resources because they were there, it helped when the students did not know where to locate specific sources and the self paced nature of the web enabled students to go over the material in their own time
- Main difficulties caused by access due to availability of computers and printing facilities

Factors that may have influenced opinion and use of the site:

- Difficulties with access (both availability and ability)
- Good usability
- Competing pressures on time / problems with motivation and requirement of independent learning skills for study in the first year

The relationship between students and staff and the use of the WWW:

- The use of the WWW did not have a significant, negative influence on the student-student relationship but did not enhance relationships – perhaps as no link was made between individuals on-line and off-line, the size of the student cohort and the MLE was not used for that purpose
- The use of the WWW did not have a significant, negative influence on the student-staff relationship and for some students may have enhanced the relationship between them and the lecturer – although may be more to do with the lecturer than the medium

²² Similarly, convenient access to resources was the main benefit identified from analysis of the open responses on questionnaire 2, but the frequency of responses were too small to be considered in detail.

- A minority of staff and students saw the potential for the WWW to be used to enhance relationships

Student demand:

- There was some demand for increased use of the WWW within more modules
- No demand for the WWW to replace traditional teaching methods due to preference for face to face teaching, students disliked the idea of learning from computers, felt they would not learn as much and lacked the necessary independent learning skills

6.2 Case study 2

The case study module had been created as a supplement to a unit in dentistry for 2nd - 5th year students. The research focused on third years using the website in the spring semester (January – April 2001) and was the first time the materials on the web had been made available in this format – though many features had been available on a previous website. The discussion below highlights the main themes identified from analysis of seven data sources. These were:

1. Questionnaire 1 which was distributed to the students in a lecture at the start of the semester, after being briefly introduced to the website. The response rate was 90%.
2. Questionnaire 2 that was given to the students at the beginning of their final lecture of semester 2. The response rate was 80%.
3. The ASSIST inventory, which was given to students in the sixth week of the semester in a lecture. The response rate was 95%.²³
4. Semi-structured interviews with six students that took place in the second half of the semester prior to questionnaire 2.²⁴
5. A focus group that took place towards the end of the second semester, prior to questionnaire 2.²⁵
6. Semi-structured interviews with two members of staff at the school.
7. Analysis of the website.

The discussion is split into seven sections. The first explores the purpose of the WWW in the case study. The second summarises the basic characteristics of the student body. The third explores students' use and proposes some potential reasons why students use the web in this way. The fourth considers the influence the use of the web may have on student and staff relationships. The fifth investigates student demand for increasing the use of the web in teaching and learning and the sixth the departmental context in which the initiative took place. The final section summarises the findings.

²³ There are a total of 69 students who took this module. 62 students completed the first questionnaire, 55 students the second, and 59 the ASSIST. Non-response occurred because students were not in the lecture.

²⁴ Before the first questionnaire and ASSIST inventory was distributed to the students, they were asked if they would like to take part in a semi-structured interview. 7 students volunteered and 6 finally took part. One person could not be contacted.

²⁵ A tutorial group of 12 students (where the case study lecturer was the tutor) were asked to take part in a focus group as a replacement to a tutorial. All agreed to participate.

6.2.1 Aim and content of the case study website

The initial aims of the case study site are explored below, based on the analysis of the interviews with the members of staff who designed the site and analysis of the website.

The site was part of a website (the “e-course”) designed to provide web-based materials for all students and staff at the school; as well as interested practitioners and educators outside Old U. There was a drive to create supplementary web-based materials for all the modules delivered by the school. The lecturer primarily responsible for the development of the website had a number of motivations for setting up the site. He was an enthusiast, who had been interested in developing and using technology to enhance learning and to increase students’ enjoyment for over ten years. He had developed the site with a colleague, a clinician who was also employed by the school, to design the e-course. The site was supplementary, it did not replace any part of the module and use was voluntary. It was designed as a place for students to access all the relevant materials they would need, such as module information, course materials and further resources. As the lecturer explained,

It’s not seen as a replacement in my mind; it’s just seen as a case of tidying everything up in a filing cabinet...and the students can then go to my filing cabinet and see what’s on there.

From analysis of the website, this on-line “filing cabinet” seems to have been achieved. The site has thirteen sections: the *home page*, *aims and objectives*, *clinical protocol*, *patient requirements*, *academic requirements*, *lectures*, *tutorials*, *clinical handouts*, *student resources*, *self assessment*, *bulletin board*, *download facility* and *teaching staff* (see figure 6.2.1). For the purpose of analysis, each of these sections has been categorized broadly into three areas: module information, text based supplementary learning materials and interactive tools and are discussed in turn below.

6.2.1.1 Module information

Six sections of the site provided students with information about the unit: a summary of the *aims and objectives*; *student resources* and *patient requirements* that contained information about exams and assessment; *academic requirements* that summarised module resources, i.e., recommended texts and videotapes (the computer and web-

based resources also available in this section are described in section 6.2.1.3); a list of *tutorial* subjects; and information about *teaching staff*. These features may help students to revise for exams plan their time effectively find out information about clinical staff locate resources to enhance their understanding or prepare for tutorials in advance. These six sections contain information that students are likely to have received elsewhere but a web-based version ensures that students have a constant up-to-date source of these details.

6.2.1.2 Text based supplementary learning materials

Three sections of the website fall into this category. The first, *clinical protocol*, provides students with essential information they will need to know prior to beginning clinic practice (e.g. controlling cross infection and dental charges). The *lectures* page contains a list of lectures where in some cases, the lecture handouts can be downloaded. The last section, *clinical handouts*, provides links to 10 PDF files that contain a step-by-step guide on how to carry out a number of clinical procedures. These features may ensure that students have the relevant information prior to going on clinic, help students to prepare in advance for the clinic or lecture (e.g. preparing questions to ask), compensate for a missed lecture, reinforce what students have previously learned, and provide clarification.

6.2.1.3 Interactive tools

Three sections of the site contain interactive learning materials. The first, *academic requirements*, has been described briefly in 6.2.1.1, here the focus is on the interactive resources: five CAL packages (developed in-house) that can be purchased on a CD or accessed via the “e-course” home page; an on-line package for students to learn about impressions; a facility to take on-line vivas; and the opportunity to complete on-line MCQs. The first three features use multimedia to provide students with an impressive interactive learning experience, opportunities to reflect on their understanding and provide them with instant feedback in the form of on-line answers and hints. With the MCQs students can locate questions for a particular topic and run their own personalised test to enhance or reinforce their learning from other situations and help prepare for exams. Similarly, a second section, *self-assessment*, contains three short answer viva style exercises and provides the students with graphics and instant feedback to learn in an interactive way and to test their understanding. The case study site also contained a *bulletin board* that provided students with the opportunity to ask questions and for staff to post messages for

students. In a similar vein, the lecturer has encouraged students to provide feedback to him about the site, through email links on various pages.

6.2.3 Student characteristics

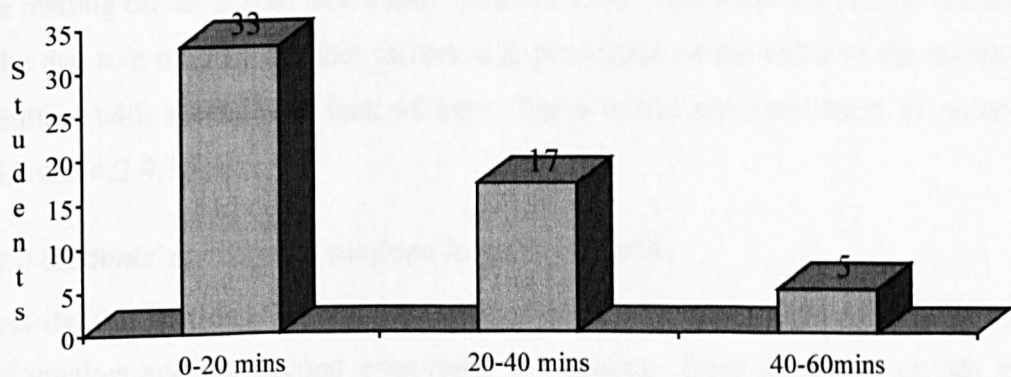
From the responses to the first questionnaire, the student cohort can be described as “traditional” campus based students. All the students were full time, had completed A-levels prior to coming to university, and 95% (59) of the students were aged between 18 and 23. Given that students were in their second semester of their third year this suggests many students had come to university straight from school / college. The gender balance of the group was fairly even, 45% (28) of the students were female and 55% (34) of the students were male.

6.2.4 Student use

The following discussion is split up into three sections: the amount of time students spent using the site; students opinion and purpose for using the site and reasons that may influence students use and opinion of using the web for the module. As noted in chapter 4, three methods were used to consider various aspects of this issue, thus findings from questionnaire data, focus groups and interviews are considered where appropriate for each section below.

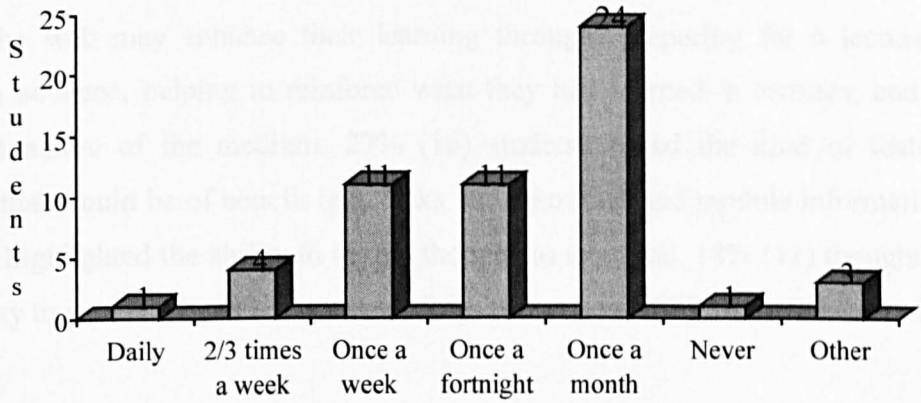
6.2.4.1 Amount of use

Respondents to questionnaire 2 typically reported that on average, they accessed the site for 0-20 minutes per session. The distribution of responses is shown in graph 6.2.1.



Graph 6.2.1 Typical period of time spent on-line for the module website per session

Students also reported that they typically accessed the website on a monthly basis, with 49% (27) students accessing the website at least once a fortnight. Responses are summarised in graph 6.2.2.



Graph 6.2.2 Number of times accessed the case study website

There was no relationship between the amount of time spent on the website per session and the frequency with which students reported accessing the case study website (see section 11.4). From these self reported frequencies it appears students do not use the website a great deal for the module and this may be, in part, because students tended to print things out and work off line. Indeed, the majority of interviewees discussed how they printed off the parts of the website that were useful to them as oppose to studying on screen. This was due to a lack of time available to use the computers, the need to look at the information at any time, the tendency to store information to be drawn upon when needed at a later stage, and the preferences for reading on paper than on screen. Only one interviewee reported making notes while reading on the screen (for a short piece of text). This small amount of use may also be due to a number of other factors: e.g. perception of the value of the medium, difficulties with access or a lack of time. These issues are considered in sections 6.2.4.2 and 6.2.4.3.

6.2.4.2 Students' opinion and purpose for using the site

For clarity, this section is divided into two parts, the first exploring data from the two questionnaires and the second examining the findings from the focus groups and interviews.

Of the 60 students who responded to the question on questionnaire 1, students expected there to be a number of benefits of using the website: 37% (22) of the students thought a benefit was the convenience of accessing all relevant information in one place, typically compared to the alternative of locating a number of printed sources or because the information could be accessed from anywhere. 30% (18) thought the web may enhance their learning through: preparing for a lecture or tutorial in advance; helping to reinforce what they had learned in lectures; and the self-paced nature of the medium. 27% (16) students noted the kind of features available that would be of benefit (e.g. links and resources and module information). 27% (16) highlighted the ability to access the web at any time. 18% (11) thought the opportunity to access missed lecture notes from the web would be beneficial.

Students were also asked at the end of the course what had been good about using the web. Of the 36 students who answered the question: 22% (8) students noted specific features of the website that they thought were good (i.e., sample questions and answers, CAL programs, lecture handouts, clinical handouts and visual aids); 19% (7) students considered the website to be a quick and convenient way to access information; 17% (6) thought the website was a good additional resource; 17% (6) students saw value in the nature of the resource (e.g., the website had been developed in house and was up to date); and 8% (3) students thought the website was a good way to learn a topic at his or her own pace.

Prior to using the web for the module students were asked, on questionnaire 1, what their main concerns were about using the web. Of the 55 students who responded to the question the most significant theme raised by 35% (19) of the students were issues about accessibility, e.g., no home access, cost of home access, lack of printing facilities, reliance on the computer clusters at Old U and the speed of downloading information at home. 18% (10) of the students reported that they had no concerns. 15% (9) were concerned about the quality of the information available, i.e., if it was up to date, reliable and relevant. A related theme, raised by a further 7% (4) of the students was the sheer quantity that was accessible on the web. 13% (7) were worried that attendance in lectures would fall. 11% (6) students thought they might miss information on the web or not benefit from what was available, typically because of problems of access. 11% (6) suggested they would not have time to use the resource.

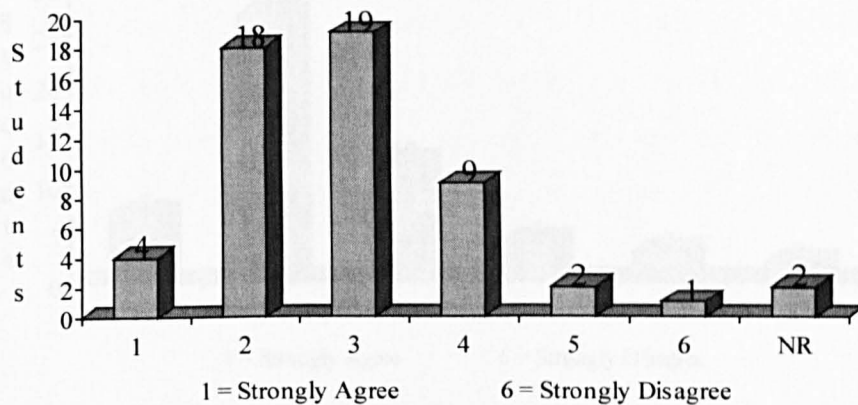
7% (4) students were worried about the responsibility for managing their own learning and organising their time.

On the second questionnaire students were asked what had been bad about using the web. Of the 24 students who responded to the question, 33% (8) of the students reported that nothing had been bad, 21% (5) felt the website did not cover all the information that they required, 17% (4) found it difficult to find time to use the website, 17% (4) had problems accessing computers and 13% (3) of the students had difficulties learning from the medium due to distractions on the web and the difficulty of learning practical skills through reading.

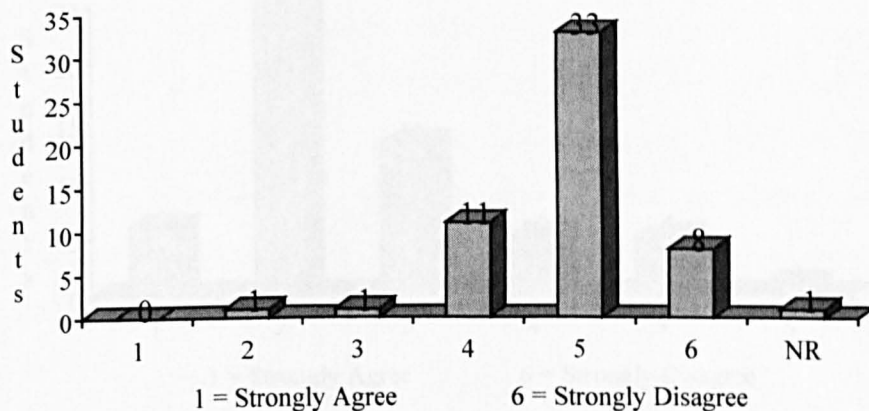
Though the response rate in questionnaire 2 for both benefits and disadvantages is low, the major benefits stated by students at the end of the module appear to be similar to those perceived at the beginning, i.e., convenient access to supplementary learning materials. Similar problems identified at the beginning, i.e. problems with access and time were raised at the end of the module.²⁶ Access, time and the demand for more resources on the site are discussed further in section 6.2.4.3.

Questionnaire 2 asked students to rate their agreement or disagreement with a number of statements on a scale from 1 (strongly agree) – 6 (strongly disagree). Responses to five of the statements: *I enjoyed using the web for this subject*, *the web did not fit in well with the course*, *using the technology will help get me more marks*, *using the web for this module helped me to learn about the subject*, and *using the web for this module was well worth the time I spent on it*, are summarised in graphs 6.2.3-6.2.7 below.

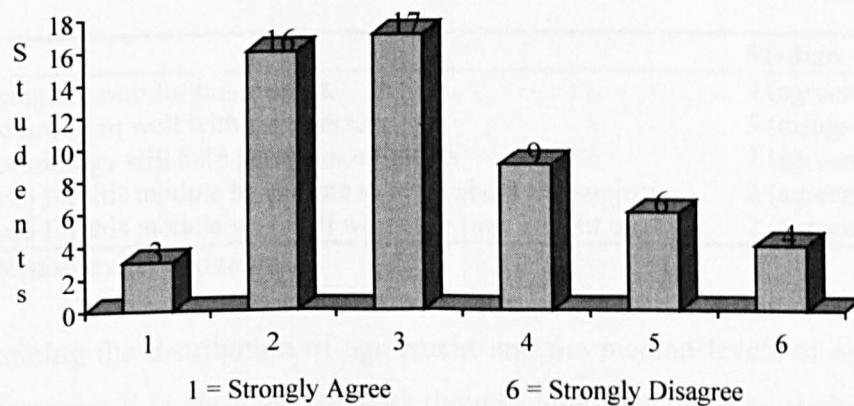
²⁶ Low response rates on these and similar questions are likely to be due to questionnaire fatigue, arising from the overall length and number of open response questions on questionnaire 2 and the significant demands that this research placed on the students throughout the module. While the response rates are low, they are still felt to be valuable though should be interpreted with caution.



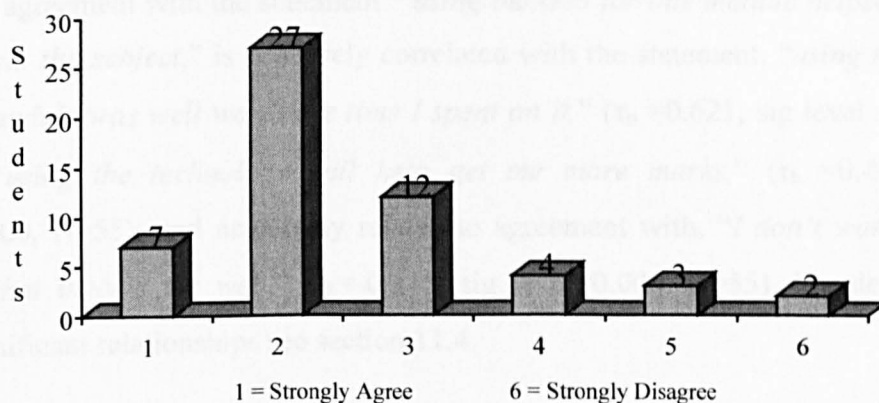
Graph 6.2.3 Agreement with the statement, “I enjoyed using the web for this subject”.



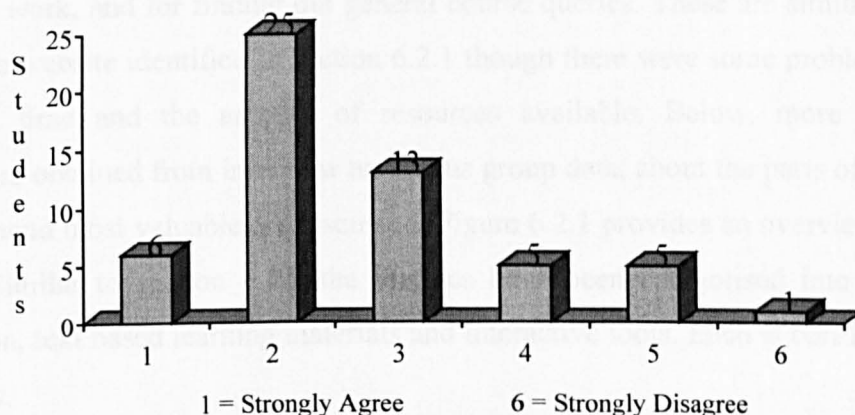
Graph 6.2.4 Agreement with the statement, “the web did not fit in well with the course.”



Graph 6.2.5 Agreement with the statement, “using the technology will help me get more marks.”



Graph 6.2.6 Agreement with the statement, “using the web helped me to learn about the subject.”



Graph 6.2.7 Agreement with the statement, “using the web for this module was well worth the time I spent on it.”

Table 6.2.1 provides a summary of the median levels of agreement for each statement.

Statement	Median
I enjoyed using the web for this subject.	3 (agreement)
The web did not fit in well with the course.	5 (disagreement)
Using the technology will help get me more marks.	3 (agreement)
Using the web for this module helped me to learn about the subject.	2 (agreement)
Using the web for this module was well worth the time I spent on it.	2 (agreement)

Table 6.2.1 Median levels of agreement

From examining the distribution of agreement and the median levels of agreement for each statement it is clear the students thought highly of the case study site. In sum, students enjoyed using the web for the subject, thought the web fitted in well with the rest of the course, helped them to learn, helped them get more marks and thought it was worth the time they had spent on it. The relationship between

agreement on the Likert style statements on questionnaire 2 are not surprising. For example, agreement with the statement: *“using the web for this module helped me to learn about the subject,”* is positively correlated with the statement, *“using the web for this module was well worth the time I spent on it,”* ($\tau_b = 0.621$, sig level = 0.000, N=55); *“using the technology will help get me more marks,”* ($\tau_b = 0.402$, sig level = 0.000, N=55); and negatively related to agreement with, *“I don’t want more courses that involve the web,”* ($\tau_b = -0.315$, sig level = 0.006, N=55). For details of other significant relationships see section 11.4.

Thus, despite students using the website for limited periods they had a high opinion of the site. In particular, the convenience of being able to access all course materials in one place at any time, using web materials to enhance understanding or catch up on missed work, and for finding out general course queries. These are similar to the aims of the website identified in section 6.2.1 though there were some problems due to access, time and the amount of resources available. Below, more specific information, obtained from interview and focus group data, about the parts of the site students found most valuable are discussed. Figure 6.2.1 provides an overview of the website. Similar to section 6.2.1 the features have been categorised into module information, text based learning materials and interactive tools. Each is considered in turn below.

Module information

In summary, only one student (the same student) reported visiting and actively using the sections that, in the main, provided students with general course information (i.e., *aims and objectives, academic requirements, tutorials, student resources, and teaching staff*). In general, interviewees typically had not used these features because they had not needed to, they could find or had been given the information elsewhere and as their time on the web was limited; they prioritised the sections they used. The *patient requirements* was the most well used section in this category, as the majority of interviewees had required clarification about this issue. Interestingly, students did report using, or consider the perceived use of a feature in a similar way to that suggested by the literature on this topic, for example, helping with assessments, to plan their time, and to locate the most appropriate course texts. In general, of the five students who had not used these sections of the site, three reported that they may use some of these features in the future, and all the students thought they were sections

that should be on the website. Often, the interviewees thought adding external links or providing more detail could improve these parts of the site and this may encourage future use.

Text based supplementary learning materials

The *clinical protocol* had only been used by one student who had checked for updates and changes to the course requirements. The other five interviewees had not used this facility primarily because they had been given the information in lectures or on clinic, or because the kind of information the section contained was best learnt on clinic in a practical situation. These interviewees did not think they would use the feature in the future yet thought the section should remain on the site.

Half of the interviewees had used the *lecture* section of the website to print off handouts either prior to the lectures taking place or if they missed one. These interviewees thought that the facility was one of the most useful parts of the website. Two interviewees had not and would not use the facility, preferring to get notes from their friends or because they could not understand the handouts unless they were in the lecture. The remaining interviewee reported he might use the facility in the future if he missed a lecture.

The interviewees best used the *clinical handouts* section. Five students had previously used the feature to prepare for treating patients at each stage of the clinical procedure, enhance understanding, and cope with differences in the way clinicians approached a particular procedure. The feature was rated highly by all students. Indeed, Jane who had previously not used the facility but intended to in future commented,

I think that is really good...going through it step by step telling yourself why you are doing it because sometimes when you are watching on clinic you don't really have a chance to ask [the clinicians].

All the students reported that they had printed off the handouts and kept them. A paper copy was more useful than a web-based version as they could then read the handout immediately prior to clinic and because of the length of the text it was easier to read on paper. However, a minority of students had problems because of the difficulties of where to print out the handouts.

Interactive tools

As discussed in 6.2.1, *academic requirements* contained interactive CAL packages and web-based resources. The majority of interviewees reported using the CAL packages that were appropriate to their year group and had found them useful to prepare for clinical practice, tutorials and revision. As Jane commented,

It sort of tests your knowledge on them, but it makes it sort of more interesting, more interactive, than just sort of being sat in the lecture and told what to [do] and you can see...where you are going wrong as well...so, yeah, it is good.

While interviewees had looked briefly at the web-based resources they had not used them, as they were considered too advanced for their stage of the degree programme. All the students thought they would use the facility in the future, for revision purposes and to enhance understanding / help preparation for clinical procedures. As Susan noted,

It would be quite useful [for] treatment planning. There are chapters on it in books but when you end up with a patient nothing looks like it does in books...you are so scared [when you first treat a patient] you really want to do something to try and to prepare for it.

None of the interviewees had looked at the on-line MCQs in any great detail though half had used computer based MCQs for other parts of the course. All the students viewed this facility positively particularly to prepare for exams and to gain feedback.

Half the interviewees had glanced at the *self-assessments*, though none had used the facility because the students perceived it to be useful at later stages in the degree programme. The majority felt they would use this section prior to exams to help revision and the facility was considered to be one of the most useful sections on the site. A minority of students particularly liked the feedback facility. As Hisham explained,

You can just see what information they want from you and how they want you to...present it. It just gives you an idea of what they want you to tell them [in the viva]... so it is good to have this here.

The majority of interviewees had not used the *bulletin board* due to a lack of time, more important parts of the site to visit and a preference for seeing people in person. In general, this was not a well-used or valued section of the site, despite interaction being encouraged by the lecturer.

Thus, from the qualitative analysis it appears that the students use the website in the main to help enhance their learning and in the future will use it more for assessment purposes when they are at an appropriate stage in the course. They also use it to a lesser degree for course information. As students from the focus group explained, the web is particularly suited to help enhance learning, due to the interactive and self paced nature of the medium. This adds to the findings from the quantitative analysis. The role of the website as a “filing cabinet” seems particularly appropriate for this course as students tend to have different clinicians teaching them and encounter particular problems on clinic at various times. The students learned about how to carry out clinical procedures through lectures, tutorials and treating patients on clinic. One problem that some students who were interviewed had encountered was the difficulty of carrying out aspects of treatments in clinic that they had not yet learned about in tutorials and lectures. As the website was designed to cover all the basic aspects of the course for all year groups it was a very useful tool when students found themselves in this situation. Thus, in general the website appears to be a useful resource, but is not used to a great extent on-line. While this study does not adequately account for offline behaviour (see chapter 9) there may be a number of other factors that also influence amount of use and opinion of the website.

6.2.4.3 *Factors influencing students' use and opinion of the web*

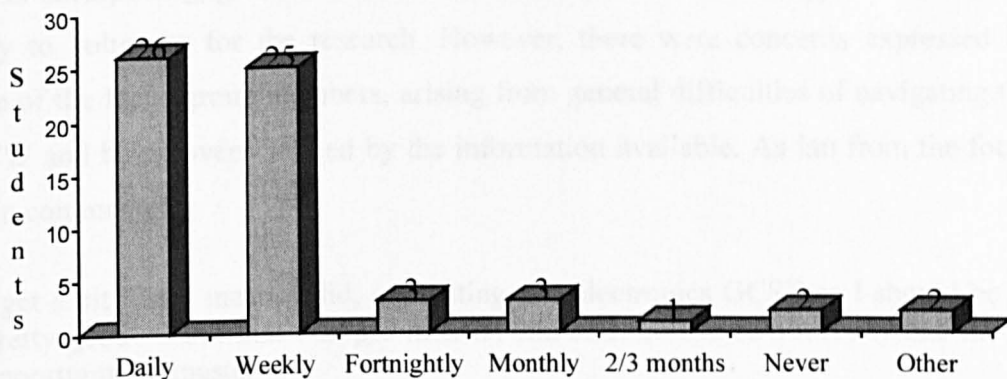
There are a number of inter-relating factors that may influence students' use of the web for the module. Here, three areas are discussed: accessibility, usability and time.

6.2.4.3.1 *Accessibility*

In this section two aspects of accessibility are considered: Internet skills and access to computers.

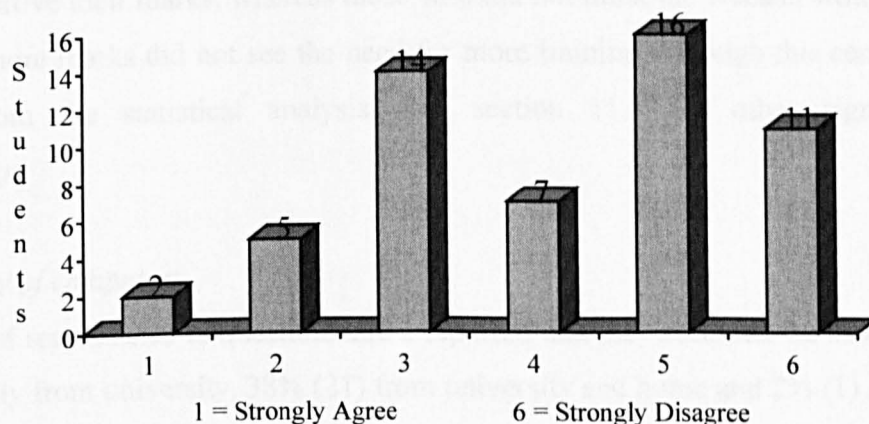
Internet skills

From analysis of responses to the first questionnaire it can be deduced that prior to the start of the module the majority of the students were frequent users of the WWW, with 82% (51) students accessing the Internet at least once a week. A summary of responses can be seen in graph 6.2.8



Graph 6.2.8 Frequency of access to the Internet prior to the start of the module

Few students had had any formal training on how to use the web. On the first questionnaire students reported that prior to the start of the module 24% (15) had received some kind of formal training in using the WWW, the majority 76% (47) of students had not. This may have implications for how effectively the students used the web and could colour their perceptions of its value as a learning medium. In addition, a small, but important minority of the students appeared not to be regular users of the web, thus training is important. As is demonstrated in graph 6.2.9, students typically disagreed with the statement, “*I would have liked more training in the use of the technology before I began this module,*” with a median level of agreement of a 4. Yet, there were a significant minority who would have liked more training.



Graph 6.2.9 Agreement with the statement, “*I would have liked more training in the use of the technology before I began the module.*”

None of the interviews reported any desire for further training on how to use the site. This is unsurprising, given that those confident to use the technology would be most likely to volunteer for the research. However, there were concerns expressed by some of the focus group members, arising from general difficulties of navigating the WWW and being overwhelmed by the information available. As Ian from the focus group commented:

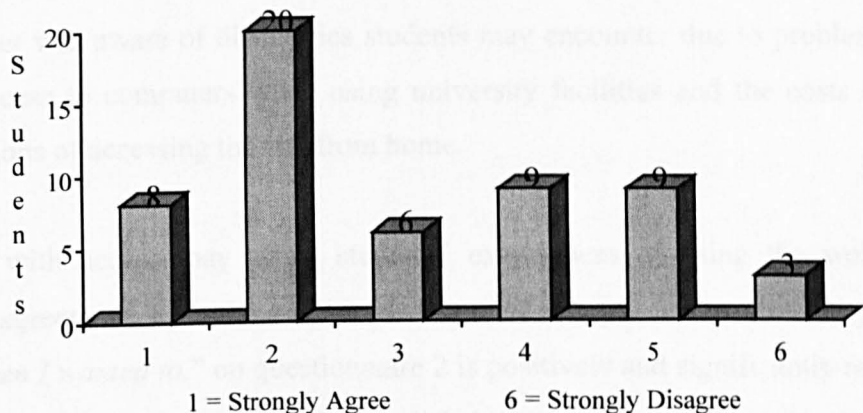
I get a bit lost. I mean, I did, computing and electronics GCSE so I should be pretty good --- but that was pre Internet and stuff so I have not really had the opportunity to master it.

Members of the focus group suggested that essential information was located on the module website and extra material should be in the form of external links which were labelled as such. It was clear from the discussion that the students were talking from their experiences of using the web for a different module on their degree programme. The case study website is likely to be far easier to navigate because it does not have external links and the site structure is fairly simple (see section 6.5.2). However, lack of confidence in navigation and other Internet skills may have a negative effect on students' use and opinion. For example, agreement with the Likert style statement, "*I would have liked more training in the use of the technology before I began this module,*" on questionnaire 2 is significantly and positively related with agreement with the statements, "*the website was difficult to operate,*" ($\tau_b=0.341$, sig level=0.002, N=55) and, "*using the technology will help get me more marks,*" ($\tau_b=0.267$, sig level=0.015, N = 55). This latter correlation may indicate that students who perceived the medium as a valuable tool wanted more help in how to use the web to improve their marks, whereas those who did not think the website would help them get more marks did not see the need for more training – though this cannot be proved from the statistical analysis. See section 11.4 for other significant relationships.

Availability of computers

60% (33) of respondents to questionnaire 2 reported that they accessed the case study website only from university, 38% (21) from university and home and 2% (1) student accessed the site from home. Thus, all the students except one at some time had made use of the computing facilities at the university. In addition, on questionnaire 1, though a significant minority, 42% (26) students reported that they had access to the web from their term time address, 58% (36) students did not. Thus, adequate

computing facilities at the university were important and in general were viewed positively. The median level of agreement with the statement, “*I could always access the web for this course when I wanted to*”, on questionnaire 2 on a scale from 1 (strongly agree) – 6 (strongly disagree) was a 2. Though, as can be seen from graph 6.2.10, 38% (21) encountered some problems.



Graph 6.2.10 Agreement with the statement, “I could always access the web for this course when I wanted to.”

Four interviewees used the university facilities (either at the hospital and/or at the university) and the remainder accessed the site only from home. In general access at the hospital was fine though it varied depending on the time of day (e.g. busy at lunchtimes) and day (e.g. number of year groups at the dental hospital) and a minority felt the computers were too slow and too few in number. The interviewees thought the university facilities were good though the students were only there one day a week with a lot of time pre-scheduled, thus they sometimes encountered difficulties if the computer rooms were booked for that time period. No problems with home access (e.g., excessive download times) were reported.

However, problems with access had been a problem for the members of the focus group and had led some students not to use the case study site as often as they would have liked. As Joan and Emma commented,

I think if you have got easy access to it...it's not like adding on to your workload or anything. Whereas if you have got to go away to the med school or whatever to get on to it then time comes into it, but if you are just looking at it at home then it's just like going to a book.

I don't know about everybody else but quite a few of us who live about fifteen, ten minutes walk away from where we can actually access a computer and we get back, those people who are doing clinics will get back about six o'clock. By six, by the time you have eaten and watched a bit of TV, relaxed a bit, done what you have to do for the following day it's like, can we really be bothered to walk all the way, that far, to go and access a computer for something that is said to us to be additional.

The issue of time to access the website will be discussed in detail in section 6.2.5.3. The lecturer was aware of difficulties students may encounter due to problems with lack of access to computers when using university facilities and the costs and the complications of accessing the site from home.

Problems with access may affect students' experiences of using the web. For example, agreement with the statement, "*I could always access the web for this course when I wanted to,*" on questionnaire 2 is positively and significantly related to agreement with, "*using the technology will help get me more marks*" ($\tau_b=0.246$, sig level=0.026, N=55). See section 11.4 for all significant results.

6.2.4.3.2 Site usability

In this section the structure, navigation, features and presentation of the site are discussed below. The results from the analysis of the website are considered, followed by consideration of students' opinions on this topic.

The website contains a number of photos and graphics. On pages that have been categorised as module information or text-based materials photos have been used to add interest and enhance presentation, and are also used in the interactive pages to assist understanding. As multimedia features add to download times, the designers have often produced the materials on a CD for students to buy or made them available for download.

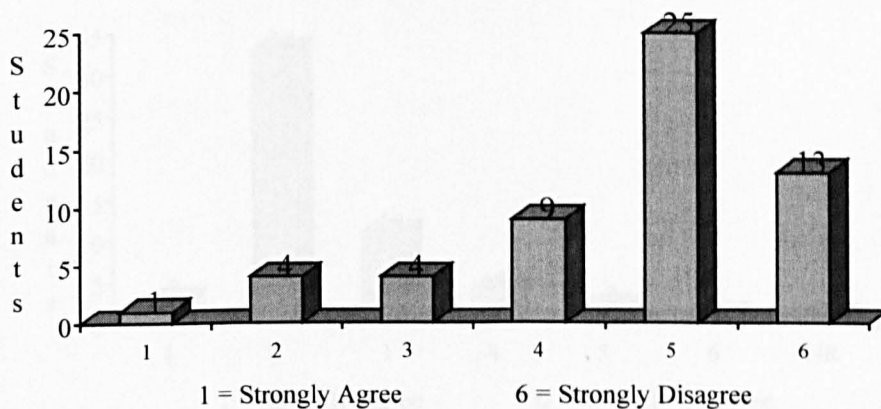
As can be seen from figure 6.2.1 the structure of the website is quite simple, with few external and internal links. This type of structure may be particularly appropriate as the main goal of this site is a "filing cabinet" of all the materials and information students need for this particular course. Students rarely have to navigate very far through the site to find the section they are looking for. However, more internal links may increase the ease with which students can navigate the site on some of the

sections. In particular, *student resources*, which provided the students with details of the exams, could be linked to the online examples of each type of question contained on the *academic requirements* and the *self-assessment* sections. The main way to navigate through the site is through the use of the side bar that appears on all the pages and the use of forward and back browsers. There is also a search facility for the entire e-course website. In general, the website is straightforward to navigate.

The overall presentation of the site is consistent with many of the good practice guidelines available regarding website presentation. Each screen has a similar format, and the amount of text and the way it is presented (using bold, larger fonts and underlining) allows users to scan for the information they require. Information students were likely to need to read closely were placed in PDF files and appeared to be designed for users to print out. The content follows the general rules for good writing (e.g. one topic per paragraph and an inverted pyramid writing style) and the language appears to be appropriate for the target audience. The colour scheme is easy on the eye, using a small range of complementary colours with a large contrast between text and background screen (Barron, 1998:360).

Students' views on the use of photos and graphics varied. Half the interviewees disliked the pictures placed on the website merely to enhance presentation, and they felt that more attractive (yet still subject specific) photographs could be utilised. In contrast, all the interviewees thought the use of graphics were a useful enhancement to the interactive features of the site. Indeed, pictures were felt to be particularly valuable in understanding practical aspects of their course. Further, when asked if video clips would be a useful addition, the majority agreed though noted that factors associated with downloading clips at home would need to be considered.

From the student perspective, the website is easy to use. On questionnaire 2 students disagreed with the statement, "*the website was difficult to operate*", on a scale from 1 (strongly agree) – 6 (strongly disagree) with a median response of a 5. The results are shown in graph 6.2.11.



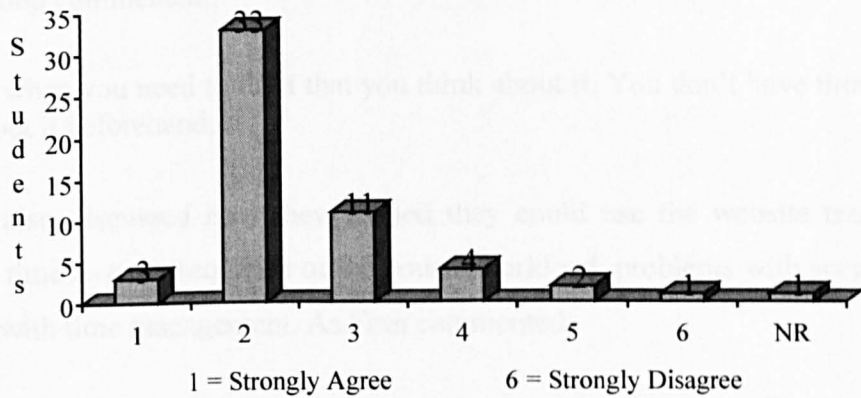
Graph 6.2.11 Agreement with the statement, “the website was difficult to operate.”

Agreement with this statement was also significantly related to other Likert style statements on questionnaire 2 (see section 11.4 in the appendix). For example, agreement with the statement, “*the website was difficult to operate,*” is negatively and significantly related to agreement with the statement, “*the website was well presented,*” ($\tau_b = -0.351$, sig level = 0.003, N = 54).

Further, the students that took part in the interviews and focus groups did not report many difficulties with navigating the site, or problems locating particular items. While all interviewees thought the side bar made navigation easy, half thought that the clarity of the homepage could be improved by emphasising what was available on the site, for example, through the use of pop up links or more information.

Respondents to the second questionnaire typically agreed with the statement, “*the website was well presented*” with a median response of 2.²⁷ The results are summarised in graph 6.1.12.

²⁷ 1 student did not answer the question and this is represented by NR in the graph.



Graph 6.2.12 Agreement with the statement, “the website was well presented.”

In general, interviewees and focus group members thought the site was well presented. Interviewees often commented on the clarity of the layout of the page and the appropriate use of bullet points, bold fonts, and underlining to emphasise key points. The main criticism was that the colour scheme was fairly bland and could be brighter. This may be because students did not read the site or use the site for long periods of time and if they began to do so the muted colour scheme may be preferred.

As with all aspects of usability, presentation is important and may well influence students’ opinions and use of the site. For example, from exploring the relationships between responses to Likert style statements on questionnaire 2, agreement with the statement, “*the website was well presented,*” is positively correlated with agreement with, “*I enjoyed using the web for this subject,*” ($\tau_b = 0.531$, sig level=0.000, N=52) and negatively correlated with agreement with the statement, “*I don’t want more modules that involve the web*” ($\tau_b = -0.243$, sig level =0.040, N=54) (also see section 11.4).

In summary, the navigation, presentation and structure of the site was considered to be good by the students although small improvements could be made. Thus, usability is unlikely to negatively affect the amount students’ used the site.

6.2.4.3.3 Time

Half the interviewees raised the problem of not having enough time to use the web because of their busy timetable, so interviewees tended to use the site for specific reasons. Similarly, students in the focus group noted that due to the lack of time on

the course, students tended to prepare only for immediate concerns. As Anne from the focus group commented,

It's only when you need to do it that you think about it. You don't have time to think about it beforehand.

The group also discussed how they wished they could use the website more but didn't have time as a consequence of the course workload, problems with access and a difficulty with time management. As Fran commented,

I would love to be able to sit down and go through everything on the prosthetics website...because obviously that would help. But I just don't find the time to do that because you have got clinics, you have got lectures, you have got tutorials to work for and lab work and it just really gets on top on you. By the time you get home you just want to sleep.

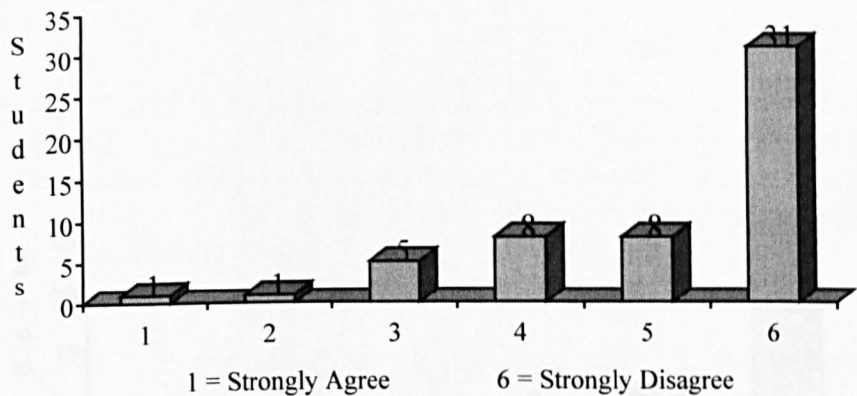
For some students in the focus group the website had eased course load pressures but for others it had added to their existing workload. Related to this issue was the demand for more course content on the module website. Questionnaire 2 asked the students to suggest ways the website could have done more to help them. Of the 21 students who answered the question, 95% (20) requested more resources, such as interactive online materials (e.g. for assessment purposes), detailed text based learning resources (e.g. a greater number of lecture handouts), and module information (e.g. specific exam dates). Interviewees also asked for more details about the module, a greater number of links to external resources and more comprehensive text based-learning materials. Further, interviewees and focus group members asked for more web-based clinical cases and assessments. Indeed, students in the focus group felt that the web was particularly suited to helping them learn about clinical procedures, due to the colourful, interactive nature of the medium. This demand for more resources may simply be a reflection of students not knowing what else to ask for so they merely ask for more of the same, or it may be because, if more details and resources were available students could ensure using the website would save them time, not add to their existing workload.

6.2.6 Student - staff relationships

This section explores the influence the web may have on relationships between students and staff and is split into two sections: the first examines student – student and the second student-staff relationships.

6.2.6.1 Student – student relationships

The use of the web did not appear to negatively affect relationships between students. On questionnaire 2 students rated their disagreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,” with a median level of disagreement of a 6. The results are summarised in graph 6.2.13.



Graph 6.2.13 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

From discussions with interviewees it is clear that other students were an important learning resource, both from their own year and the year above. Students were asked, when they were using additional resources to aid their learning (e.g. the library, the website and friends) what resource they tended to use the most. The majority of interviewees reported that learning from friends was one of their most important resources. As Hisham and Hannah commented,

I think you get more from your clinic and your friends because, you know, I talk to people who have actually done it before and you can’t get better than that really because they know what they have done, they know where they went wrong, so they can advise you accordingly.

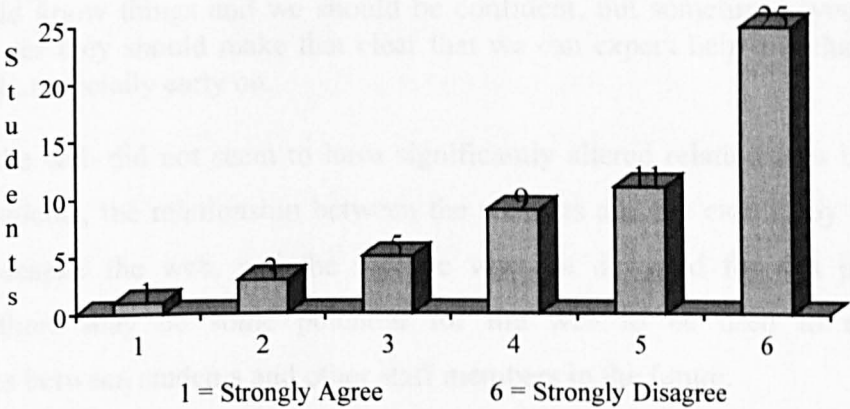
Everybody picks different things up from their different patients...I live with two other dentists and...you sort of pick things up from them...I think you learn an awful lot from that.

Perhaps because students on the same course encountered different procedures on clinic, with different clinicians teaching them at different times, this relationship had become very important. It seems the website did not foster relationships between

students, however, it was not designed to do so and there did not seem to be a need for it to fulfil this role.

6.2.6.2 Student-staff relationships

Similarly the web did not appear to have a negative effect on student – staff relationships for the majority of students. The median agreement with the statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,*” on questionnaire 2 was a 6. See graph 6.2.14 for a summary of responses.



Graph 6.2.14 Agreement with the statement, “using the web for part of this module meant I didn’t get to know the tutor as well as I usually do.”

Perhaps not surprisingly, agreement with statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do*” was strongly correlated with, “*using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,*” ($\tau_b = 0.704$, sig level=0.000, N=55). Agreement with the statement was also significantly related to agreement with, “*I would have liked more training in the use of the technology before I began this module,*” ($\tau_b = 0.247$, sig level=0.027, N=55) and negatively correlated with responses to, “*I could always access the web for this course when I wanted to,*” ($\tau_b = -0.239$, sig level=0.033, N=55). These relationships may indicate that those who had trouble with accessibility felt alienated in some way, and perhaps felt they could not share in the lecturer’s enthusiasm for using the website for the module.

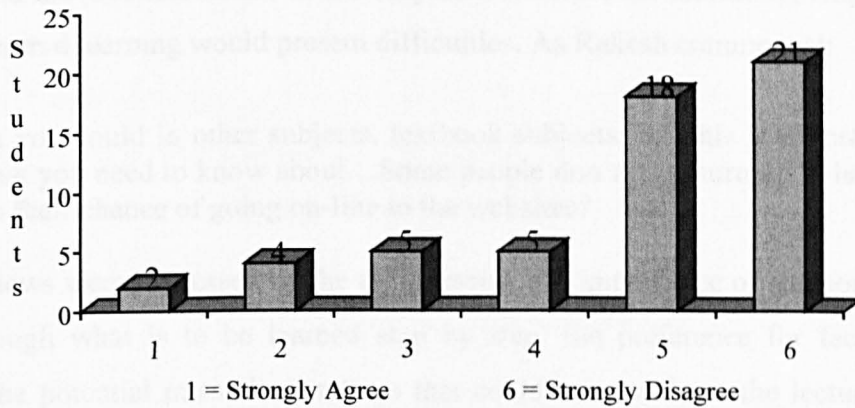
Interviewees had a high opinion of the case study lecturer, they thought he taught the students well, was approachable, and all were aware of his interest in technology. In contrast, half the interviewees noted how some students found the other clinicians intimidating and unapproachable. The web may be one way on enhancing student staff relationships through providing a means to contact the lecturers via email (though the majority of interviewees would prefer to see the lecturer in person, using email to organise a meeting or ask very basic questions) and setting the “tone” of the course. Though this was not a strong theme in the analysis one interviewee, Susan commented:

[It] is nice [that the website states] you must seek help when you feel you need it - because with some of the clinicians if you do go and ask for help you actually get shouted at for not knowing enough. Although I know, you know, we should know things and we should be confident, but sometimes [you are not]. So yes they should make that clear that we can expect help and that we can get it...especially early on.

Currently, the web did not seem to have significantly altered relationships between staff and students, the relationship between the students and the case study lecturer was good despite the web, and the website was not designed for this purpose. However, there may be some potential for the web to be used to enhance relationships between students and other staff members in the future.

6.2.6 Student demand

The students did appear to want to use the web more in their teaching and learning. On questionnaire 2 the median level of agreement with the statement “*I don’t want more modules that involve the web*” was a 5. A summary of the results is shown in graph 6.2.15.



Graph 6.2.15 Agreement with the statement, “I don’t want to have more modules that involve the web.”

Indeed, agreement with the statement, “*I don’t want more modules that involve the web,*” is significantly correlated to other statements (see section 11.4). For example, the statement is significantly and negatively related to agreement with, “*using the web for this module helped me to learn about the subject,*” ($\tau_b=-0.315$, sig level=0.006, N=55) and the statement, “*I enjoyed using the web for this subject,*” ($\tau_b=-0.261$, sig level=0.025, N=53).

Half those interviewed thought more lecturers should support the initiative by specifically directing students to the site and talking about it more in tutorials and lectures. Students thought other undergraduates would then use the site more. A minority of interviewees also expressed a desire for more detailed web resources for each module. Students in the focus group and the majority of interviewees explained how only the case study lecturer’s material was on the case study site while other lecturers’ handouts and material were not. Indeed, the material they would most like on the web was from those other lecturers (who were not considered as good as the case study lecturer).

There appears to be demand from the majority of students for increasing the amount of web-based materials available. However, this demand is for supplementary materials, not for the use of the web as a replacement to face-to-face teaching methods. When interviewees were asked how they felt about the web replacing traditional teaching methods students could see potential benefits, such as increased flexibility. However, all felt that the web could not replace face-to-face teaching as

they benefited from clinicians' experience, they needed to be guided through the course, and the practical nature of the subject. For some, the increasing emphasis on student centred learning would present difficulties. As Rakesh commented:

I mean you could in other subjects, textbook subjects, but this is all practical stuff that you need to know about...Some people don't even turn up to lectures what is their chance of going on-line to the websites?

Similar views were expressed by the focus group: the importance of someone taking them through what is to be learned step by step, the preference for face-to-face contact, the potential misunderstandings that could arise without the lecturer being present, and difficulties with motivation.

6.2.7 Departmental context

The department supported the use of the web for teaching and learning, and demonstrated this through employing staff and investing in the network. There was also interest to begin using the web for the CPD market. The lecturer had worked with a number of staff to use the technology in his teaching. The case study site had been set up with another member of staff (who was a clinician) at the school who had been employed on a part time basis to help develop the website. The lecturer explained his relationship with the other academic,

I tell him what I want and he puts it up...If I liked it I liked it, but if I said I don't like it he would destroy it and rebuild it...I have basic HTML knowledge that I can go in and update it.

Similar to the majority of innovators, the lecturer had invested an immeasurable amount of time in the project and a main motivation was personal interest and enjoyment. A further motivation was for the school to be at the cutting edge in this area and for the institution to look good. The school had employed a number of staff so that the clinicians would not need to have a vast amount of technical skills for all the web-based materials to be developed for the school. Despite this support, not all clinicians had come on board at the time of the research. The lecturer thought this was due to a number of factors such as: dislike of sharing material, the love of giving the lecture and time. However, he thought it would happen over time, and could not be forced or rushed.

6.2.8 Summary

The use of the web for the case study module was intended to:

- Provide students with access to all the relevant information about the module and useful resources
- As a supplement to the existing module

The use of the website was developed within a departmental context where:

- The case study lecturer was an enthusiast who enjoyed using technology, believed that it would lead to benefits for the students and wished to promote the school in this area
- There was some support and resources for the move towards the increasing use of the WWW for teaching and learning (e.g. the appointment of a web designer who was also a clinician) within the traditional degree programmes and for CPD markets
- There was some resistance from staff for this move

The student cohort can be defined as:

- Traditional, the majority taking A-levels prior to attending university
- Regular users of the web but few had had any formal training

Students used the website:

- For short, brief periods of time, typically 0-20 minutes per session, typically accessed the website on a monthly basis, with 49% (27) students accessing the website at least once a fortnight.
- In the way intended by the lecturer, i.e. as a “filing cabinet” for the module

Students’ opinion of the website from the questionnaire data:

- Benefits of convenient access for all relevant materials and the related potential learning benefits; the website fitted in well, they enjoyed using it, thought it would help them learn, to get more marks and was worth the time they spent on it
- Potential problems identified prior to use were the quality and kind of information available and the potential fall in attendance
- Difficulties identified after use were the need for more resources with improved coverage of the whole module, the lack of time to access the website and some problems with accessibility (both availability of computers and ability)

Students' opinion of the website from the qualitative data:

- Text based learning materials were most frequently used to help clarify and enhance understanding for students
- Module information used the least but considered valuable, particularly when trying to locate a specific piece of information
- Interactive tools perceived to be important but more useful for later on in the degree programme
- Some difficulties with accessibility (both availability and ability)

Factors that may have influenced opinion and use of the site:

- Fair accessibility (but difficulties for some in terms of availability of computers / printers and / or skills)
- Good usability
- Lack of time

The relationship between students and staff and the use of the WWW:

- No negative influence on student – student relationship – relationship with friends from current and other year groups of far greater importance and perhaps no need for WWW to take on that role
- No negative influence on student-lecturer relationship: the relationship between the case study lecturer and the students was already good, problems with other clinicians not changed significantly by the WWW but could be in the future

Student demand:

- Demand for increased use of WWW as a supplementary resource
- No demand for WWW to replace traditional teaching due to the preference for learning face to face, the practical nature of the subject and a lack of independent learning skills

6.3 Case study 3

The case study module was created as a supplement to an English module for second and third year English students. The research focused on students using the website in the autumn semester (October –January 2001). The discussion below highlights the main themes identified from analysis of seven data sources. These were:

1. Questionnaire 1 distributed to the students via email at the start of the semester. The response rate was 59%.²⁸
2. Questionnaire 2 given to the students at the beginning of their final seminar of the course in semester 2. The response rate was 90%.
3. The ASSIST inventory that was given to students in the last seminar of the semester. The response rate was 62%.²⁹
4. Semi-structured interviews with two students that took place in the first half of the semester prior to the ASSIST inventory and questionnaire 2.³⁰
5. A focus group that took place at the end of the second semester, after questionnaire 2.³¹
6. A semi-structured interview with the case study lecturer that took place at the end of the semester.
7. Analysis of the website.³²

The discussion below is split into seven sections. The first explores the purpose of the WWW in the case study. The second student characteristics, and the third student use. The fourth explores the influence the use of the web may have on student and staff relationships. The fifth considers student demand for replacing face-to-face teaching methods with the use of the web and the sixth the departmental context in which the initiative took place. The final section summarises the findings.

²⁸ There are a total of 29 students who took this module, 17 completed the first questionnaire that was emailed to students twice. Non-response occurred because students chose not to reply.

²⁹ 26 students completed the second questionnaire and 18 the ASSIST. Non-response occurred because students were not in the seminar and/or chose not to complete the ASSIST. The findings from the ASSIST are not included in the analysis.

³⁰ When the first questionnaire was distributed to the students, they were asked if they would like to take part in a semi-structured interview. 5 students volunteered and 4 took part, two tapes failed and the notes taken were not considered sufficient to be included as part of the analysis.

³¹ Students were asked to take part in a focus group at the end of the semester, 8 students agreed and took part.

³² As can be seen from the list above, this case is slightly different as the first questionnaire was distributed to students on-line and the ASSIST inventory was carried out at the end of the module. The implications for this when analysing the data alongside other cases are considered throughout the remaining chapters.

6.3.1 Aim and content of the case study website

The aim of the website are explored below, based on the analysis of the interview with the case study lecturer, studying the website and analysis of course documents.

The case study lecturer had been using some form of technology in his teaching for decades. He used technology in teaching because he enjoyed it and he believed that when used appropriately, technology could enhance students' IT skills, and augment teaching and learning. In contrast to other cases, he felt that the website had saved him time, as developing web pages was not time consuming and saved him time in terms of course organisation and distributing resources and information to the students. He had developed web-based materials for the case study module in 1996/97 but for this student cohort he had redesigned the website, though the module remained essentially the same in teaching content and style. The case study lecturer got no IT support and did everything himself.

The module is part of a larger website that contains a variety of teaching and learning materials related to each course the lecturer is responsible for and others areas of interest, for example, the lecturer's curriculum vitae and research interests, previous years courses and students' comments about the various modules. Here, the focus will be on the section most directly related to the module of interest although students may visit other parts of the website that are of relevance to them.

The face-to-face teaching for the module was via a one-hour seminar each week, students also met in small groups for one hour for further discussion without the presence of the case study lecturer. The case study lecturer had designed the site to help organize and structure the course for the students and as a means of providing them with all the information and resources they required, and in part to overcome the lack of resources / copies of texts in the university library. While the use of the web was voluntary, students were expected to access the site at least once a week, as details of what to prepare for the next seminar and the necessary resources were only available on the site. The case study lecturer encouraged students to contact him via email to discuss issues and ask questions and also used technology to enhance face-to-face teaching. For example, he used technology to help present students' presentations (e.g. playing music that students wanted to use).

The case study website contained the following sections (see figure 6.3.1): the *course week-by-week*, including information about what to expect in the seminar, tasks for next week and relevant resources; pages providing basic information about the course, i.e. *aims rules and customs of the course*, a *preliminary reading list*, *assessment of the course*, *rules for handing in assessed material*, *teaching times* and *official module description*; a *discussion board*; and *reading lists* which led to sections providing more detailed reading lists and web links on each topic.

The following discussion outlines the content available on the website and highlights the potential benefits of each of these elements. For the purpose of analysis, each of the sections on the website has been categorized into three areas: module information, text based supplementary learning materials and interactive tools.

6.3.1.1 *Module information*

Seven sections provide students with module information. The *preliminary reading list* provides information about essential reading and links to Amazon enabling students to purchase the books on-line. *Aims, rules and customs of the course* provide information such as the aims, teaching methods, assessment, and how the Internet will be used for the module, and examples of students work (see section 6.3.1). A third, *assessment of the course* focuses on the assessment of the module, and provides details such as deadline dates and learning outcomes to be assessed. *Teaching times* outlines the times the seminars take place. The *official module description* provides the standardized departmental description of the module. Assessment information is provided in the section entitled, *rules for handing in assessed material*. The *course week-by-week* and the *reading lists* contain module information but are considered in the sections below. These sections may be useful to help students' organization and time management, ensures they have up-to-date access to all the relevant details, may aid revision and help when completing assignments. The placing of syllabi on the web, particularly within a context of a larger website of all the modules the lecturer offers, can help to market the module to potential students (Bonk et al., 1999:5).

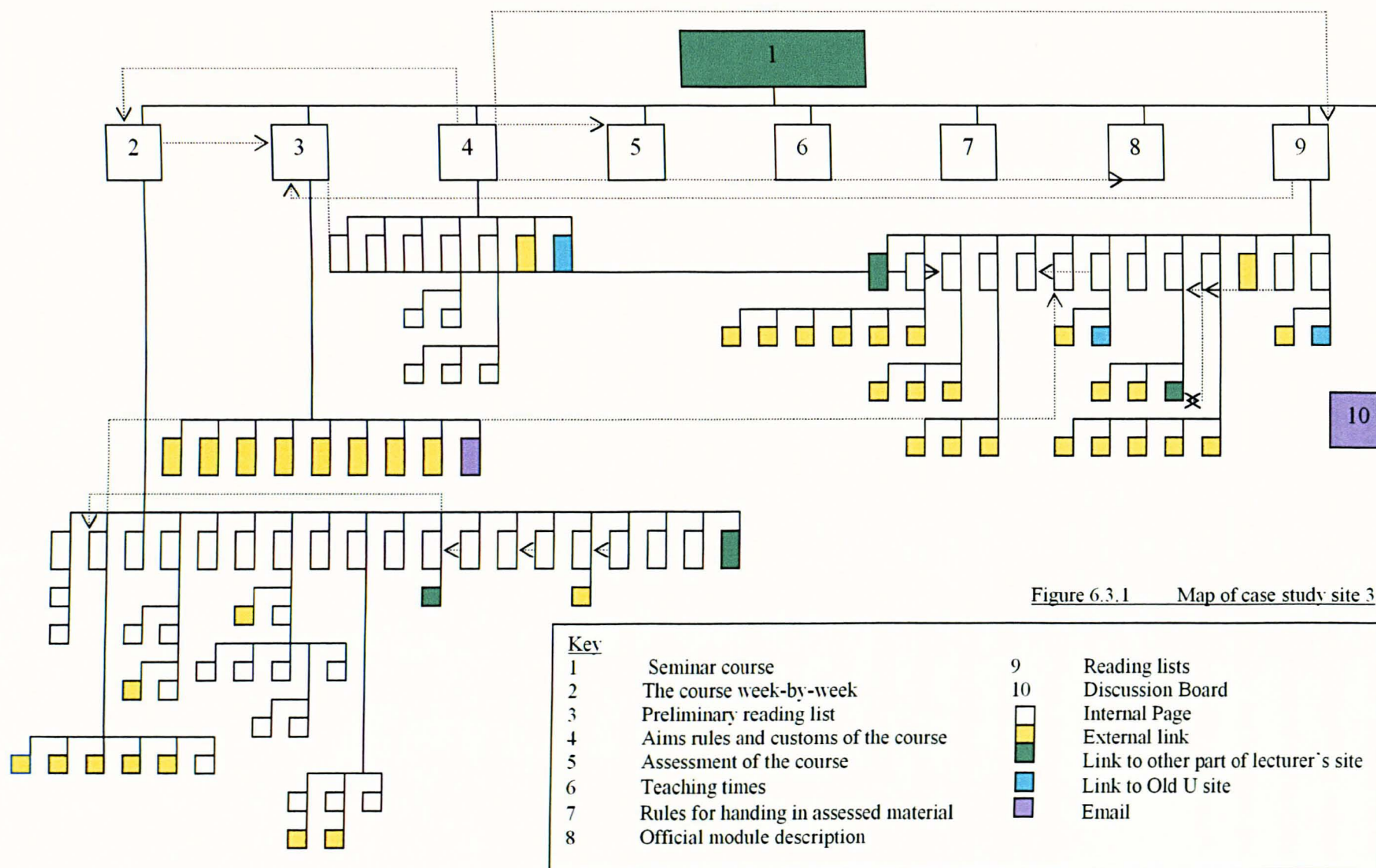


Figure 6.3.1 Map of case study site 3

6.3.1.2 *Text based supplementary learning materials*

The main section containing text based learning materials is the *course week-by-week* that contains resources such as poems and definitions. There are other features on the full site that fall into this category, for example lecture notes and slides from related courses and advice on how to write essays, but these are not the focus of the analysis here. These resources may help the students prepare in advance for the seminar and improve “time on task” as time is not wasted searching for resources that may not be available elsewhere or difficult to find (Chickering and Ermann, 1996:5).

6.3.1.3 *Interactive tools*

Three sections of the site contain interactive tools: the external links throughout the *course week-by-week* pages and on the *reading lists* sections of the website; the *discussion board*; and part of the *aims rules and customs* page that provides a link to examples of previous years work (i.e. websites that they developed as part of the module). As this latter section is not relevant to the students until the related second term module it will not be explored in any detail here. The use of external links may help students access relevant resources, explore the topic in more depth, gain an overview of the whole topic, and stimulate personal interest in the subject. Participation in the on-line discussions was voluntary and designed to stimulate further discussion outside the seminars and can encourage student-to-student and tutor to student communication (Barron, 1998:364); help students who are shy in seminars to have their say (Chickering and Ermann, 1996:4); and as the discussions are not assessed students can feel free to discuss the topics in any way they wish, however participation rates may be poor as assessed work is likely to take priority (Bonk et al., 1999:8).

6.3.2 Student characteristics

The students studying this case study module can be described as traditional campus based students.³³ Of the 17 students who filled in questionnaire 1, all were full time students, and, as would be expected for a second and third year course at Old U, 53% were aged between 18 and 20 and 47% between 21 and 23. 82% (14) of the students had previously completed A-levels with 18% (3) international students taking similar

³³ Though it is important to note this questionnaire was set to students via email and thus may have skewed the sample.

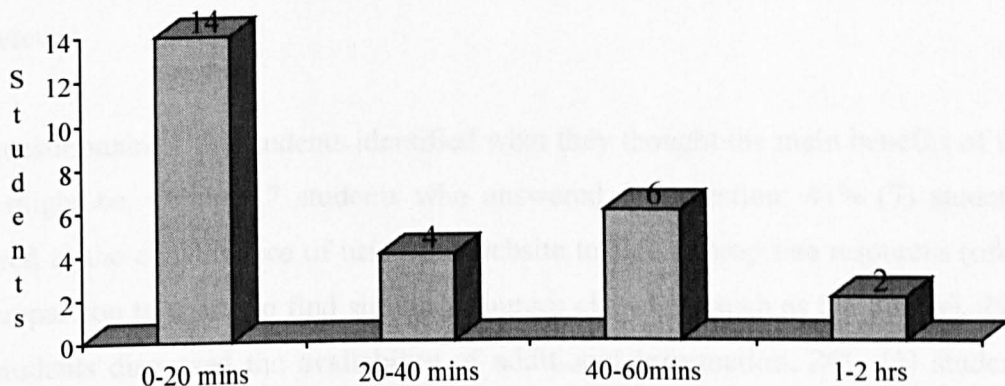
qualifications in France, Holland and Germany. 65% (11) of the students were female and 35% (6) of the students were male.

6.3.3 Student use

The following discussion focuses on the student experience and is divided into three sections: the number of occasions and amount of time students spent using the website; students’ opinion and purpose for using the website; and potential factors that may influence students’ use and opinion of the site.

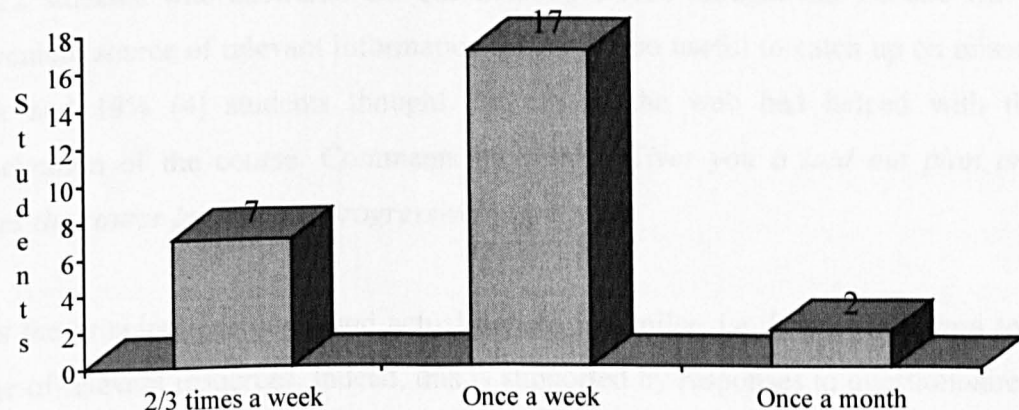
6.3.3.1 The amount students used the website

On questionnaire 2, students were asked how much time they spent, on average, when they accessed the website. As can be seen from graph 6.3.1 students typically used the site for 0-20 minutes per session.



Graph 6.3.1 Typical period of time spent on-line for the module website per session

As can be seen from graph 6.3.2, typically students reported accessing the website on weekly basis.



Graph 6.3.2 Number of times accessed the case study website

In this case, there was a significant relationship between the amount of time students reported spending on the site and the number of times they accessed it ($\tau_b = -0.404$, sig level=0.006, N=26). That is, the more frequently students accessed the site the shorter the amount of time they spent on-line for the module per occasion. Members of the focus group and interviewees reported that they accessed the site once or twice a week in order to obtain the materials from the week-by-week pages. In general, students tended to print off the items they required, thus this may explain the relatively short amount of time spent on-line.

6.3.3.2 *Students' opinion and purpose for using the site*

As discussed in chapter 4, different methods were utilised to gain a deeper insight into the student experience, and each method was analysed separately. For clarity, this section is divided into two parts, the first evaluating data from the two questionnaires and the second examining the findings from the focus groups and interviews.

On questionnaire 1 the students identified what they thought the main benefits of the web might be. Of the 17 students who answered the question: 41% (7) students referred to the convenience of using the website to find appropriate resources (often in comparison to trying to find similar resources elsewhere such as the library). 29% (5) students discussed the availability of additional information. 24% (4) students thought that the website would lead to improved communication between lecturer and students. 18% (3) noted the discussion board would be a useful resource and 12% (2) students thought their IT skills would improve.

On questionnaire 2, students reported what had been good about using the web. Of the 22 students who answered the question: 68% (15) thought the website was a convenient source of relevant information that was also useful to catch up on missed work and 18% (4) students thought the use of the web had helped with the organization of the course. Comments included, "*Gives you a laid out plan and makes the course logical and progressive.*"

Thus the principal perceived and actual benefit is similar, i.e. improved access to a range of relevant resources. Indeed, this is supported by responses to questionnaire 2 where students were asked if they accessed the website more at certain times of the

course compared to others. Of the 21 students who responded to the question, 58% (11) of the students used the site more when the resources were considered to be useful in preparation for the seminar. Interestingly, an actual benefit not raised at the start of the course (improved structure and organization) was an intended aim of the website as stressed by the lecturer.³⁴

Questionnaire 1 asked the students to state their concerns about using the web. Of the 16 students who responded to the question: 34% (6) students had no concerns. 31% (5) students were worried about their ability to use the Internet. 25% (4) students were concerned about access to computers and 6% (1) student noted that the use of the web might reduce contact time with the tutor.

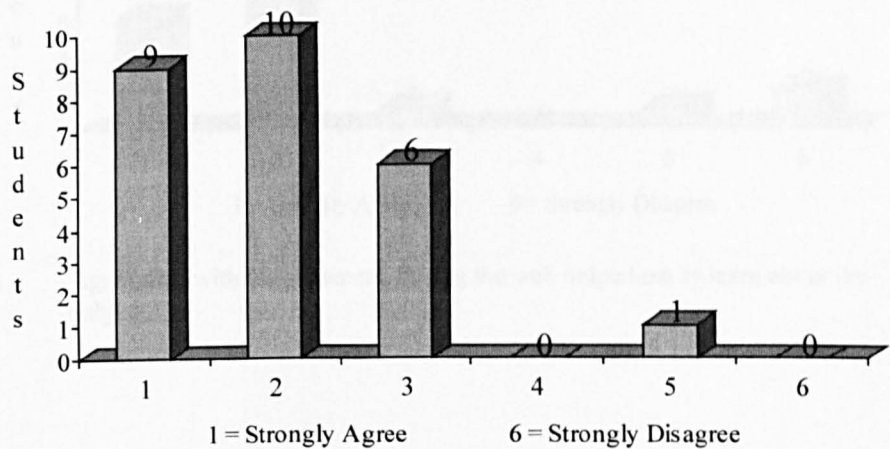
On questionnaire 2, students were asked what had been bad about using the web. Of the 22 students who responded: 18% (4) students reported that nothing had been bad, 59% (13) students discussed access difficulties due to a lack of home access and reliance on university computers. 18% (4) students stated that they experienced problems due to their lack of Internet skills (e.g. navigation or dealing with large amounts of information). Comments included, *"I am really useless at using the Internet and found it frustrating to start with...Can be discouraging when you don't know enough to cope with minor setbacks (page expiry, not knowing where to click etc)."*

Thus access issues arising from both availability of computers and, to a lesser extent, ability to use the Internet effectively appeared to be the main perceived and actual problems of using the website. As previously noted, comparison between these two questionnaires is problematic, yet it is interesting that accessibility was still a theme on the first questionnaire, despite the likelihood that these students were the most confident users of the Internet. This issue will be discussed in section 6.3.3.3.

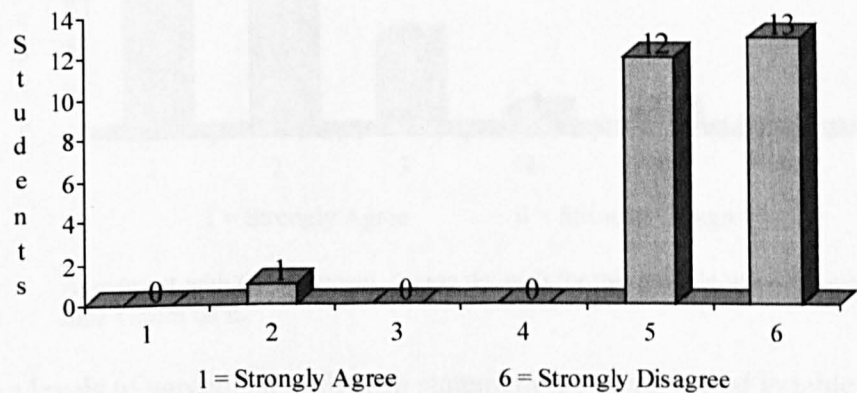
On questionnaire 2, the students were given a series of statements and asked to indicate their agreement or disagreement with each statement on a scale from 1 (strongly agree) – 6 (strongly disagree). The responses to five of the statements: *I enjoyed using the web for this subject; the web did not fit in well with the course;*

³⁴ However, it is important to note that comparison of these two questionnaires should be interpreted with caution as one was sent to students via email and the other completed on paper – thus there may be differences in the sample of the population who responded.

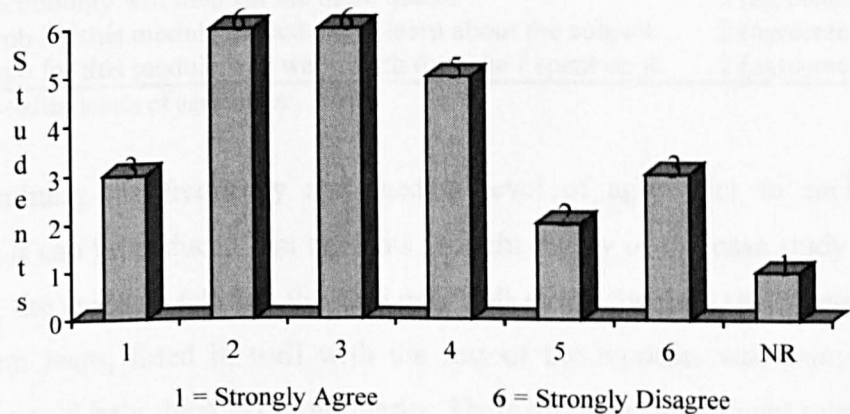
using the technology will help get me more marks; using the web for this module helped me to learn about the subject; and using the web for this module was well worth the time I spent on it, are summarised in graphs 6.3.3-6.3.7 below.



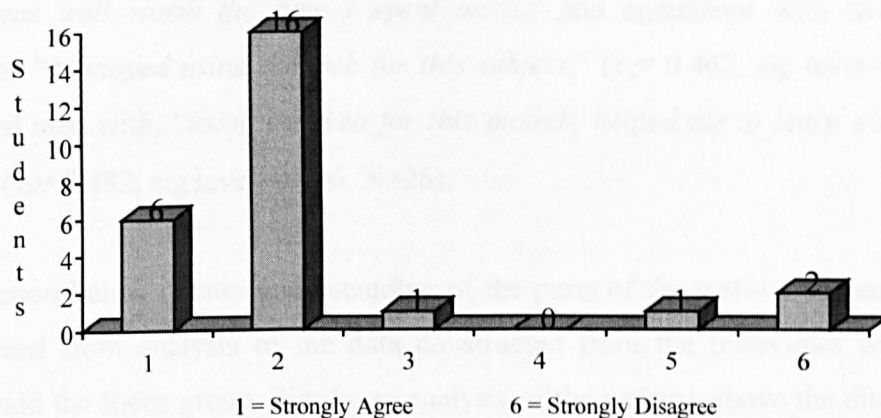
Graph 6.3.3 Agreement with the statement, "I enjoyed using the web for this subject".



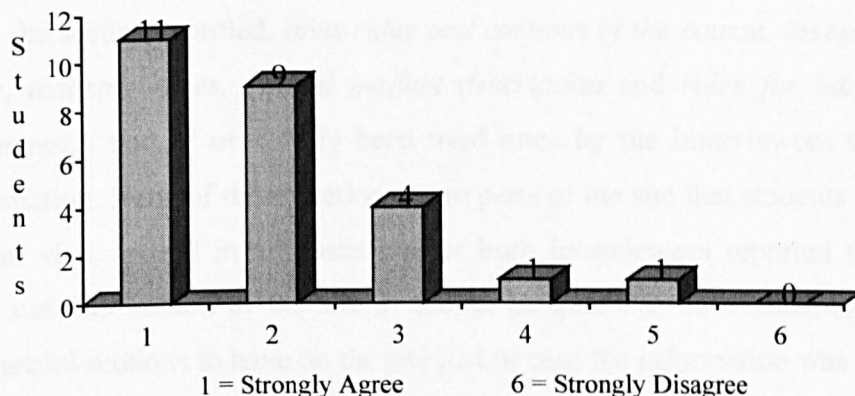
Graph 6.3.4 Agreement with the statement, "the web did not fit in well with the course."



Graph 6.3.5 Agreement with the statement, "using the technology will help me get more marks."



Graph 6.3.6 Agreement with the statement, “using the web helped me to learn about the subject.”



Graph 6.3.7 Agreement with the statement, “using the web for this module was well worth the time I spent on it.”

The median levels of agreement with each statement are summarised in table 6.3.1

Statement	Median
I enjoyed using the web for this subject.	2 (agreement)
The web did not fit in well with the course.	5.5 (disagreement)
Using the technology will help get me more marks.	3 (agreement)
Using the web for this module helped me to learn about the subject.	2 (agreement)
Using the web for this module was well worth the time I spent on it.	2 (agreement)

Table 6.3.1 Median levels of agreement

From examining the frequency and median level of agreement to each of the statements it can be deduced that students thought highly of the case study website. In general, the students felt that the web was well worth the time they spent on it, it helped them learn, fitted in well with the rest of the module, was enjoyable and thought it would help them get more marks. There are some significant relationships between levels of agreements on each of the Likert style statements. There is a

positive correlation between agreement with the statement, “*using the web for this module was well worth the time I spent on it,*” and agreement with two other statements, “*I enjoyed using the web for this subject,*” ($\tau_b = 0.442$, sig level = 0.011, $N=26$) and also with, “*using the web for this module helped me to learn about the subject,*” ($\tau_b = 0.482$, sig level = 0.006, $N=26$).

In the section below greater understanding of the parts of the website students used are obtained from analysis of the data constructed from the interviews with two students and the focus group. Similar to analysis of the website above the discussion is divided into three areas: module information; text based learning materials and interactive tools (see figure 6.3.1 for a site overview).

Module information

In general, the sections entitled, *aims rules and customs of the course*, *assessment of the course*, *teaching times*, *official module description* and *rules for handing in assessed material* had, if ever, only been used once by the interviewees to check some information. None of these sections were parts of the site that students felt they would often visit, indeed in all cases one or both interviewees reported that they would not use this section of the site in future. Despite this both students thought they were useful sections to have on the site just in case the information was required at a later date. The two remaining sections in this category, the *preliminary reading list* and parts of the *reading lists* (see also interactive tools below) were perceived to be more useful. Both interviewees appreciated the provision of a *preliminary reading list* with additional, recommended reading for each topic provided on the *reading lists*. The interviewees had only scanned the more detailed reading lists though thought they would be useful in the future, particularly when writing essays when more specific information was required.

Text based learning materials

Both interviewees had regularly used the *week-by-week* section of the website to find out what was happening and what they had to do to prepare for the seminar. Both felt this section was the most useful part of the site and was a good way of disseminating the work, and providing everything they required for the module in one place. This was the view supported by members of the focus group – as all relevant resources were in one place this saved the majority of students’ time.

Indeed, some of the students had not gone to the library for the course as they had found everything they needed on the website. As Jacqui commented,

There is less to do because there is less kind of looking around for stuff and less having to think because I mean lots of courses you have to spend an hour or so thinking about what exactly you are trying to look for for a start and with this you know what you are looking for, and most of the time the kind of primary text or whatever is there and all we have to do is kind of use it you don't need to spend much time [searching].

However, some students were concerned that it could become too web-based and that they should go to the library and other sources to locate information. In addition, other students felt that locating the relevant resources on the web was more time consuming due to problems with accessibility.

Interactive tools

The external links on the *reading lists* and the *course week-by-week* were valued by the interviewees because they thought it was useful to have a limited number of resources selected by the lecturer as opposed to the large lists provided by search engines. Further, the selection of the links by the lecturer ensured the sources were accurate. Similarly, the focus group thought that the links were useful particularly for this course that involved understanding of psychoanalysts such as Freud or Jung where the websites in this area were particularly difficult to evaluate. As Ellen commented,

One of the dangers, I think, in using the Internet is that there is a lot of crap on there and you could end up with an essay that is anonymous, and written you don't know when, with people quoting other texts but not referencing them properly...and you end up with...information you don't feel you can trust in the same way, and yet at the same time...there is something authoritative about looking at something on the screen.

In general, the discussion board was viewed positively both by the interviewees and the members of the focus group. Neither interviewee had contributed to the board though both had experience of using boards before. One interviewee had read the postings. Both interviewees thought they might contribute to the board in the future, though as one interviewee noted, she would have to feel the point she was making was valid and of a high standard. Indeed, few students had used the facility; only twelve messages were posted on the board from the 17th October 2001-15th December 2001. Seven of these messages were from the lecturer (e.g. information

about extra resources, responding to students' postings and encouraging further discussion).

The focus group thought the discussion facility was a good idea but had not participated for a number of reasons, such as the need for more encouragement from the lecturer, problems with accessing the Internet, and concerns that they would be putting themselves on the line in a subject that they found difficult. As a member of the focus group, Jacqui, noted,

I think when you have a question you are sort of laying yourself open to people knowing that you are not 100% confident about what you are thinking about.

The focus group were asked what the case study lecturer could do to promote discussion. They thought a more structured, directed discussion related to the week-by-week discussions might help. Neither of the interviewees believed that assessment would encourage contributions as it would create a forced debate and was unfair for those who were not confident in using the medium. Similarly, members of the focus group thought assessment would destroy the nature of the dialogue.

Both interviewees felt the case study lecturer should contribute to the board given his expertise in the subject. When the students in the focus group were asked if the lecturer should contribute, one student felt that when he had posted a comment he felt a bit of a "teacher's pet", despite, in the main, being motivated to write because he was interested in the topic. Thus, he thought discussion might be increased if it was left to students. However, some students thought while having the case study lecturer contributing felt a bit like he was looking over their shoulder all the time it was also good to have his input into discussions. Indeed, students already met in small groups independently each week to talk about the topics covered in the seminars and this had been initiated and encouraged by the case study lecturer. However, because of these face-face groups it meant there was less reason to use the discussion board. When asked if they would prefer to use the web instead of meeting in small groups, members of the focus group felt this would not work as well because using the medium would lead to discussion that was not spontaneous and would be more time consuming as it was not in synchronous time. A further problem for some students was with access to the Internet. The lecturer also had possible reasons why the students were not contributing, and had considered assessment to encourage it,

I have set up a discussion forum but that has been very disappointing --nothing happens. I thought of making it compulsory but I drew back from that I think there are two reasons. One reason is that British students are shyer as oppose to American students who have been doing show and tell since they were six British students don't have that sort of forthcoming quality and then the second thing is they find it difficult to type...you must ask them and see if that is the case but that is what I suspect.

A further benefit of the website for interviewees and members of the focus group was that it provided structure and support to the seminar based module. As Peter and Ellen from the focus group commented,

It is just a strange mad subject and the website adds a great deal of structure to it.

It helped me once or twice when I had a bad day and I was getting all panicky coming out of the seminar and thought okay I really don't understand anything that is going on. I went to the website just read through his old lectures and just skimmed through and it was sort of comforting to have everything there week-by-week and sort of like having the information there at your finger tips is useful.

Thus, from the qualitative and quantitative data it appears students are using the website in some of the ways intended by the lecturer. It provides students with a clear structure for the course, helps to prepare for the seminars and makes accessing the relevant resources more convenient (though for some students accessibility was a problem). The discussion board was not used as the lecturer had hoped it would and this was due to factors such as the students already meeting face-to-face to discuss topics outside the seminar, the difficulty students have in sharing their opinions in such a permanent form and problems with accessibility. In the next section the issues of accessibility and usability are considered.

6.3.3.3 Factors that may influence use, opinion and purpose

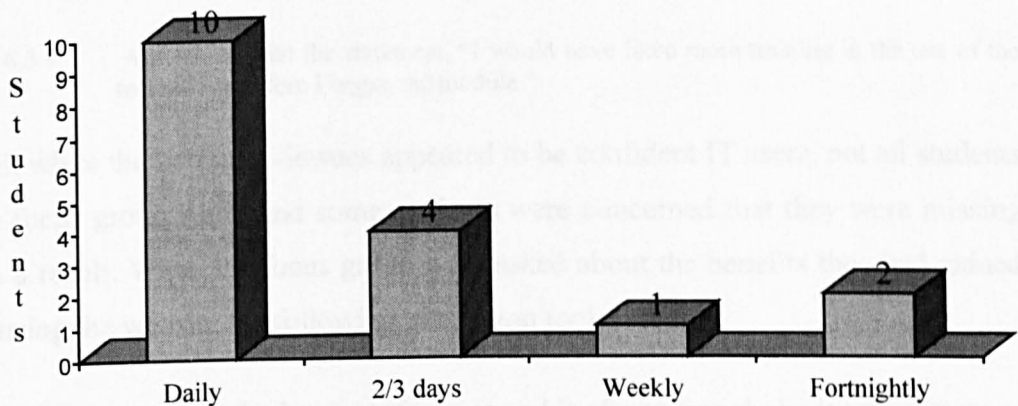
There are a number of factors that may influence the use of the web for teaching and learning and two of these, accessibility and website usability, are discussed below.

6.3.3.3.1 Accessibility

Two aspects of accessibility are considered: Internet skills and availability of computers.

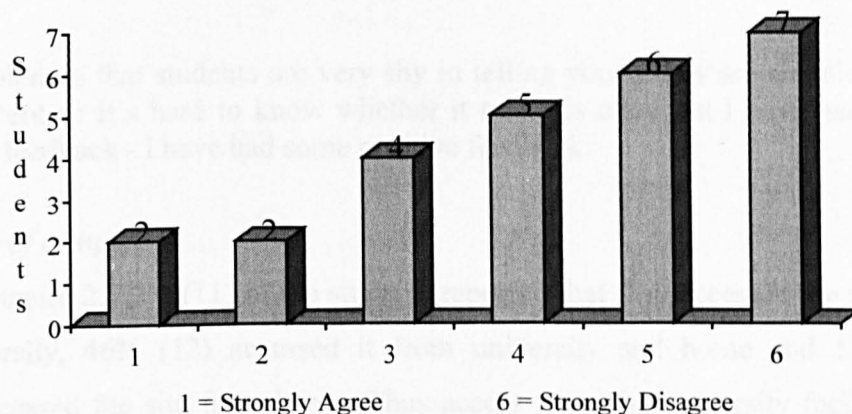
Internet skills

Prior to the start of the module students reported typically using the WWW on a daily basis (see graph 6.3.8). Frequent use of the Internet is to be expected, given these students answered questionnaire 1 via email.



Graph 6.3.8 Frequency of access to the Internet prior to the start of the module

Despite these students being frequent users of the Internet prior to the start of the module only 18% (3) had received some kind of formal training in using the WWW, the majority 82% (14) of students had received none. This could have implications for students' use of the web for the case study module. However, as can be seen in graph 6.3.9 students did not want more training to use the web for this module. The median response to the statement, *"I would have liked more training in the use of technology before I began this module,"* is a 4 suggesting that the amount of training is acceptable for the students. However, there is a significant minority that did want more training, and thus it is likely that at least some of the students did not feel they had sufficient IT skills (this is supported by the questionnaire data in section 6.3.3.2 above). Agreement with the statement, *"I would have liked more training in the use of technology before I began this module,"* is positively correlated with agreement with, *"the website was difficult to operate,"* ($\tau_b = 0.451$, sig level=0.009, N=26).



Graph 6.3.9 Agreement with the statement, “I would have liked more training in the use of the technology before I began the module.”

Indeed, while the two interviewees appeared to be confident IT users, not all students in the focus group were, and some students were concerned that they were missing out as a result. When the focus group were asked about the benefits they had gained from using the website the following discussion took place:

It does get you onto the Internet if you are a bit of a technophobe it sort of gets you used to it ...

William

It has stopped me from being really technophobic...

Ellen

It is not as scary as you think.

Jacqui

It is like you have got this enormous initial block when you don't know anything about it. and you don't know how to get anywhere and you do not know what to do, and you feel like an absolute idiot asking everybody the simplest things and you don't know the terminology to ask people stuff.

Ellen

You kind of realise that once you have done it once you can do it again...and you can work things out for yourself.

Jacqui

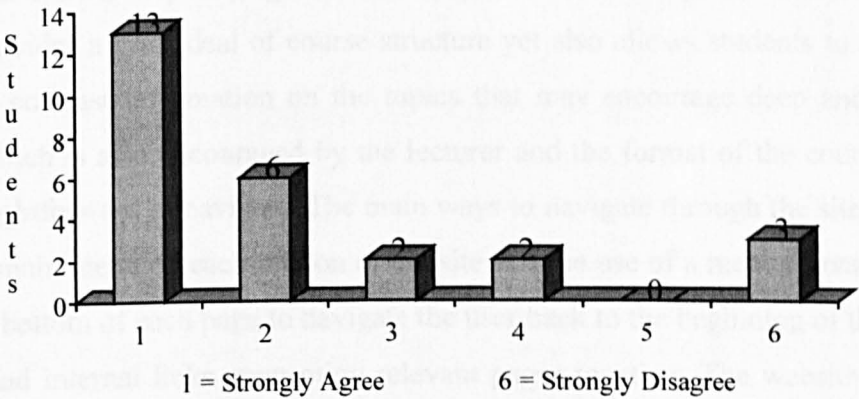
The case study lecturer had offered further training yet no one had accepted his offer despite evidence that a significant minority required it. In the focus group, the majority of students did not appear to know about this offer of support. Indeed, the lecturer thought the students were reasonably competent as for the first time this year all the students had an email address and no one had accepted the training (although

he noted this may be fear of volunteering). However, he did find that some students did not get the information. As he noted,

The problem is that students are very shy in telling you if they are technically incompetent so it's hard to know whether it really is okay but I have had no negative feedback - I have had some positive feedback.

Availability of computers

On questionnaire 2, 42% (11) of the students reported that they accessed the website from university, 46% (12) accessed it from university and home and 12% (3) students accessed the site from home. Thus access from the university facilities is important. In general, students did not have a problem with access, as can be seen from graph 6.3.10, the median level of agreement with the statement, “*I could always access the web for this course when I wanted to*” was 1.5.



Graph 6.3.10 Agreement with the statement, “I could always access the web for this course when I wanted to.”

Indeed, both interviewees found access to be reasonable, as long as they picked their times carefully and went to certain computer clusters on campus. However, some members of the focus group experienced difficulties, as Liz and Louise commented:

I found it so hard...it is just the practicalities, I mean, we do not have Internet at the house so I have to go to the school to use it and my username and password do not work and...the time I did try to print things off the net at the school it was so difficult to do, it took several trips across the corridor to go to the office. It's just more trouble than its worth ...

It just sounds like we are being expected to pay for our own photocopying of the handouts and stuff.

However, others disagreed, as Tom commented,

We have seven days a week, twenty four hours a day access to the Internet ...I can come into the computer room [to] look on the Internet...past, present, future work is all there - it is a massive resource.

6.3.3.3.1 Site usability

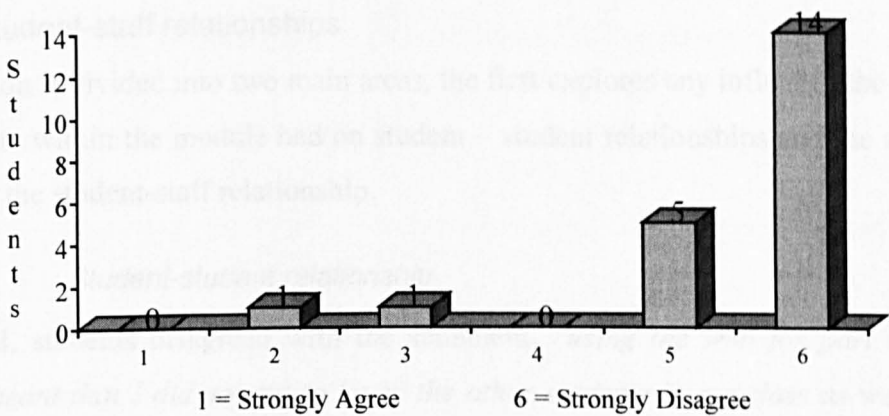
In this section, the usability of the website is explored through: 1) analysis of the website; and 2) analysis of students' views identified from the focus groups, questionnaires and interviews.

Images are placed on the website to enhance the look of the website and used to enhance learning in a small section of cases. As can be seen from figure 6.3.1 this site can be categorised between a hierarchical and referential structure, which enables students to explore topics at differing levels of depth, and allows them to navigate their own way through the site (Oliver and Herrington, 1995:12). The website provides a great deal of course structure yet also allows students to explore issues and contrast information on the topics that may encourage deep and active learning which is also encouraged by the lecturer and the format of the course. The site is straightforward to navigate. The main ways to navigate through the site are the use of the main menu on each section of the site and the use of a menu / breadcrumb trail at the bottom of each page to navigate the user back to the beginning of the main sections, and internal links connecting relevant pages together. The website is very well presented, and contains many of the features identified as important when considering presentation and readability. Each screen has a similar format, the look and feel of the site is consistent, and uses a lot of white space. The screen presentation is page based which makes the website accessible to all, regardless of computer type or size, though it can cause frustrations due to scrolling (Barron, 1998:358). However, scrolling on the pages is not excessive and is unlikely to cause many problems. The amount of text on each screen is limited and contains short concise headed sections. The colour combinations are easy on the eye, the background is simple and does not distract the user (Bonk et al., 1999:5) and there is a large contrast between text and background screen (Barron, 1998:360).

The interviewees, members of the focus group, as well as questionnaire respondents felt the website was well presented. In general students thought the site was excellent, but requested more multimedia features. As Peter commented,

More paintings more pictures make the site bigger and better because I think that what he does and what he teaches in very original, very inspirational and really makes you think so much...the website [should] reflect that.

The students found the website easy to operate. As can be seen in graph 6.3.11 the majority of the students disagreed with the statement, “the website was difficult to operate,” with a median level of agreement of 6.



Graph 6.3.11 Agreement with the statement, “the website was difficult to operate.”

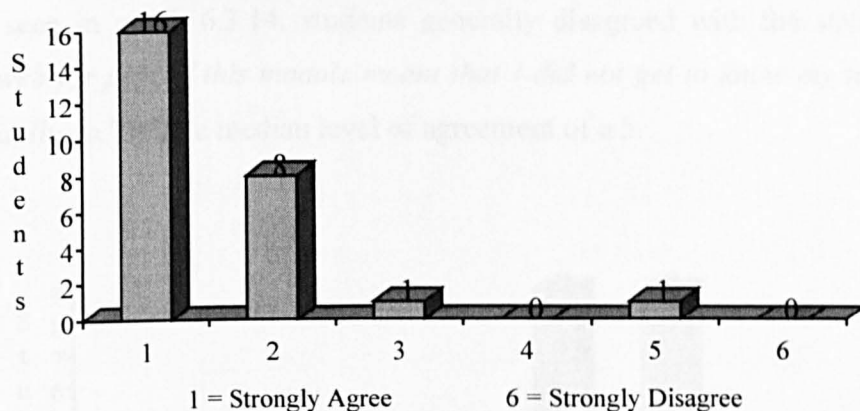
This is supported by comments from the interviewees who thought the navigation of the site was clear. One interviewee felt that the pages of basic information tended to overlap and that section of the site could be condensed; though the other student thought that the overlaps increased the ease with which particular sources could be located.

Students in the focus group thought the site was fairly easy to navigate. Although for some students the layout was not straightforward, as William and Ellen commented,

It has got a funny layout; once you have used it once and you have found it it's fine.

I wonder if that is one of [name of lecturer] little schemes though to get people to look around the website a bit.

The students' median level of agreement with the statement, “the website was well presented,” was 1. A summary of responses is shown in graph 6.3.12.



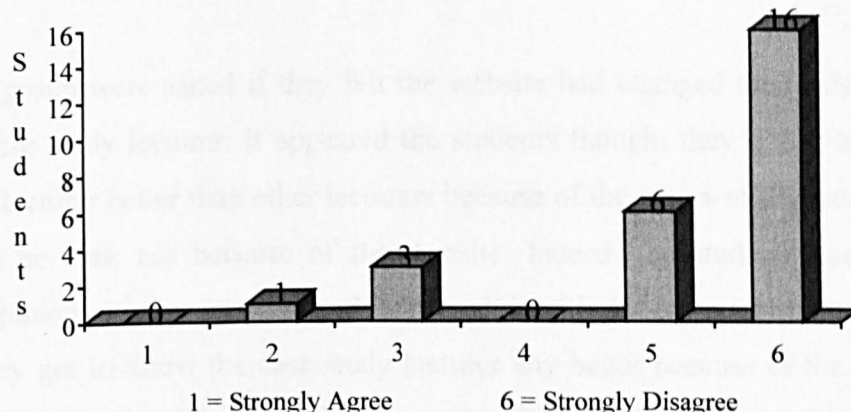
Graph 6.3.12 Agreement with the statement, “the website was well presented.”

6.3.4 Student-staff relationships

This section is divided into two main areas, the first explores any influence the use of the website within the module had on student – student relationships and the second examines the student-staff relationship.

6.3.4.1. Student-student relationship

In general, students disagreed with the statement, “*using the web for part of this module meant that I did not get to know the other students in my class as well as I usually do.*” As can be seen in graph 6.3.13 the median response was a 6.

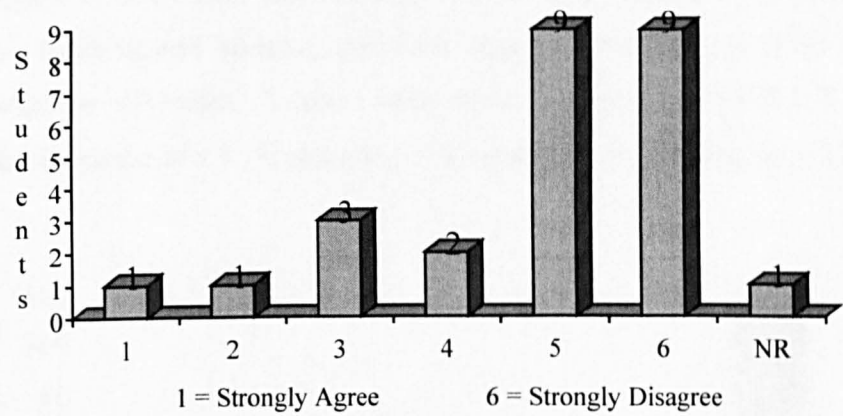


Graph 6.3.13 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

As the discussion board was not used to a significant extent, and the web did not replace any face-to-face teaching, this issue did not arise as a significant factor in either the interviews or focus group. Thus it appears that the web did not have a negative influence on student-student relationships but nor did it enhance it.

6.3.4.1. Student-staff relationship

As can be seen in graph 6.3.14, students generally disagreed with the statement, “using the web for part of this module meant that I did not get to know my tutor as well as I usually do,” with a median level of agreement of a 5.



Graph 6.3.14 Agreement with the statement, “using the web for part of this module meant I didn’t get to know the tutor as well as I usually do.”

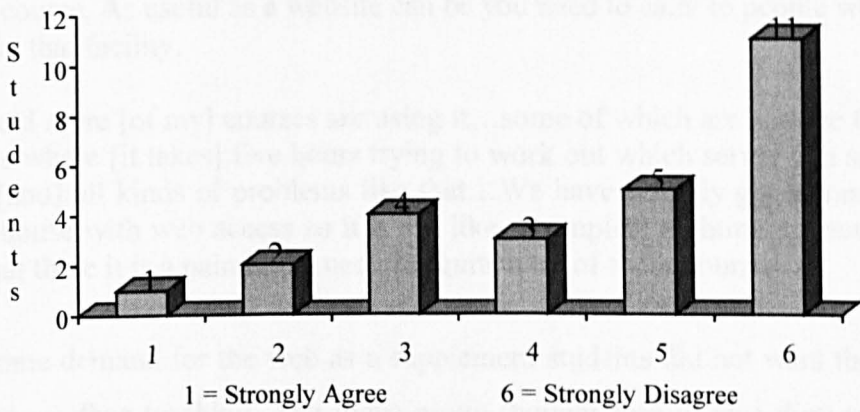
Predictably, agreement with the statement, “using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,” was positively correlated with agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do” ($\tau_b=0.628$, sig level=0.000, N = 25).

The focus group were asked if they felt the website had changed their relationship with the case study lecturer. It appeared the students thought they got to know the case study lecturer better than other lecturers because of the nature of the module and the person he was; not because of the website. Indeed, the students had a very positive opinion of the lecturer and the module. Similarly, neither interviewee thought they got to know the case study lecturer any better because of the website, though one felt the site did reflect his personality. Both interviewees would email the lecturer or contact him via the discussion board as oppose to immediately going to see him face to face. The lecturer encouraged these forms of communication. When the lecturer was asked if he felt the WebBoard had changed the relationship with the students, he replied,

No---it means that I am more approachable because they know they can always get hold of me and I do ask for it to be emails and it means, I hope, that they think of me as being reliable, in control, that's part of the aim. But it is very important not to make the technology get in the way, the technology is always subservient to the teaching course.

6.3.5 Student demand

There did appear to be demand from the students for more modules to use the web as a part of their teaching and learning. On Questionnaire 2 the majority of the students disagreed with the statement, *"I don't want more modules that involve the web,"* with a median response of a 5. A summary of the results is shown in graph 6.3.15.



Graph 6.3.15 Agreement with the statement, "I don't want to have more modules that involve the web."

Despite this demand, students in the focus group pointed out that their other experiences at Old U for using the web were not as positive. When the focus group were asked what they felt about the design of the case study website students noted how much better it was than the universities main website, which students found difficult to navigate. As James commented,

It took me like an hour and a half on a fast computer at the students union trying to search out some term dates for next year. I mean that is the kind of information that would be great to be able to get [on the web] but using [the Old U] site is ridiculous.

The students in the focus group also observed that staff must be technically competent. As William explained,

The tutor says there is stuff on the web, this is the url, I don't know how to work it but I am told if you go there you can get this information...more often than not you go to this the url it is dead it doesn't work, it goes to the wrong site, there is no information there. Unless it is someone like [the case study lecturer] who does know what they are doing with the Internet to actually check this stuff and can actually (like he does) put it on a website that is accessible rather than Old U with seven passwords and a key type thing then it is often more hindrance than help.

Indeed, the students did not feel the institution was quite ready for the replacement of traditional teaching methods with the web. As William and James commented,

We are in a very transitional period at the moment - not everyone has the Internet but ultimately they will, pretty much at universities anyway but while you are not at that stage yet it's very difficult to do a web-based, a totally web-based, course. As useful as a website can be you need to cater to people who do not have that facility.

More and more [of my] courses are using it...some of which are horrific Old U systems where [it takes] five hours trying to work out which server you should be on [and] all kinds of problems like that...We have actually got a computer in our house with web access so it is not like a complete nightmare...but even with that there it is a pain in the neck for quite a lot of those courses.

Despite some demand for the web as a supplement students did not want the web to replace face-to-face teaching. The focus group thought face-to-face discussion was particularly valuable because of the need for discussion to help them learn and to develop ideas, and the preference of talking about issues face to face. As Ellen commented,

I have really got in my mind; I am like turning it over in my head all in the time. It really helps to meet up with other people who are going through the same sort of thing.

There was also the problem of motivation,

You are not very good at motivating yourself if you have got no contact with the tutors there is no impetus to do the work...I know I shouldn't say this but [if there was no face to face contact]...you would just put it off and say oh I'll do it next week.

Louise

For similar reasons the interviewees viewed the web as a replacement negatively. In general, students already felt they would like more contact time for their degree programme and did not wish for face-to-face contact to be reduced.

6.3.6 Departmental context

The case study lecturer highlighted a number of factors preventing staff from using the web for teaching and learning: technophobia, a lack of understanding of design, the prioritisation of research in promotion which led to an unwillingness from staff to invest the time in learning a new skill (that he believed could save them teaching time), and difficulty with the fact the students may know more than them about this area and were unable to deal with unexpected technological faults in the classroom. Further, as with many innovators, he believed that the teaching had to come first, and that the use of the WWW should never be technology led. Over the next five years the case study lecturer had taken on the responsibility for creating department web pages for staff and students, but he felt without investment, changes in staff profile and a turnaround in the current conservatism present both from students and staff, not a great deal would change in terms of using the web for teaching and learning in the department.

6.3.7 Summary

The use of the web for the case study module was intended to:

- Supplement weekly seminars through providing details of what to prepare for the following week, access to relevant resources and providing a further forum for discussion
- Provide all information relevant to the module and to provide a organisation function
- To save the lecturer time

The use of the website was developed within a departmental context where:

- There were few initiatives in this area
- The case study lecturer's motives were personal interest, enjoyment, and the belief that appropriate use could lead to improvements in IT skills and other educational benefits for students
- Many staff were resistant to change, due to lack of incentives and skills

The student cohort can be defined as:

- Traditional, most having completed A-levels prior to entering university, the remainder a small proportion of Erasmus students
- Majority were regular users of the web³⁵, but a significant minority would have liked more training in the module

³⁵ Though this is based on analysis of email responses to questionnaire 1.

Students used the website:

- On a regular basis, for short periods of time, typically once a week and usually for 0-20 minutes
- In some of the ways intended by the lecturer, i.e. to prepare for the weekly seminars but not to discuss issues that arose in seminars on-line

Students' opinion of the website from the questionnaire data:

- Convenience of access to a range of relevant resources, worth time spent on it, helped learning, improved marks, fitted in with course and was enjoyable
- Problems with access (primarily availability and to a lesser extent ability)

Students' opinion of the website from the qualitative data:

- Week-by-week section used most, useful for links to resources, provided structure to course
- Discussion board not used a great deal due to: access, public nature of board, preference for face to face discussion that was already taking place outside the seminar. Assessment would not lead to positive use of the board

Factors that may have influenced opinion and use of the site:

- Some problems with accessibility (both skills and availability of computers)
- Good usability

The relationship between students and staff and the use of the WWW:

- Student-student relationship not significantly affected by use of WWW
- WWW did not significantly effect relationship between staff and student although nature of the module meant students got to know lecturer better than usual and WWW may enhance the ease with which he could be contacted

Student demand:

- Is demand for increased amount of the WWW for teaching and learning within modules where appropriate
- No demand for the WWW as a replacement for "traditional teaching" due to social nature of learning, potential problems with motivation and value of face-to-face contact. Further, students felt infrastructure of institution was not sufficiently developed for this to take place successfully

7. Results Chapter 3 - the Modules at New U

In this chapter the results from each of the three case study modules at New U are analysed in turn, reported as cases 4-6. The analysis is based on seven data sources. The process of data collection and analysis are described in detail in chapter 4. In summary, the sources of data construction are:

1. Questionnaire 1 to determine student characteristics, prior experience of using the web and expectations of using the case study site for the module. Typically, this questionnaire was distributed to the students in a lecture at the start of the semester, after being introduced to the website.
2. Questionnaire 2 to determine students' use, opinion and experiences of using the case study site for the module. Usually, the questionnaire was given to the students at the beginning of their final lecture of the semester.
3. The ASSIST inventory to determine if students employed a surface, strategic or deep approach to learning. Ordinarily the inventory was given to students in the sixth week of the semester in a lecture but the results are not included in the analysis (see chapter 4).
4. Focus groups to determine opinions and experiences of using the web for teaching and learning for the case study site and more generally. Normally, the focus group took place at the end of the second semester, after questionnaire 2.
5. Semi-structured interviews with students to determine in-depth opinions and use of each section of the case study site. In general, the interviews took place in the second half of the semester prior to questionnaire 2.
6. Semi-structured interviews with the case study lecturer and any other staff involved with the module to determine the way the module was conceptualized and produced, the aims of the module, and the departmental context. The interviews took place at the end of the semester.
7. Analysis of the website to determine usability factors, such as navigation and presentation, and content of the site.
8. Where appropriate, analysis of on-line contributions.

The first section of this chapter explores the use of a WebBoard for students reading a degree in Midwifery. The second highlights the main themes from the use of a supplementary website for a German module and the third discusses issues that arose from the study of a website that was used as a supplement and partial replacement to a Cultural Studies module for Marketing students.

7.1 Case study 4

In this case, the innovation of interest was the use of WebBoard. WebBoard is a web-based message board that enables threaded discussion by a group of users in asynchronous time. It had been created as a supplement to several units for first year students studying a degree in Midwifery. The research focused on students using the site in the spring semester (January – April 2001). The discussion below highlights the main themes identified from analysis of seven data sources:

1. Questionnaire 1 distributed to the students in a lecture at the start of semester 2, after being briefly introduced to the WebBoard. The response rate was 90%.
2. Questionnaire 2 given to the students at the end of their final lecture of the course in semester 2. The response rate was 95%.
3. The ASSIST inventory given to students in the second half of the semester in a lecture. The response rate was 78%.³⁶
4. A semi-structured interview with 1 student. The interview took place at the beginning of the summer semester after questionnaire 2.³⁷
5. A focus group that took place at the end of the second semester, after questionnaire 2.³⁸
6. A semi-structured interview with the case study lecturer and an interview with a midwife who participated in the on-line discussions. Each interview took place towards the end of the module.
7. Analysis of the message boards.

The discussion below is split into seven sections. The first explores the purpose of the WebBoard, and the second student characteristics. The third section explores student use and the fourth the potential influence the use of the web may have on student and staff relationships. The fifth investigates student demand for the use of the web in teaching and learning and the sixth considers the departmental context in which the initiative took place. The final section summarises the findings.

³⁶ There are a total of 40 students who took this module. 36 students completed questionnaire 1, 38 questionnaire 2, and 31 the ASSIST. Non-response occurred because students were not in the lecture.

³⁷ Before the first questionnaire and the ASSIST were distributed to the students, they were asked if they would like to take part in a semi-structured interview. The case study lecturer asked students in class if they wanted to participate and a letter was sent to all students by the researcher. Despite these efforts only one student volunteered and one took part.

³⁸ Students were asked to take part in a focus group towards the end of the semester by the case study lecturer and via a letter from the researcher, twelve students agreed and took part.

7.1.1 Aim of the WWW in the case study module

The initial aims of the WebBoard are explored below, based on the analysis of the interview with the case study lecturer, studying the message boards and analysis of course documents.

Prior to the introduction of WebBoard the lecturer conducted preliminary needs analysis with students from the year above to determine how useful the facility may be. The response was positive, and the WebBoard was launched in the second semester of the following academic year for first year students. It was designed as a supplement to current teaching methods and was developed to provide students with the opportunity to discuss their experiences while out on clinical placement with university staff, midwives from around the city and their peers. Participation, while encouraged, was voluntary and not assessed.

A central purpose of the discussion boards was to allow students to more easily link the theory they had learnt in the classroom with clinical practice; and provide support to students who were encountering all aspects of clinical practice from the outset of their degree. Other motivations were to provide a consistency of information and learning experience that was difficult to achieve when students were participating in placements scattered across the city, to promote independent lifelong learning skills, and to enhance opportunities for collaborative learning.

The case study lecturer was interested in developing innovative ways of teaching that moved away from the didactic methods often used in her discipline. The development of WebBoard was the first time the case study lecturer had used technology in her teaching. She had become involved in using ICTs because she had an interest in this area from a teacher training qualification she was doing which coincided with the opportunity to bid for some money from the central projects at New U (see chapter 5).

The initiative consisted of a series of boards, one linked to each module where students could post comments relevant to that subject area and share or access resources that had been placed there by academic staff, midwives or other students. There was also a board intended for student use only, which staff members could not access (with the exception of the case study lecturer who would act as a moderator if

necessary). This was intended as a more social area where students could chat, let off steam or talk about issues related to the course more freely without feeling they were being “watched ” by tutors/teachers. A midwife from each of the clinical placements and the staff within the department were asked to contribute to the discussions and add resources where appropriate. In this case, the case study lecturer’s role was highly active, moderating the boards, sharing experiences, encouraging postings and suggesting resources and links.

7.1.2 Student characteristics

From the responses to questionnaire 1, it can be seen that the Midwifery students were all studying full time and were female. As demonstrated in table 7.1.1 the age group of the students was fairly broad, with a median age range of 21-23. The younger students have tended to take a fairly traditional route into higher education, the majority of whom completed A-levels, and the majority of older students undertook an access course. A minority of students have previously completed a degree. It is likely that students have had a variety of different life experiences prior to starting the course, for example several students had children, and these differences may have implications for students’ interpretations of their experiences on clinical placement and their use and opinion of WebBoard. These issues are explored further in section 7.1.3.

Age	A levels	Access	GNVQ	BTEC	Degree	NS	Total(%)
18-20	14	0	2	1	0	0	17(47%)
21-23	3	0	0	0	2	0	5 (14%)
24-26	0	0	0	0	1	1	2 (6%)
27-29	0	3	0	0	0	0	3 (9%)
30-32	0	3	0	0	1	0	4 (11%)
33-43	0	4	0	0	1	0	5 (14%)
Total(%)	17(47%)	10(28%)	2(6%)	1(3%)	5(14%)	1(3%)	36(100%)

Table 7.1.1 Students age range and educational background

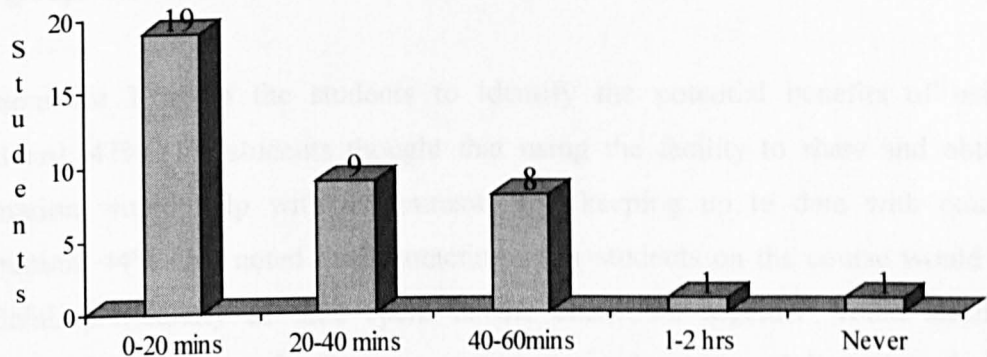
7.1.3 Student use

The following discussion is split into three sections: the number of occasions and amount of time students spent using WebBoard; students’ opinion and purpose for using WebBoard; and factors that may have influenced students’ opinions and use of the on-line discussions.

7.1.3.1 The amount students used the website

As can be seen in graph 7.1.1, the majority of students estimated that they accessed the WebBoard for short periods of time, typically 0-20 minutes per session.

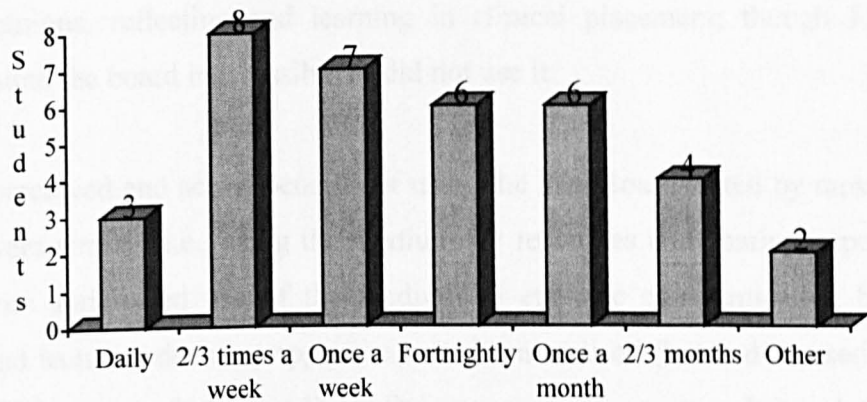
Graph 7.1.1 Typical period of time spent on-line for the module website per session



Graph 7.1.1 Typical period of time spent on-line for the module website per session

As can be seen in graph 7.1.2, the frequency with which the students accessed the site was fairly mixed with 50% (18) students accessing the website at least once a week and 28% (10) accessing the site once a month or less. Two students did not respond to the question.

Graph 7.1.2 Number of times accessed the case study website



Graph 7.1.2 Number of times accessed the case study website

In this case, there was a significant relationship between the amount of time students reported spending on the site and the number of times they accessed it ($\tau_b = -0.320$, sig level = 0.011, $N = 36$). That is, the more frequently students accessed the site the shorter the amount of time they spent on-line for the module per occasion. There was no relationship between the amount of time spent on the website per session and the frequency with which students reported accessing the case study website (see section 11.4 in the appendix).

7.1.3.2 Students' opinion and reason for using the site

As discussed in chapter 4, the findings from each method are analysed separately and compared where appropriate. This section is divided into two parts; the first explores the data from the two questionnaires and the second examines the findings from the focus groups and interviews.

Questionnaire 1 asked the students to identify the potential benefits of using WebBoard. 47% (17) students thought that using the facility to share and obtain information would help with assignments and keeping up to date with course information. 44% (16) noted that contacting other students on the course would be beneficial, particularly as time spent in the classroom together would steadily decrease. 31% (11) thought sharing experiences and getting advice when facing difficulties in clinical placement would be useful and 22% (8) students thought it would be a good way of keeping in contact with tutors.

At the end of the module questionnaire 2 asked the students what had been good about using the WebBoard. Of the 35 students who responded: 54% (19) felt that the resources posted on-line were useful for a variety of purposes, such as revision, supporting the lectures and assignments; 29% (10) thought it was a good way of sharing opinions, reflecting and learning in clinical placement; though 11% (4) students found the board inaccessible or did not use it.

Thus the perceived and actual benefits of using the WebBoard stated by most of the students were similar, i.e., using the medium for resources and sharing experiences although the anticipated use of the medium to enhance communication between students and lecturers does not appear to have been realised (but is discussed further in 7.1.5). The use of the medium for resources is supported by data from questionnaire 2, where the students were asked if they accessed the WebBoard more at certain times of the course compared to others. 47% (18) reported that they used the WebBoard more at times for revision purposes, and a further 13% (5) used it for presentations or resources. The issue of accessibility is discussed in section 7.1.3.3.1.

At the start of the module questionnaire 1 asked the students what their main concerns about using the WebBoard were. Of the 36 students who responded to the question: 17% (6) students reported that they had no concerns. 25% (9) students were

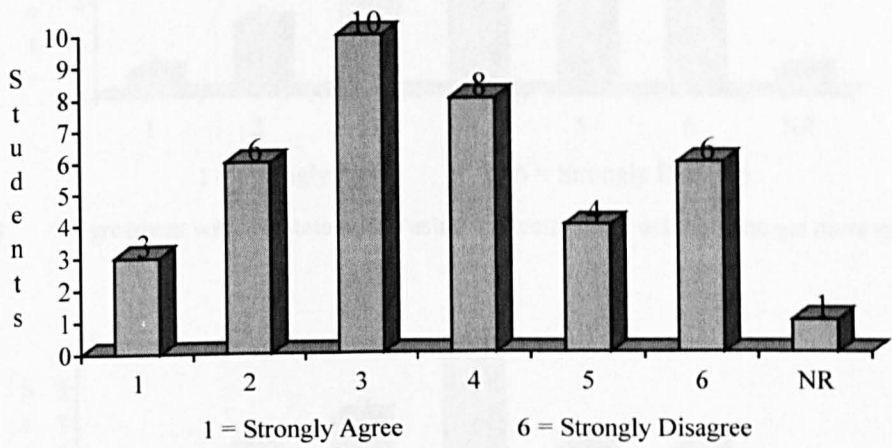
concerned about the lack of anonymity when making contributions to the WebBoard and the resulting lack of privacy. Comments included, *"I would feel more comfortable about using this WebBoard if my questions/messages were anonymous. If my name was not linked, or I had the choice, I know I would definitely use it, but as it stands I will be more reserved....You may not wish everyone to see a question you're asking because you may feel it's quite trivial."* 22% (8) were concerned that their lack of experience and/or dislike of using computers would be problematic. Comments included, *"I don't understand how to use the Internet, I will feel under pressure that I have to use it for certain modules as part of the course...I'm not 100% sure how to use the web so I don't think I [will] get the most out of it."* 14% (5) were concerned that they would not have enough time in clinical placement to use the computer and/or there may be other problems with getting access to a PC. 11% (4) expressed concerns about being misinterpreted on the WebBoard and 8% (3) were worried that they would not have enough time to access it or because it seemed like more effort was required on their part.

Students were asked on questionnaire 2 what had been bad about using the WebBoard. Of the 30 students who responded: 27% (8) reported that nothing had been bad; 23% (7) experienced problems with access; 17% (5) thought more people should have participated; 10% (3) felt it had taken up valuable teaching time; 10% (3) felt pressured into using it and disadvantaged if they experienced accessibility problems; 7% (2) experienced usability problems (i.e. too much time staring at the computer screen and the WebBoard being slow); and 7% (2) students felt it was time consuming.

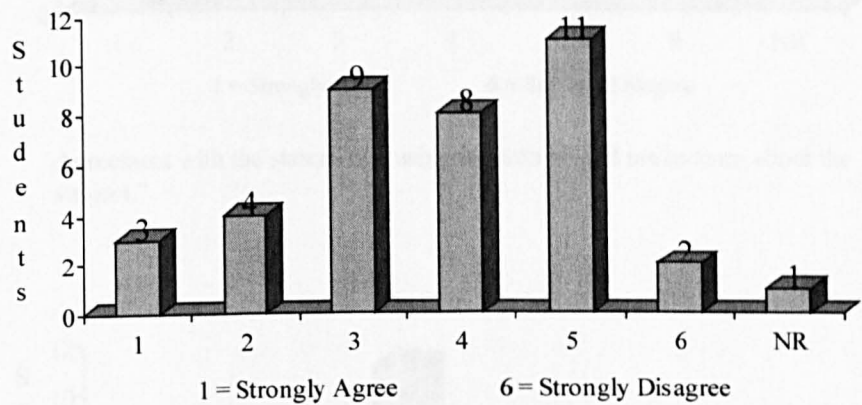
Thus, while a significant minority had not experienced problems, concerns expressed at the beginning of the course due to access (caused by factors such as availability or skills had been an issue). Lack of participation may be due to a number of interrelating factors (including concerns about confidentiality and fear of being misinterpreted) and these will be discussed in section 7.1.3.3.1.

On questionnaire 2, the students were given a series of statements and asked to indicate their agreement or disagreement with each statement on a scale from 1 (strongly agree) – 6 (strongly disagree). Levels of agreement with five of these statements: 1) *I enjoyed using the web for this subject*; 2) *the web did not fit in well*

with the course; 3) using the technology will help get me more marks; 4) using the web for this module helped me to learn about the subject; and 5) using the web for this module was well worth the time I spent on it are summarised in graphs 7.1.3-7.1.7.³⁹

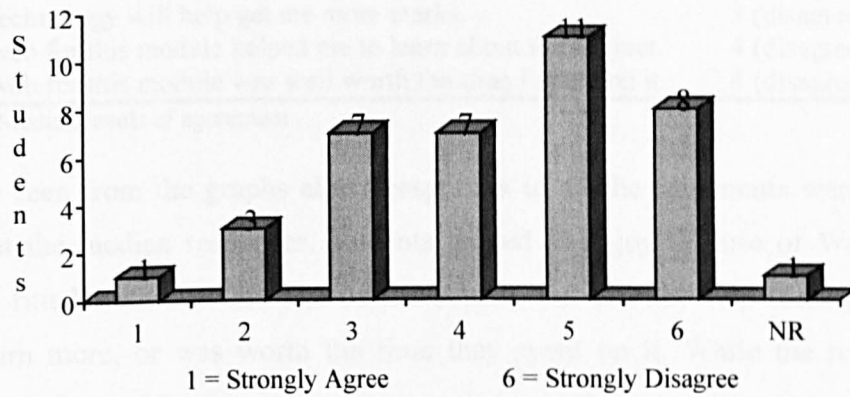


Graph 7.1.3 Agreement with the statement, "I enjoyed using the web for this subject".

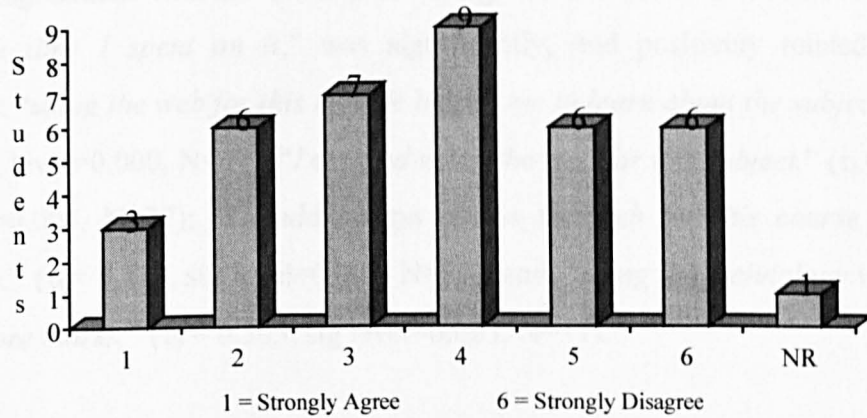


Graph 7.1.4 Agreement with the statement, "the web did not fit in well with the course."

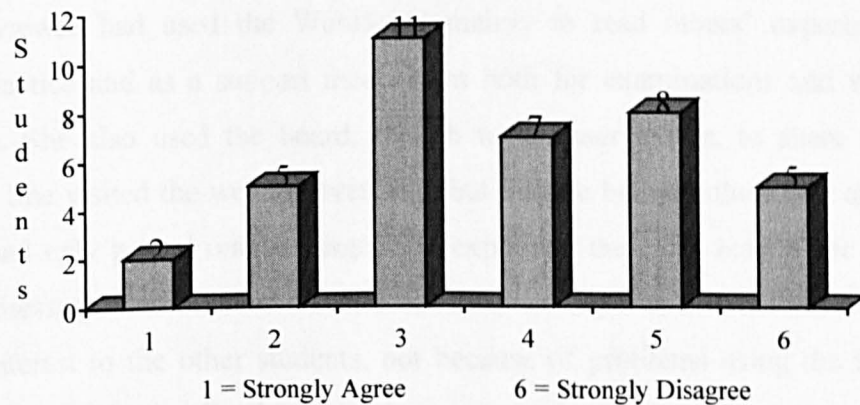
³⁹ NR in each of the graphs indicates the number of students who did not respond to the question.



Graph 7.1.5 Agreement with the statement, "using the technology will help me get more marks."



Graph 7.1.6 Agreement with the statement, "using the web helped me to learn about the subject."



Graph 7.1.7 Agreement with the statement, "using the web for this module was well worth the time I spent on it."

The median level of agreement for each of the statements are summarised in table 7.1.2.

Statement	Median
I enjoyed using the web for this subject.	3 (agreement)
The web did not fit in well with the course.	4 (disagreement)
Using the technology will help get me more marks.	5 (disagreement)
Using the web for this module helped me to learn about the subject.	4 (disagreement)
Using the web for this module was well worth the time I spent on it.	4 (disagreement)

Table 7.1.2 Median levels of agreement

As can be seen from the graphs above responses to all the statements were mixed. Looking at the median responses, students tended to enjoy the use of WebBoard, thought it fitted well with the rest of the course, but did not help them get more marks, learn more, or was worth the time they spent on it. While the results are mixed, the relationships between agreements on each statement are predictable. Details of all significant results are provided in section 11.4 of the appendix. For example, agreement with the statement, *“using the web for this module was well worth the time I spent on it,”* was significantly, and positively related to the following: *“using the web for this module helped me to learn about the subject,”* ($\tau_b = 0.530$, sig level=0.000, N=37); *“I enjoyed using the web for this subject,”* ($\tau_b = 0.440$, sig level=0.001, N=37); *“I could always access the web for this course when I wanted to,”* ($\tau_b = 0.419$, sig level=0.002, N=37); and, *“using the technology will help get me more marks,”* ($\tau_b = 0.305$, sig level=0.023, N=37).

From the qualitative data further understanding regarding the students experiences of using the WebBoard can be identified. The section below reports on data constructed from the interviews and the focus group data.

The interviewee had used the WebBoard mainly to read others’ experiences in clinical practice and as a support mechanism both for examinations and while on placement. She also used the board, though to a lesser extent, to share and use resources. She visited the website everyday, but despite being enthusiastic about the medium had only posted one message. She explained the main reason she had not posted a message was because she did not feel her experiences in the community were of interest to the other students, not because of problems using the board or concerns about others reading her message.

Examples of messages posted on the board are contained in section 11.5 of the appendix. In general students posted the majority of the discussions on only one of the boards as opposed to using the subject specific ones. The on-line discussions

were used for a variety of purposes: as a support mechanism, for queries, and to discuss events encountered in practice. Students in the focus group and the interviewee suggested a number of benefits of using WebBoard: enjoyment, improvement in IT skills, reflection and sharing of experiences, and to a lesser extent the sharing of resources. As members of the focus group commented,

I think it is good for when we first went on placement because you just did not know what to expect so everyone was writing down their experiences.

Susan

I think they are still good because people [were] saying...I did this today [on clinic] and then I think I cannot wait until I do that.

Emma

Reflection of experiences is really good for you.

Amy

Yeah or if you have had a really bad day it might be good just to get it off your chest to someone you know.

Emma

Similarly, when the focus group were asked if using the boards had helped them when they were in clinical practice, Emma commented,

It's hard to think of all the different situations you would be in until you hear someone talk about something and then you think, "Oh God what would I do?" and then it prepares you in a way.

While WebBoard may be useful for the students' experiences of clinical practice members of the focus group did not think it would help their performance in exams. Further, the benefits highlighted from the qualitative data were often tempered or removed due to difficulties with access or preferences for a different teaching method (see section 7.1.3.3).

The lecturer was aware that the students were using the WebBoard as a form of social support and enhancing reflective learning, but she felt it was not being used to its fullest extent, as she did not think the students were relating theory and practice or learning through active experimentation. Further, participation was patchy.

7.1.3.3 Factors that may influence students' opinion and use of the site

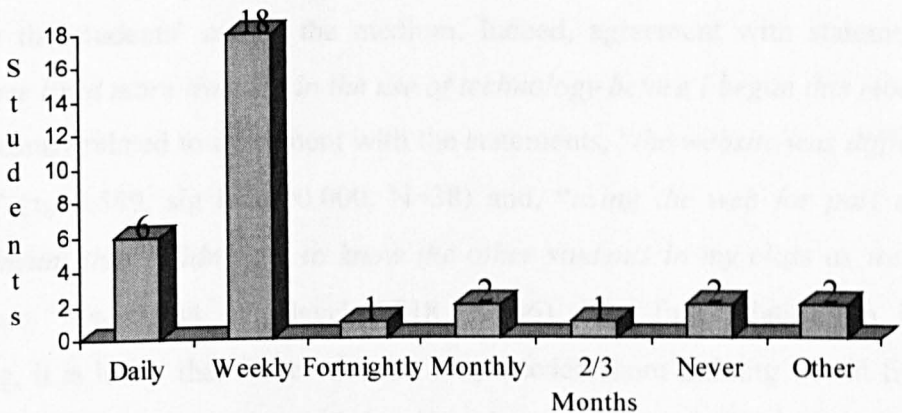
In this section factors that may influence students' use and opinion of WebBoard are considered. These are accessibility, site usability, collaborative learning, confidentiality, preferences and time.

7.1.3.3.1 Accessibility

Similar to the questionnaire data, a theme running throughout discussions with the focus group and the interviewee was the feeling of being put at a disadvantage if access was difficult either due to skills, experience, availability and/or time. In this section two aspects are considered, Internet skills and the availability of computers.

Internet skills

As can be seen in graph 7.1.8, students typically accessed the web on a weekly basis prior to the start of the module⁴⁰, though 25% (9) students accessed the web on a monthly basis or less, with some students never using the medium.

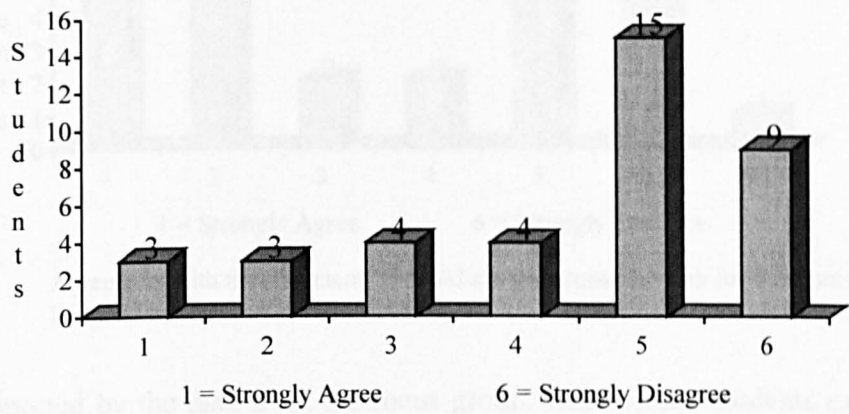


Graph 7.1.8 Frequency of access to the Internet prior to the start of the module

Few students had received any formal training prior to the case study module. On questionnaire 1, 86% (31) students reported receiving none, with only 14% (5) students previously receiving some kind of formal training in using the WWW. Thus, a lack of Internet skills may be a problem for some students. Further, the fact that some students disliked or feared computers was a theme that was highlighted in discussions with the interviewee, members of the focus group, and the case study lecturer. Students did receive training at the launch of the initiative from a member of the central unit at New U. Indeed, as can be seen from graph 7.1.9 this training

⁴⁰ Includes one student who selected the "other" option who reported accessing the web once every three days.

appears to have been satisfactory. The median rating of agreement with the statement, “*I would have liked more training in the use of technology before I began this module*” was a 5.

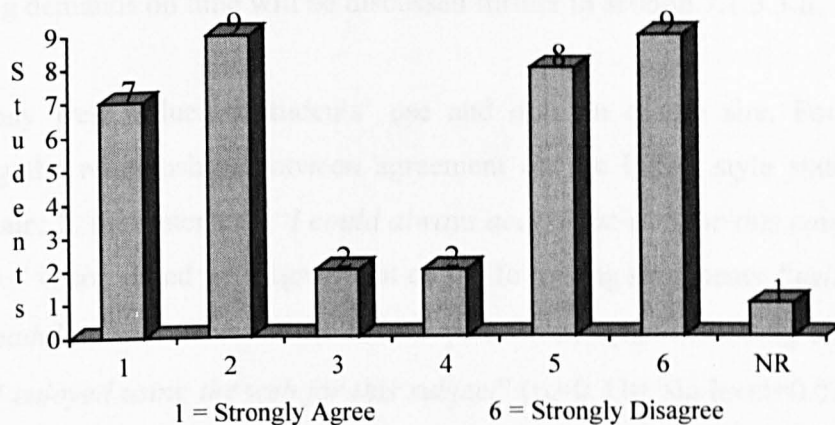


Graph 7.1.9 Agreement with the statement, “*I would have liked more training in the use of the technology before I began the module.*”

Nevertheless 26% (10) students would have liked more training and this may influence the students’ use of the medium. Indeed, agreement with statement, “*I would have liked more training in the use of technology before I began this module,*” is significantly related to agreement with the statements, “*the website was difficult to operate,*” ($\tau_b=0.559$, sig level=0.000, N=38) and, “*using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,*” ($\tau_b=0.344$, sig level=0.018, N=36). The first relationship is not surprising, it is likely that those who felt they needed more training would find the WebBoard difficult to operate and the second correlation may imply that students who felt they did not have the necessary skills were alienated from their peers in some way.

Availability of computers

As can be seen from graph 7.1.10, students’ experiences of access were mixed. Overall, students did experience difficulties with access, as the median level of agreement with the statement, “*I could always access the web for this course when I wanted to,*” was a 4.



Graph 7.1.10 Agreement with the statement, “I could always access the web for this course when I wanted to.”

This is supported by the data from the focus group, where some students expressed concerns about the lack of access at some hospitals due to problems with passwords or lack of Internet access. Though other group members felt the provision was good. Finding the time while on the wards to use WebBoard or feeling able to use it was a related issue although, again, this was not the experience of all the students. Obviously, using the computer at home involved costs for students and this was raised as a problem both by the student interviewee and the focus group. This was particularly problematic for students who were out in the community, as they had to make a special effort to go into the hospital to use the computer. As the interviewee explained, the costs in money and time incurred by travelling to the hospital and parking meant that she might as well work at home. The case study lecturer was aware of the difficulties of access in hospitals due to passwords and the costs students would incur if they accessed it at home. Lack of access experienced by students was not due to a lack of effort by the case study lecturer. However, all students could also access the WebBoard at the university. As Rachel from the focus group commented,

We can all access the computer at break if we wanted to in the resource room so nobody has got any problems with accessing...I think a lot of people felt like they couldn't be bothered to do it their own time really.

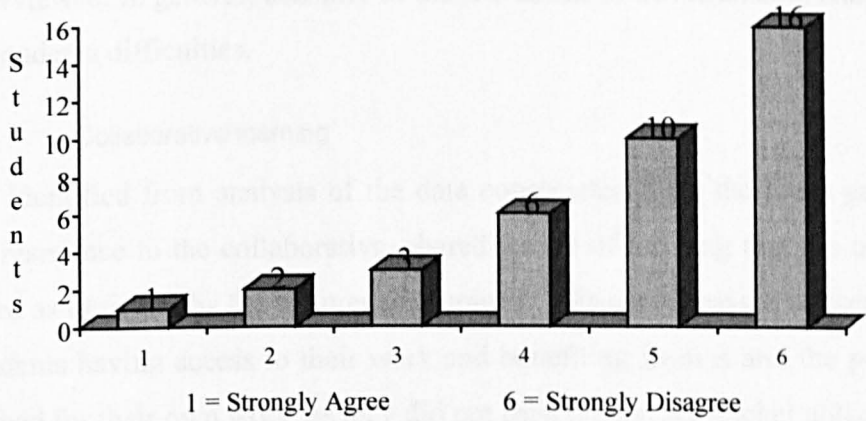
However, other (more dominant) members of the group disagreed, arguing that as they had a family, work and university was the only place they could access the board. At the hospitals they had experienced difficulties with access and whilst at

university they wanted to talk to their friends and relax during break times. Competing demands on time will be discussed further in section 7.1.3.3.6.

Access may well influence students' use and opinion of the site. For example, examining the relationships between agreement on the Likert style statements on questionnaire 2, the statement, "*I could always access the web for this course when I wanted to,*" is correlated with agreement on the following statements, "*using the web for this module was well worth the time I spent on it,*" ($\tau_b = 0.419$, sig level=0.002, N=37); "*I enjoyed using the web for this subject*" ($\tau_b = 0.330$, sig level=0.013, N=37); and, "*using the web for this module helped me to learn about the subject,*" ($\tau_b = 0.295$, sig level=0.026, N=37).

7.1.3.3.2 Site usability

The students found the WebBoards easy to operate. As shown in graph 7.1.11, the majority disagreed with the statement, "*the website was difficult to operate,*" with a median response of a 5.



Graph 7.1.11 Agreement with the statement, "*the website was difficult to operate.*"

Similarly, the interviewee had found WebBoard easy to use, though she was confident in using the Internet at the start of the course due to using IT in previous jobs. In contrast, members of the focus group had encountered problems as the large number of postings made it difficult for students to see which ones they had and had not read. Each student could manage their own messages, i.e. could delete and edit their own postings but students had not really done this. Two possible solutions were suggested: 1) for the case study lecturer to delete them or 2) for students to be able to

file and edit the messages in a similar way to email. A minority of students in the focus group also discussed their frustration when they encountered other difficulties with usability, i.e. with the site crashing or their message disappearing as they tried to post it.

The ease with which students can use the WebBoard may influence their opinion and use. From examining the relationships between agreement on the Likert style questions on questionnaire 2, agreement with the statement, "*the website was difficult to operate*" is negatively correlated with, "*I enjoyed using the web for this subject,*" ($\tau_b = -0.314$, sig level=0.021, N=37) and "*using the web for this module was well worth the time I spent on it,*" ($\tau_b = -0.272$, sig level=0.043, N=38). See section 11.4 for other significant relationships.

Just before students went on summer placement the case study lecturer did archive a lot of the messages, changed the boards to relate to the clinical practice students would be encountering over the summer and changed the colours of the screens. This seems to be appreciated and noted both by the student and the midwife who were interviewed. In general, usability of the site seems to be reasonable and unlikely to cause students difficulties.

7.1.3.3.3 Collaborative learning

A theme identified from analysis of the data constructed from the focus group was students resistance to the collaborative, shared nature of learning that the use of the WebBoard as designed by the lecturer encouraged. This encompassed concerns about other students having access to their work and benefiting from it and the preference students had for their own work, as they did not trust others. As Rachel noted,

I think one of things they wanted us to do was to post our ideas and...our questions...and answers to the questions as a way of helping other people learn. I think sometimes you have got to remember that some people put quite a lot of effort into what they do and other people don't, so if you are putting your ideas forward it's almost like doing the work for other people too.

Once pressed about why they felt like that, the students tended to change the focus from this issue of learning from each other to that of others seeing and judging their work. It was if the students knew they were supposed to like collaborative learning as it was a "good" thing. The group went on to explain that it was not so much that they

minded people using their work as other people judging it, they felt the lecturer was the only person who should read it. As Amy explained,

I'd worry that if I put something up and everybody read it and people would be like [Amy] put something up and thought it was really good but it was rubbish.

Indeed, the case study lecturer was aware of the preference students had for the more traditional didactic teaching methods; that the students quite liked to be “spoon-fed” rather than learning through collaborative projects. Thus, students dislike of the learning method promoted by the use of the medium may have led to a reduction in use or an aversion to the medium.

7.1.3.3.4 Confidentiality

Students in the focus group raised concerns that people they did not know were contributing to WebBoard. This was an unwelcome intrusion and had led to fewer students using the board, as they were not sure who was going to be reading their message. The group felt quite strongly that the student board should only be accessed by students, and the other boards should only be open to the students and the specific midwives / modules leaders who had previously been identified.

Indeed, a student in the focus group raised an example of when the case study lecturer edited her message. She told the group the lecturer had explained that she had edited the paragraph for legal reasons, i.e., if the message became common knowledge the information could be used in court to sue the hospital / bring charges against the clinicians. However the student felt this was not justified, as she had not put the name of the hospital or the doctor involved, and the WebBoard was only supposed to be read by specific individuals. This was the view generally supported by the group. Students felt that editing comments went against a primary purpose of the initiative, that the WebBoard provided a place to deal with difficult issues that were not discussed elsewhere. This lack of uncertainty and the fear of repercussions from their comments had led to lack of use, as now students would be more likely to use email or talk about the issue in a tutorial. However, the interviewee, while acknowledging the pros and cons of the lecturer editing postings, seemed to see the lecturer potentially editing the contributions as reassuring,

[name of tutor] overlooks it...[to see] if anyone is sort of breaching confidentiality a little bit even though they are probably not meaning to...It is hard because...you want to sort of say something sometimes [but] if it is something that really borders on confidential you think well how can I phrase it in the right way but get the story across as well.

Sally

Confidentiality was also difficult for the midwife who was interviewed. She explained how if she used WebBoard at work, there was a possibility that others could come into the room and read postings on the screen. Indeed, she had been concerned after this was raised by the case study lecturer at a meeting. From then, she had typically worked at home where she could guarantee privacy. However, while she could see the problems of people reading it, there may be advantages too; midwives could learn from the postings on the board, there were no black and white answers in clinical practice so a variety of opinions would be useful, and it may overcome possible feelings of isolation when being involved in the project. Indeed, the midwife explained how she felt “almost like an elitist” being part of the initiative.

Thus, this issue of confidentiality is a factor for all those concerned with the project. It appears that there are conflicts between one of the most beneficial aspects of the WebBoard (i.e. a place to discuss difficult issues) and the constraints of confidentiality and security.

7.1.3.3.5 Preferences for other forms of communication

As with any form of communication, on-line discussions will be preferred and used more by some individuals compared to others. A reason for the lack of use of WebBoard by some students was because they preferred other methods of communication with friends, e.g. phone, face to face or email. Indeed, this issue was raised in both the focus group and by the interviewee. As Sally, the interviewee commented,

It shouldn't be used just for you to have a chat with your friend really...it is obviously things that you should share as a group and...perhaps that is why people haven't used it...I am sure they have been keeping in touch with each other or people they are closest with during the class but in a different way.

Obviously these preferences will interact with other factors such as accessibility and skills, but both the lecturer and the midwife who were interviewed believed the

medium and the way it was intended to be used just suited some students more. As the lecturer commented,

From the students' point of view if we suddenly said WebBoard is stopping tomorrow I think there would be howls of protest from some quarters others would shrug their shoulders and say yes whatever. A significant minority have really enjoyed this and seem to be getting some benefit from it.

Indeed this is supported by the questionnaire data explored in section 7.1.2. For example, the responses to the Likert style statements on questionnaire 2 were very mixed. Often, just under half the students rated each statement positively and the remainder rating each statement negatively.

7.1.3.3.6 Time / other commitments

A further factor that influenced use appeared to be the lack of time students had to use the WebBoard. From discussions in the focus group it was clear that students had other priorities, such as social activities at university (e.g. chatting with friends), home commitments and other work pressures that influenced the amount WebBoard was used. It was apparent from the focus group discussion that the students felt that they would use the facility when they had time. As Jo commented,

I say myself being a parent I don't have any time before school starts. I go sit in the classes and then the only time I could possibly use it here is really in my lunchtime which you might have something else to do...and when I get home I have got the kids so I don't actually ever get a chance to use it here unless I make a point of doing it. So I would say for some actually access is probably more of an issue than for others.

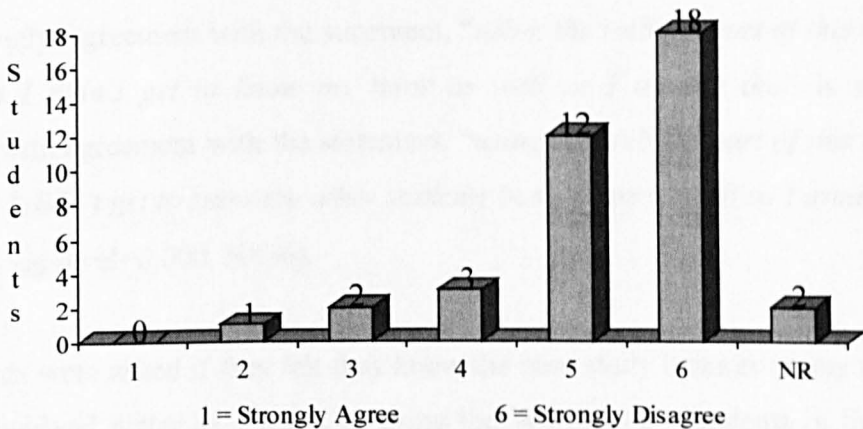
While less dominant (younger) members of the group tried to argue that all students could access the WebBoard at university in their break time, the older more verbal members of the group rejected this idea as that was when they wanted to talk to friends and have a break. In addition to these priorities, students in the focus group pointed out that they had far less "free" time compared to other students, they were in lectures or clinical placements for more hours than the average student and had significantly less holiday as they were in hospital placements most of the summer. In general, both the focus group and the student interviewee viewed WebBoard as an addition to their existing workload.

7.1.4 Student-staff relationships

The following section explores the influence the WebBoard may have had on relationships between students and staff. The first section examines the relationships between the students and the second the relationships between students and staff.

7.1.4.1 Student-student relationship

The use of the WebBoard did not appear to negatively affect relationships between the students. As can be seen in graph 7.1.12 the majority of students disagreed with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,” with a median response of 5.5.

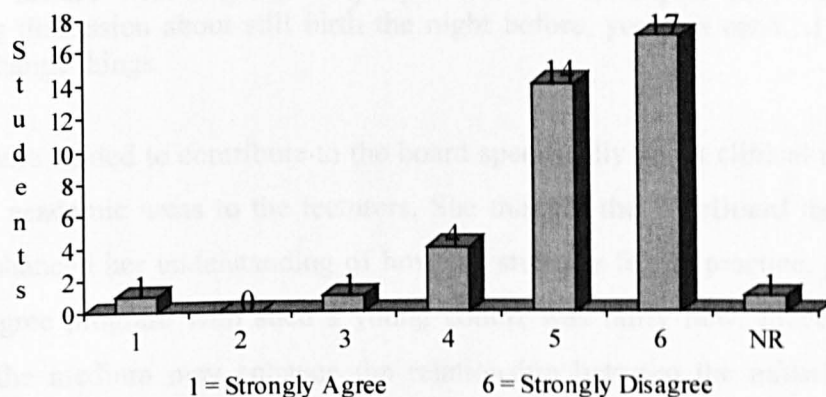


Graph 7.1.12 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

From the analysis of the qualitative data it appears that the use of the WebBoard did not lead to students getting to know each other better despite the sharing of opinions and experiences. Students in the focus group and the interviewee reported talking about WebBoard and its contents with their friends who did not have a computer, but did not discuss topics with people they did not already speak to face-to-face. On line discussion did not relate to face-to-face conversations. This was particularly so because, when students read a comment on-line, they did not link the name to a person.

7.1.4.2 Student-staff relationship

Students did not agree that using WebBoard had meant that they did not get to know their tutor as well as they usually did. As can be seen in graph 7.1.13, the median disagreement with the statement, “using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,” was a 5.



Graph 7.1.13 Agreement with the statement, “using the web for part of this module meant I didn’t get to know the tutor as well as I usually do.”

Unsurprisingly, agreement with the statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,*” is strongly correlated with agreement with the statement, “*using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do,*” ($\tau_b = 0.849$, sig level=0.000, N=36).

The students were asked if they felt they knew the case study lecturer or any other of the staff involved better as a result of using the WebBoard. Students in the focus group felt they knew the tutor better through more face-to-face contact (e.g. if she was their personal tutor) rather than the use of the web. Further, students thought other lecturers only made a few token contributions to the discussions as opposed to getting involved. Sally, the interviewee, thought it was more about the particular tutor than the facility, she commented,

I think [name of lecturer] seems that type of person anyway. She seems quite an approachable person and a very bubbly type of person.

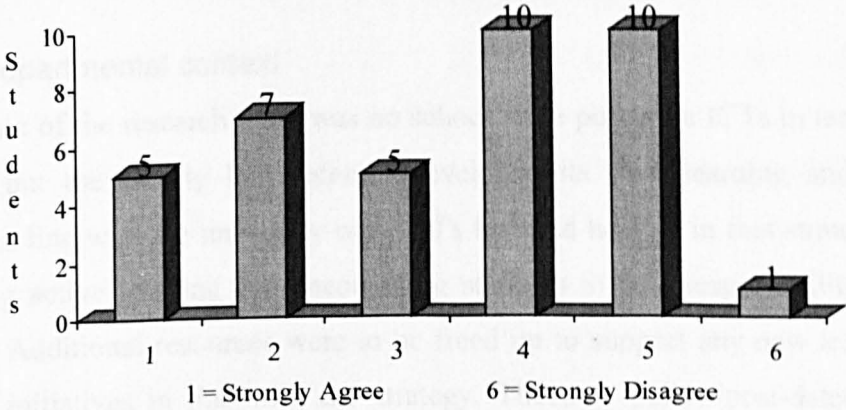
The lecturer also thought it was more about her general approach to teaching and learning; she was comfortable sharing her personal experiences with students and saw herself as a facilitator not as an expert with knowledge to impart. WebBoard fitted in with her existing philosophy though she felt it may have had some influence on her relationship with the other students. She commented,

We certainly draw on some of the WebBoard topics in class...you can't have a formal lecture with a group of people that you have just been intimately sharing discussion about still birth the night before, you just can't...I think it does change things.

The midwife tended to contribute to the board specifically about clinical matters and left more academic areas to the lecturers. She thought the WebBoard had, to some extent, enhanced her understanding of how the students felt in practice, particularly as the degree program with such a young cohort was fairly new. Indeed, in some respects the medium may enhance the relationship between the midwife and the students. The midwife felt a potential advantage of the medium was that it allowed for time and thought to respond to distressing situations the students had experienced although care was required to ensure the comments came across appropriately on screen.

7.1.5 Student demand

As can be seen from graph 7.14 demand from the students for more modules that used the web for teaching and learning was mixed. The median level of agreement with the statement, “I don’t want more modules that involve the web,” was a 4.



Graph 7.1.14 Agreement with the statement, “I don’t want to have more modules that involve the web.”

Despite some demand for the use of the web in more modules the students in the focus group were adamant that they did not want the web to replace aspects of traditional teaching. As Amy and Laura commented,

[If] they try to get rid of lecture time and save money and post stuff on there and ask us to learn from there that would be awful. That would be horrible.

If I had to do all my learning off the computer I would leave the course.

Students compared such a move as similar to a distance-learning programme, and this was not what they wanted from their degree. They felt that technology was not a suitable medium because of the practical nature of what they were learning, as Amy explained,

Our job is 99% communicating with people face-to-face...if we were doing an IT course that would be fabulous, but we are not, we are learning to deal with people one to one, respect, trust all of that, you can't learn that through a computer screen.

Further themes identified in the focus group were the need for social interaction to learn because of the importance of non-verbal communication and ensuring the students' interpretation of the content was correct. The interviewee thought some replacement of lectures with the web could be acceptable but was not appropriate for all teaching. Further, there would still be problems arising from accessibility:

I think lectures are still importantI think it is good to be together as a group and discuss things. I don't think WebBoard could replace that but there could be like certain lectures where it could work...but then again it is access again really.

Sally

7.1.6 Departmental context

At the time of the research there was no school wide policy on ICTs in teaching and learning but the faculty had recently developed its own learning and teaching strategy in line with the university one. ICTs featured heavily in that strategy, as did promoting active learning and encouraging students to take responsibility for their learning. Additional resources were to be freed up to support any new learning and teaching initiatives in line with the strategy. The new policy post-dated the case study lecturer's project. She had encountered problems due to the insufficient infrastructure and technical know how within the faculty to support new methods of teaching. In general, most of the support, IT help, training, and general encouragement came from the central unit (see chapter 5). Eighteen hours of her teaching had been freed up in the semester prior to the start of the initiative, but that was all the support offered. The time to moderate the board was great, she estimated that about ten hours a week was average.

Despite a great deal of encouragement and attempting to get colleagues involved throughout the project only one additional lecturer had participated in the discussions, and begun to incorporate the technology into her teaching. The case study lecturer described how some colleagues (who tended to favour a more didactic approach to teaching) were resistant to the initiative and ignored the entire project. While she had noticed some improvement towards the end of the semester as lecturer's workloads decreased the case study lecturer was disappointed with the lack of input from the rest of the staff involved with the programme. The lack of institutional incentives and the initiative viewed, as a "flavour of the month," had also not encouraged staff use. She said,

I have let people know that I am working in the evenings on this...in my own time and it's, "Well good on her if she wants to be mug enough...that will teach you to put your hand up in a meeting won't it?" It is just that mentality that I was talking to you earlier of survival, you know, it's turn up, teach, do what you have got to do and that is enough for most people and in fact that is more than enough, and I can understand that, and I can appreciate it...because if you do [get involved] you just get sucked in and your good will is abused.

In addition to staff involvement, support was required from midwives and hospitals across the city. Similar to academic staff, few midwives contributed to the board, and the reasons for this were high work demands, difficulties of access (e.g. the computer being too far away from the ward and a lack of Internet skills). Similar to the case study lecturer, the midwife who was interviewed participated in her own time, because she enjoyed using the medium and believed it benefited the students. Interestingly, this was despite having limited technical skills and feeling that the training provided at New U was too advanced (in her words, "I felt like I was drowning") combined with problems with access at work (due to security issues). The midwife was a regular contributor to the board and reported accessing the board daily for any time between a few minutes up to three quarters of an hour if there was something she felt she needed to respond to carefully.

Thus, support from the initiative from academic staff and midwives was not great, in part due to the lack of value placed on the WebBoard by the institution. Without school support it was unlikely that the initiative would be adopted by a great number of educators.

7.1.7 Summary

The use of the WebBoard for the case study module was intended to:

- Be used as a supplement to existing modules
- Encourage students to make links between theory and practice, provide emotional support, develop independent and collaborative learning skills and provide consistency in learning experience

The use of the WebBoard was developed within a departmental context where:

- There was some drive towards more student centred learning approaches
- There was inadequate infrastructure and technical support
- Institutional incentives were not felt to be a motivating factor
- Difficulties of time, didactic teaching culture and skills were significant barriers to the adoption of more innovative approaches to teaching

The student cohort can be defined as:

- Female, half the group were traditional, i.e. aged 18-20 and took A-levels, a quarter were aged over 27 and took an access course prior to beginning the degree

Students used the WebBoard:

- For sharing resources, clinical experiences and reflection
- For brief periods of time on-line, typically 0-20 minutes
- The frequency with which the students accessed the site was fairly mixed with 50% (18) students accessing the website at least once a week and 28% (10) accessing the site once a month or less
- In some of the ways intended by the lecturer but not a great deal of active experimentation took place and not all students participated

Students' opinion of the website from the questionnaire data:

- Good for sharing resources and experiences but problems with access (both skills and availability) and lack of participation
- Thought the WebBoard fitted in well with the course, and enjoyed using it but did not think it helped them learn, get more marks or was worth the time spent on it (though the responses to these statements were very mixed)

Students' opinion of the website from the qualitative data:

- Good to promote reflection, share experiences and improve IT skills and to a lesser extent share resources and enjoyable to use.
- Tempered by difficulties of access, confidentiality, and time pressures

Factors that may have influenced opinion and use of the site:

- Problems with accessibility
- Good usability
- Difficulties with confidentiality
- Dislike of collaborative learning
- Preference for other mediums
- Competing pressures on time

The relationship between students and staff and the use of the WWW:

- Use of the boards did not lead to students or staff getting to know each other better
- Relationship of staff to student suited to form of learning promoted by WebBoard

Student demand:

- Some demand for increased amount of the WWW for teaching and learning within modules
- No demand for the WWW as a replacement for “traditional teaching” due to social nature of learning

7.2 Case study 5

The case study website was created as a supplement to a unit in German for final year students reading a Business Administration or Marketing degree. The research focused on the use of the website in the spring semester (January - April 2001). The discussion below highlights the main themes identified from analysis of seven data sources:

1. Questionnaire 1 distributed to students in a lecture at the start of the semester, after being briefly introduced to the website. The response rate was 75%.
2. Questionnaire 2 given to students at the beginning of their final lecture of the module in semester 2. The response rate was 75%.
3. The ASSIST inventory given to students in the second half of the semester in a lecture. The response rate was 100%.⁴¹
4. Semi-structured interviews with two students. These took place in the first half of the semester prior to the ASSIST inventory and questionnaire 2.⁴²
5. A focus group that took place at the end of the second semester, after questionnaire 2.⁴³
6. A semi-structured interview with the case study lecturer towards the end of the module.
7. Analysis of the website.

This case is interesting, as not only is it a very small group (only four students took the course), but the three students who are the focus of the analysis were close friends and lived in the same house. This is contrary to many who see the use of ICTs as a teaching medium best suited to large, perhaps widely dispersed, groups. As a consequence of the small number of students, those who were interviewed were also members of the focus group. Thus, the influence of group dynamics can be explored, such as, if the interviewees' thoughts changed from interview to focus group and, if so, the potential reasons for this. The effect of group dynamics is indicated in the text below when considered to be of particular relevance.

41 There are a total of 4 students who took this module. 3 students completed the first and second questionnaire and 4 students completed the ASSIST. Non-response occurred because students were not in the lecture.

42 Before the 1st questionnaire was distributed to the students, they were asked if they would like to take part in a semi-structured interview. Two students volunteered and two took part.

43 Students were asked to take part in a focus group towards the end of the semester, three students (who lived together) agreed to take part. The focus group took place at their house.

The discussion is split into seven sections. The first explores the aim and content of the case study website. The second the characteristics of the student cohort and the third, student use. The fourth investigates the potential influence the use of the web may have on student and staff relationships. The fifth considers student demand for the use of the web in teaching and learning and the sixth the departmental context. The final section summarises the findings.

7.2.1 Aim and content of the case study website

The initial aims of the case study site are explored below, based on the analysis of the interview with the case study lecturer, studying the website and analysis of course documents.

The case study website was designed as a supplement to face to face teaching methods and was, in part, developed in order to compensate for reduced contact hours with the students due to financial constraints within the division. Also, because the lecturer believed that, when used appropriately, new technologies could have educational benefits for students as they could accommodate different learner styles and preferences. The website consisted of a range of supplementary materials, providing information about the module, access to supplementary learning materials and a discussion board. Contributions to the discussion board were compulsory and assessed while the use of the remainder of the website was voluntary. The lecturer commented,

So what we tried to do is to focus in the lessons on the more active skills like listening and speaking and then [for the] other things we wanted to use technology so they can practice the other skills like writing. So the WebBoard is obviously sort of writing, clarifying ideas, discussing etc.

Below the content available on the website and the potential benefits of each of these elements are considered. Here, content refers to the specific features that are on the website, not to the accuracy or relevancy of the content. For the purpose of analysis, each section on the website has been categorized into one of three main areas: module information, text based supplementary learning materials, and interactive tools. For an overview of the website see figure 7.2.1.

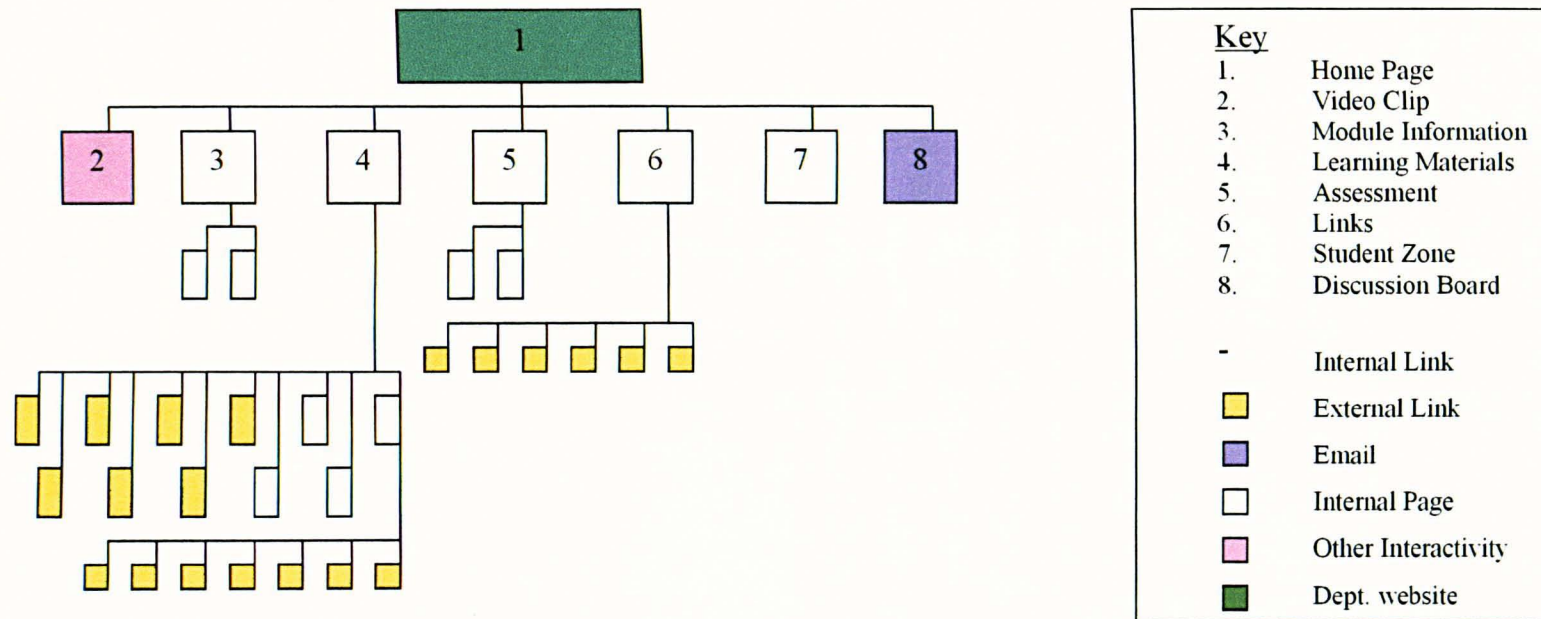


Figure 7.2.1 Map of case study website 5

7.2.1.1 Module information

Two sections of the website fall into this category. *Module information* contains details about the course, e.g. aims and objectives, timetable, essential reading, and brief details of assessment. *Assessment* provides information regarding assessment of the module, e.g. timing of assessment, details of tasks and the assessment criteria. Both of these sections can help potential students decide if they want to take the module and is useful to students who are already on the course, for example, when it comes to revision purposes to determine exactly what is required of them and for organising their time (Bonk et al., 1999:5).

7.2.1.2 Text based supplementary learning materials

The *student zone* contains student work completed by the group (with corrections in some cases) and the marks the student received. This can help current and future students see what is expected of them and helps the tutor to make clear the standard required. It may also encourage collaborative learning and save the tutor time in creating web resources. Although it may also lead to increased attempts at plagiarism (Bonk et al., 1999:7). *Learning materials* contains text-based resources such as a guide to using the Internet for German and links to useful external sites. These more interactive features are discussed below.

7.2.1.3 Interactive tools

There are four sections of the website that can be categorised as interactive tools. *External links* and *learning materials* provide external links relevant to the module and can encourage students to explore the topic in more depth and help them to gain an overview of the whole topic. In accordance with Tweddle and colleagues (1998) recommendations there are a small number of clearly signposted, up-to date external links on the site, some of which include a brief description of what the user can expect to find when visiting the external website (p.265). There is a *video clip* on the site, which the students were required to watch, summarise the main points and then discuss in class. This is another use of interactivity, for which the web is particularly useful and it also acts as a convenient delivery mechanism. Students are required to post messages on the *discussion board* (WebBoard) to discuss topics that are covered in class. The feature may encourage reflection, increase awareness of particular topics, improve German writing and reading skills, helps students who are unforthcoming in seminars to have their say (Chickering and Ermann, 1996:4); and,

similar to posting student work, students will try their best as they are aware their work is on show (Bonk et al., 1999:8). Contributions were assessed in order to encourage contributions and improve quality of postings. The tutor's role was kept to a minimum, and tended to simply move the discussion onto a new topic. To a small extent, communication was extended to others outside the course, i.e., a student who lived in Germany who had studied for a year as an Erasmus student at New U. This is likely to help the students gain a different perspective other than the tutors and other classmates (Bonk et al., 1999:11).

7.2.2 Student characteristics

The students studying this module can be described as traditional campus based students. Of the students that completed questionnaire 1, all 3 reported that they were male, had completed A-levels prior to attending university, were aged between 21 and 23 and were full time.

7.2.3 Student use

The following discussion is split into three sections: the number of occasions and amount of time students spent using the site; students' opinion and reasons for use and factors that may influence students' opinion and use.

7.2.3.2 *The amount students used the website*

On questionnaire 2 students estimated how much time they spent on average, when they accessed the website. Two students reported that they spent 0-20 minutes on the site per session and the other estimated that they spent 1-2 hours (including going offline and preparing a response for WebBoard) every time they accessed the site. Further, two students reported that they accessed the website once a week and the other accessed it 2/3 times a week. This data is consistent from the interview and focus groups, i.e., that two students accessed the site every week to access the discussion board and post messages; one student posted all his messages at the end of the module, and everyone prepared contributions to the board off line.

7.2.3.2 *Students' opinion and purpose for using the site*

This section is divided into two parts, the first exploring data from the two questionnaires and the second highlighting findings from the focus groups and interviews.

Questionnaire 1 asked the students what they thought the potential benefits of using the web for this module might be. The responses were, *“Better access (if it all works)...Information on any subject...Contact with German materials...Improve all skill areas (including listening)...Help with grammar and spelling at a touch of a button...Greater amount of relevant information available to me...Ease of contact to German friends / students.”*

The students were asked on questionnaire 2 what had been good about using the web for the module. The responses were, *“General improvement of awareness of German culture...Formulate a structured argument rather than speaking an argument, which is sometimes not thought out...Access! You can get to it from anywhere. You could do work when visiting other people in different cities.”*

Thus the perceived and actual benefits of using the web were quite similar, i.e., ease of access, understanding of German culture through contact with people and resources from Germany, and key literacy skills, specifically constructing an argument. Though students may, in the first questionnaire, be highlighting issues relevant to the use of the web in general as opposed to the case study site.

Questionnaire 1 asked the students what their main concerns about using the web for the module were. The responses were, *“Poor access to the WebBoard, it crashing etc...So much information available it can be overwhelming and off-putting. For example, putting in a search term can bring up thousands of search strings - most have no relevance at all...The inaccuracy of the information available at the time of research.”*

Students were asked on questionnaire 2 what had been bad about using the web for the module. The responses were as follows: *“Too easy to leave stuff until the last minute...Same as emails. Not much interaction...It lacked a "personal touch" No eye contact with others and not very spontaneous!”*

Thus general concerns about using the web and access concerns specific to the module site at the beginning of the course may not have been realised. The need to manage their own time and lack of interaction had been the main problems students

had encountered when using the WebBoard. These issues were also apparent in the qualitative analysis and will be discussed further in section 7.2.3.3.3.

On questionnaire 2, the students were given a series of statements and asked to indicate their agreement or disagreement with each statement on a scale from 1 (strongly agree) – 6 (strongly disagree). Five of the statements were:

- *The web did not fit in well with the rest of this course*
- *Using the web for this module was well worth the time I spent on it*
- *I enjoyed using the web for this subject*
- *Using the technology will get me more marks*
- *Using the web for this module helped me to learn about the subject*

Due to the small numbers for this case, examining graphs to look for overall patterns is scarcely worthwhile. In general, students' thought the web did fit in well with the rest of the course (the median agreement with the statement was a 5), but, contrary to the replies to more open response questions, it did not help them to learn (the median agreement with the statement was a 5), although for two students the use of the web for the module was perceived to be well worth the time they spent on it. It appears that the two participants who thought the web was worth their time either agreed with the statement to indicate that it would improve their marks for the module or they enjoyed using the medium. In contrast, for the student who did not think it was worth his time, the use of the web was rated negatively for all statements above apart from the statement, "*the web did not fit in well with the rest of this course.*"

While the quantitative data provides an overview of students' use and opinion of the site the data constructed from the interviews with the two students and the focus group provide more detailed understanding of what parts of the site students used and for what purpose. In the interviews and focus group the students reported only using the WebBoard and not the other sections of the case study site except for one case indicated below. Similar to section 7.2.1 the various features of the site have been categorised into three main headings: module information, text based learning materials and interactive tools (see figure 7.2.1 for a site overview).

Module information

Both interviewees reported that they had not, and would not, use either the *module information* or the *assessment* sections of the site, as they already had the information on paper, though both felt the information contained in the sections were useful. As information about the module was available to the students on paper this was not currently, or likely to be in the future, a well used part of the site.

Text based learning materials

One student had previously visited the *student zone* although a number of additions had been made since that date and the other student had not previously looked at the feature. Both interviewees thought it would be useful for the years below them prior to doing the assignment, but would be unlikely to use the facility themselves now as they had completed the assessment for that part of the module. The interviewees thought the section of the site might be useful to post up recent and forthcoming student presentations, to help prepare for a class, and/or improve the ease with which they could exchange work with other members of the group. However, both students did not appear to be entirely at ease with this form of learning resource, one because he would not think to look at work done by his peers and the other because his work was on show. As Steve commented,

Oh this is nice it gives you all the - it means that everyone can look at how naff your work is with all the red bitsWell, I would feel a lot more comfortable if there wasn't - if the corrections weren't made in red.

Neither student reported using the *learning materials* section of the site or thought they would be likely to use it. Both students tended to focus their discussion on the use of the external links section of the page (see below). Thus, similar to module information these parts of the site were not used, nor likely to be used by the students in the future.

Interactive tools

The interviewees did not use the *external links* available on the site because they preferred to find external links themselves either through a search engine or from prior knowledge of websites gained while living in Germany. For one student this was because the time taken to go either route did not differ enormously and for the other it was because he had already found his own links to sites that he found

particularly useful. In general, both students tended to use the Internet for a specific purpose, for example for statistics for an essay rather than to gain a great deal of background knowledge about particular topics (although one interviewee reported some, on average monthly, activity of this kind). Steve thought this was because,

In the third year you don't want to waste too much time so - maybe if you are like a first year student and you have a bit more time on your hands...I think in the first year you are much more enthusiastic about things anyway - then maybe you would take a bit of time to go through all these things - but I don't want to waste time.

The issue of work demands and prioritisation of tasks are discussed fully in section 7.2.3.3.3.

The case study site contains a *video clip* of a German family debating specific issues. The students were asked to access the clip, summarise the main points and discuss the topic in class. While the students could see some benefits (e.g., a different approach to learning and the appeal of hearing what people from Germany thought about specific issues) they did not feel they had gained much from the experience. This was in part due to the poor quality of production and the falseness of the situation (the family knew they were being filmed). It was clear that the time to download clips at home was considered excessive by the students for the amount of benefit they gained from this feature.

Both interviewees reported using the *discussion board* on a regular basis. Typically the students accessed the site twice a week, in order to see previous postings and post a response. Both students reported using the discussion board in a similar way, they described how they read the messages on the board and then prepared their response off-line before going back on-line to post their comments. The interviewees found the discussion board easy to use and self-explanatory. The discussion on the WebBoard was not spontaneous and tended to be a singular activity.

When asked how long it took to read and post a message each week one student estimated an hour and the other an hour and ten minutes. A primary motivation for participating in the discussion and posting high quality messages was because the contributions were assessed.

One of the students interviewed deliberately tried to write in a way to initiate discussion and this was an approach echoed by another student in the focus group, who felt there was a particular need to do so as he had left all his postings to the last minute. As Steve commented,

You have to be a little bit more aggressive to people than you normally would be when you talk to people just like to get a response. You have to speak and like put questions at the end of sentences which you wouldn't do when you are speaking to someone. You would normally - when you speak to someone you just look at them and then just stop talking and then that is like a question isn't it? But with this you have to like pose questions so they have to answer.

However, the other student who was interviewed appeared to be more concerned with offending people.

Thus, the main part of the website used by the students was the discussion board. From the qualitative data, as with the more quantitative components of the questionnaire data it appeared the students did perceive some educational benefits. The discussion on the WebBoard was related to topics covered in class. The interviewees' thought the board provided an opportunity to discuss issues related to those covered in class in more depth. The same students in the focus group also raised this as a benefit. As Steve in the focus group explained,

We don't talk openly in class in seminars because there is a lecturer there and there are time constraints and I suppose to some degree [name of lecturer] wants to move onto the next thing...she has got stuff to cover in a class...she can't stop and talk about stuff that is maybe interesting to us...we can...sort of chew it over a little bit ...the stuff that we think is important.

All three students in the focus group thought the on-line discussions helped them to learn to construct an argument. In addition, the interviewees thought use of the WebBoard improved writing and grammar skills. Further benefits of using the WebBoard raised by one of the students in the focus group and/or in interviews were: a different tool for covering a particular part of the course, to see other students work, to promote reflection and honesty when discussing specific issues, to communicate their ideas effectively (see section 7.2.4.2) and to learn more about Germany. As Steve commented in the interview,

When you are debating it you can reflect on how you feel even if you don't know it, you write something and you think, "Oh, do I really think that?" and then you think, "yes, I do"...[It is interesting to know what the] Germans think about it...there are not that many Germans here which you can ask about how they feel about reunification and that sort of thing...there is only so much [name of lecturer] can tell us and...she doesn't go into like the small things that maybe we want to think about [which] Germans our age do.

The case study lecturer felt the technology had worked in the way she had intended, i.e., an opportunity to have continuous writing practice in a more interactive way. She thought the students' grammar and language skills had improved but noted that it was hard to quantify if they would have improved in a similar way if she had set equivalent paper-based tasks. It is clear that the case study lecturer saw the use of the WebBoard as the main purpose of the case study site and this may have been a reason why the students also only used this area.

7.2.3.3 Factors that may influence use and opinion of the site

There are a number of factors that may influence the perceptions and use of the web for teaching and learning by students. Some of these are discussed below: accessibility, site usability, assessment and work priorities, and participants and participation on the discussion board.

7.2.3.3.1 Accessibility

Here, two areas of accessibility are discussed: Internet skills and availability of computers.

Internet skills

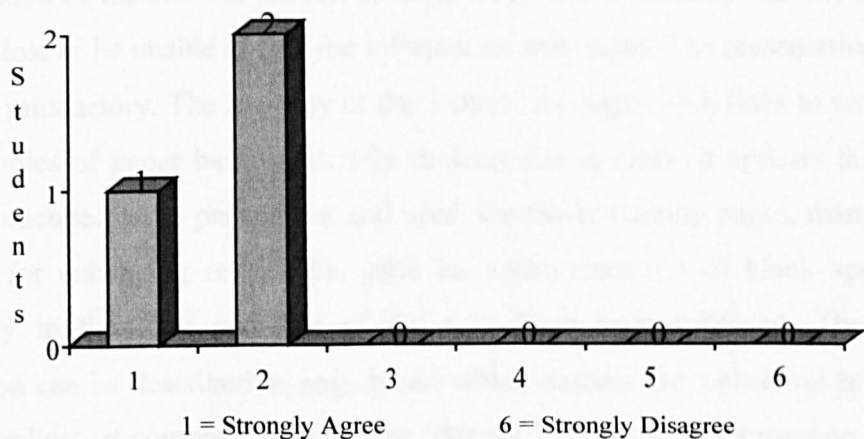
The students appear to be comfortable using the technology. From the responses to questionnaire 1, all the students' access the web on a daily basis and two have had formal training in using the WWW. Further, students were given some training in how to use the WebBoard in the first lecture of the seminar. Indeed, all three students disagreed with the statement on questionnaire 2, "*I would have liked more training in the use of technology before I began this module*" with a median response of 5 on a scale from 1 (strongly agree) to 6 (strongly disagree).

These findings are supported from analysis of the interview data. Both interviewees were confident in using technology and had used discussion boards / email while on placement. Despite this, the ability to evaluate websites was highlighted as a concern

by a member of the focus group and another student reported how he just used the information from the Internet as if it were reliable and did not consider this a problem as long as he referenced the source. Nevertheless, in general, the students did not seem to be concerned about using the web as part of the module and this was supported by the views of the lecturer.

Availability of computers

All students accessed the web from university and home. This is supported by all three data sources. It appears that students had few problems with access. This may be because the students shared a computer at home with free Internet access as part of package deal with cable. As can be seen in graph 7.2.1, the students disagreed with the statement, “I could always access the web for this course when I wanted to” with a median response of 2.



Graph 7.2.1 Agreement with the statement, “I could always access the web for this course when I wanted to.”

Both interviewees were aware of busy and non-busy periods in university computer rooms and that some computers were technically superior to others. One interviewee preferred using the university computers because they were quicker and the other student preferred accessing the web from home due to the flexibility and guaranteed access it provided (despite the fact it was slower). Thus, aspects of accessibility (i.e. Internet skills and availability of computers) are not likely to have negatively influenced students’ use or opinion of the site.

7.2.3.3.2 Site usability

Site usability was explored with respect to the use of features, the structure of the website, navigation and presentation. The discussion is split into two sections: the

first summarises the findings from the website analysis and the second the themes from the students' viewpoint.

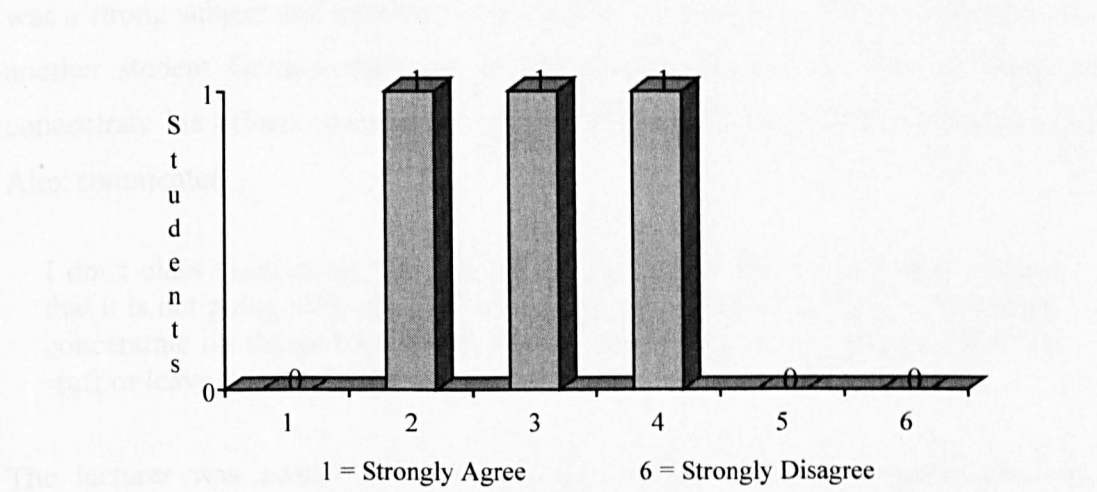
The case study site contains few multimedia features, apart from a video clip of a German family engaged in a debate. As can be seen from figure 7.2.1, the structure of the website is straightforward. There are no links between sections of the site, and the amount of depth students could go into for each section is fairly limited. Thus, this website appears to be designed primarily for initial levels of knowledge acquisition (which would be expected for course information) with some opportunity to explore topics in more depth through the use of external links and discussion. The site appears straightforward to navigate. The home page provides a spider diagram leading to each section of the website. Students can navigate their way through the site using the back and forward browsers or an "up" link to take them back to a higher level. Students navigate from the home page each time they want to find a further section of the site. As the site is fairly simple, it is unlikely that the students would get lost or be unable to find the information they want. The presentation of the website is satisfactory. The majority of the website are pages with links to word files that are copies of paper based materials students use in class. It appears that these pages are intended to be printed out and used. On the remaining pages, many of the proposals for enhancing readability, such as, appropriate use of blank space and consistency in the look and feel of the site, have been followed. The screen presentation can be described as page based which ensures the website is accessible to all, regardless of computer type or size (Barron, 1998) and is appropriate as there is no side menu and the pages are fairly short thus scrolling is limited. The amount of text on the web pages is very limited enabling users to locate specific information easily. As stated above the handouts are more complex and although could be scanned for information, it is likely students would print them out. The colour scheme of the website can help readability as the colour combinations used do not strain the eye. The background is simple and does not distract the user (Bonk et al., 1999:5) and there is a large contrast between text and background screen (Barron, 1998:360).

The use of the video clip was rated negatively by the students in the focus group due to the poor quality of production. This was particularly problematic for a student with hearing difficulties who found trying to understand the meaning of the film difficult. Further, from the interviews, the time taken to download clips at home was

considered excessive. It was apparent from both the focus group and interviews that the students would not use this feature unless they were required to, and the quality of the video needed to be improved in order for it to be of benefit.

The two students who were interviewed thought the home page was clear and the site was easy to navigate. However, both thought more explanation as to what was available on the website under each section on the home page would be useful. Indeed, on questionnaire 2 all the students disagreed with the statement, “*the website was difficult to operate,*” with a median response on a scale of 1 (strongly agree) to 6 (strongly disagree) of a 5.

The students’ response to the statement, “*the website was well presented*” was mixed and is shown in graph 7.2.2.



Graph 7.2.2 Agreement with the statement, “the website was well presented.”

The students who were interviewed thought the presentation of the site could be improved through the use of more colour and perhaps more graphics. They disagreed on the relative importance of speed and presentation. Interestingly, it was the student who had preferred to access the website at home who wanted improved presentation at the cost of speed.

In summary, from analysis of the website and consideration of the student data, the usability of the site was satisfactory and unlikely to negatively effect students’ use or opinion of the site.

7.2.3.3.3 Assessment and work priorities

As noted in section 7.2.3.2, the discussion board was the part of the site that was used by the students. A main motivation to use the WebBoard appeared to be assessment, and members of the focus group described how they put messages on the discussion board because they, “had to get the marks.” In general, it appeared that two members of the focus group would not contribute if it was not assessed although Steve, might. He was the most interested in the idea of the WebBoard and had, for some of the time, enjoyed using the medium. It seems likely that Steve would contribute more to the WebBoard if more people had participated as he appeared to be interested in talking to others (particularly from Germany) and had expressed these views both in the focus group and the interview. Assessment was also important in terms of the students’ prioritisation of work. For one student, German was a strong subject and therefore required less attention than others. In contrast, for another student German was one of his weaker subjects and thus he chose to concentrate his efforts elsewhere where he believed he could get more marks. As Alex commented,

I don't class German as being the most important thing I do because I know that it is not going to be the strongest mark I am going to get. So I would rather concentrate on things I would get a good mark [for]. So sometimes I don't do stuff or leave it until the last minute.

The lecturer was aware of the importance students placed on assessment, and believed that when a task was not assessed it was hard to persuade students of its value, and to invest effort into the assignment.

7.2.3.3.3 Participants and participation on the discussion board

The main difficulty with the WebBoard appeared to be the small number of students in the class who actively participated in the discussions. Discussion was not always spontaneous, in part because three of the four students took the module lived together and also because there was little input from German people outside the module. Students in the focus group and interviews thought the facility could be improved if more people from Germany and from other year groups within New U participated. Reasons highlighted by one person either in the interview or focus group included: to gain more perspectives and understanding from German people, to enhance learning for lower year groups from seeing debate at higher levels, and the benefits of honesty

if you did not know everyone. Not knowing all members of the discussion group meant there were no consequences (e.g. losing a friend) if you disagreed or held a controversial view, and people would provide more honest responses to your comments (for example, if they were considered rude). As Steve in the focus group commented,

I think some of the stuff I wrote on the WebBoard [name of lecturer] thought it was a bit direct - she thought it might cause offence to people if they didn't know me...if I don't get told these things I am never going to learn and I will keep offending people that I don't know. So I think [it would help if there were] more strangers definitely.

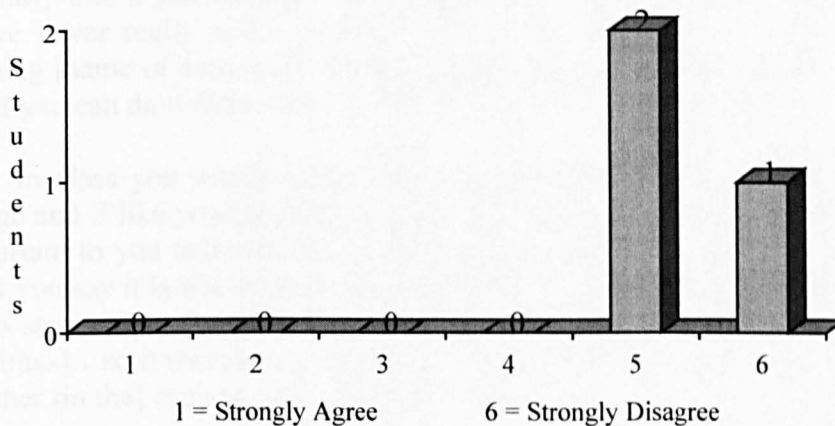
In addition to more people contributing one member of the focus group suggested the enforcement of deadlines so everyone had to post a message each week to enhance discussion.

7.2.4 Student - staff relationships

This section is divided into two; the first explores the influence of the use of the web on student relationships and the second the influence the web may have on staff and student relationships.

7.2.4.1 Student-student relationship

As stated in the introduction, this is a unique case because three of the four students who took the module lived in the same house. As the students were already close, it is unlikely that the WebBoard was a significant factor influencing the relationships between students. This is supported by the students' disagreement with the statement, *“using the web for part of this module meant that I didn't get to know the other students in my class as well as I usually do.”* The results are summarised in graph 7.2.3.



Graph 7.2.3 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

Similarly, the focus group felt they were a close group and this had a number of implications for on-line and face-to-face discussions. They could provoke or tease other members of the group on-line because they knew where the boundaries were, the closeness within the group meant that they had more fun and tended not to be so self-conscious when speaking face-to-face and on-line. However, this sometimes meant that discussions on the WebBoard were not as fruitful as they already knew a lot about each other’s opinions. Indeed, while on-line contributions were occasionally discussed in face-to-face situations both in and outside class this often meant that students discussed their contributions face-to-face and merely placed a posting on the WebBoard because they had to.

7.2.4.2 Student-staff relationship

The use of the WebBoard did not have a negative influence of relationships between the students and the tutor. The students disagreed with the statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,*” on a scale from 1 (strongly agree) – 6 (strongly disagree) with a median response of a 5.

Indeed, the use of WebBoard may have enhanced relationships. As the focus group noted, the on-line discussions allowed them to take their time to prepare their comments compared to discussing face to face, thus ensuring they got their message across effectively; and provided them with an opportunity to express personal views that may not be in-line with the lecturer’s viewpoint. As Alex and Steve commented,

Because sometimes you worry about, well you don't worry but you think about what people's reactions are going to be when you say it face to face, particularly like if you have got like completely conflicting views. To be fair we have never really had a problem with it but sometimes like if we say something [name of case study lecturer] might have a problem with it, so it is easier if you can do it from home or like away from everybody else.

I think in class you worry about how you are going to say it in a foreign language and if like your grammar is right because you will say something that is important to you and then the teacher will say, oh, that is not how you say it...how you say it is not the most important thing in a discussion it is what you want to say really...[Also] I thought [the lecturers views] were rather bizarre [sometimes]...so it was good to have that formality and not sort of have to look each other [in the] eye and say I didn't really agree.

The lecturer did not often contribute to the WebBoard, but when she did it was most frequently to move the topic on, or to occasionally post a comment in response to a point a student had made. The students in the focus group had mixed feelings about the case study lecturer contributing more, one felt as the group was small more entries would be beneficial and would help the gender balance of the discussions, as the class was made up of three boys and one girl. The students were asked if the discussion would change if the lecturer contributed. The students thought in general they would still put their message across although one student thought he would find it difficult, if the lecturer had a more discursive role in the group. The following discussion took place,

Yes I would feel uncomfortable - okay she is reading it, but if I'd answer her it is like talking back isn't it?

Paul

I don't. I suppose that is one of the good things because you wouldn't normally be talking back that much in class but like talking back on that you ...can structure [it] like a discussion and still like get your point across.

Steve

Sometimes she does have quite opposite views to what we think as well in class and stuff but if we say something she will say no I think this [but] she is not saying [our views are] wrong.

Alex

This led to discussion about general concerns at university that your grades would be affected depending on your level of agreement with the lecturer. However, in the case study module the students felt (to varying degrees) that this would not happen. Reasons for this were: because the assessment criteria did not assess point of view, it

was a medium designed for everyone to have different viewpoints, and the lecturer and the group knew and understood each other very well.

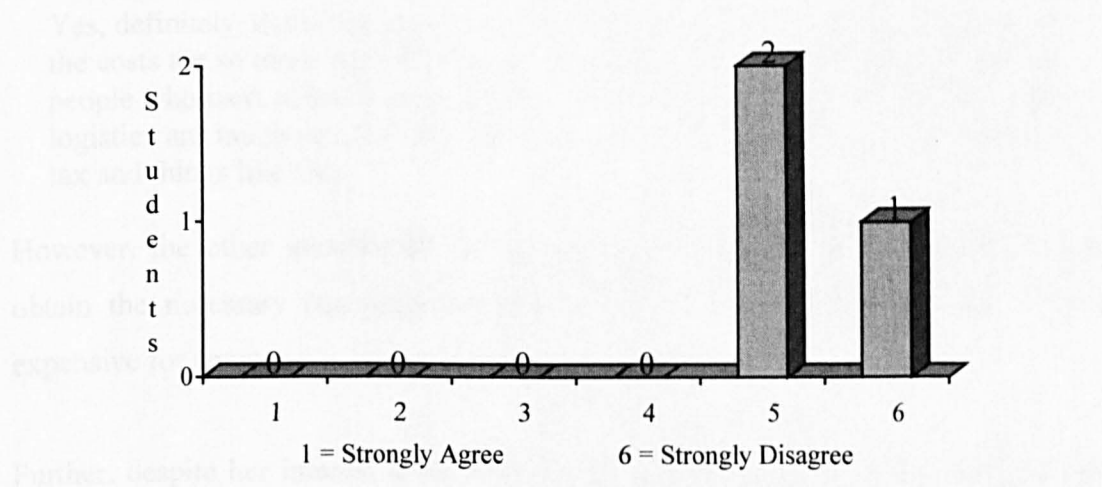
The lecturer also saw this as an important benefit of the web-based discussions, commenting that,

Well it was a non-threatening way of writing as well rather than hand it into the teacher and you get corrected all the time, you know, they didn't feel like they were put down or anything I think. It did motivate them to write in a more sort of free communicative style so at least they learnt how to communicate on that level, understanding what the others wrote and then reacting.

The case study lecturer did not think the WebBoard had changed the relationship with students, despite the fact it had been brought in to reduce contact hours, because of the interactive teaching methods used in class time.

7.2.5 Student demand

There did appear to be demand from the students for more modules that used the web for teaching and learning. On Questionnaire 2 the students disagreed with the statement, *“I don’t want more modules that involve the web.”* A summary of the results is shown in graph 7.2.4.



Graph 7.2.4 Agreement with the statement, “I don’t want to have more modules that involve the web.”

However, there was not a demand for replacing “traditional teaching.” It was clear from the interviews and the focus group that students valued the interaction between students and staff. In addition to the importance of the social aspects of teaching and learning all the students in the focus group felt that currently the technology available at New U was not sufficient to learn solely on the web. When the focus group were

asked how they would feel about replacing face to face contact with the web Steve and Paul commented,

I don't suppose it can replace sort of being in a lecture or that sort of thing...I think you need like the human contact...you need someone to like stare you in the eyes to make sure that you are paying attention.

Steve

I think you definitely need a mixture of both...because you can't learn without interaction...because it is body language and everything as well isn't it?

Paul

As well as interaction in class, there was the social aspect of coming to university. However, the students appeared to be well aware of the practical and cost implications that now had to be considered when entering university, and how web-based technologies may assist with this problem. As Steve and Paul commented,

Like some of the mature students they have a bit of a hard time I think at [New U]. They don't really integrate. You see them sometimes and, you know, they come in for their classes and then they bugger off again. I suppose for people like that if you are a little bit older and you are working and that sort of thing then it is probably quite good to have it all web-based so you can listen to your lectures at times which are convenient for you. But I think for younger people it is important to get the social aspect in.

Yes, definitely, definitely come to university for the social [aspect] but because the costs are so much now to come to university...[the web] is the only way for people who can't afford it to do all that...and overseas people as well like...the logistics are much easier rather than to come over here and sort out visas and tax and things like that.

However, the other member of the focus group highlighted the costs required to obtain the necessary equipment to learn via the web, which would still be too expensive for some.

Further, despite her interest in technologies to enhance campus based teaching and learning the tutor did not think distance learning was appropriate for learning languages.

7.2.6 Departmental context

As noted in 7.2.1, the case study lecturer was employed as a German lecturer and to assist in the development of the use of new technologies in learning and teaching within the division for campus-based students. Half of her time was allocated to this

role: she was responsible for the development of the departmental website, held workshops and supported interested individuals. There were no plans to ensure all modules utilised technology within the division. Yet there was a separate initiative within the school to develop web-based materials for distance learning courses. Her motive to use the technology in her teaching was to help students learn and believed this should be the central motivation for any lecturer, particularly as technology was unlikely to save the lecturer time. In her own experience, acting as a mentor and mediating the boards took as much time as traditional teaching.

The case study lecturer stressed how there needed to be institutional change in order for more staff to adopt the use of ICT in teaching and learning. Time and lack of rewards were perceived to be the main difficulties. As discussed in chapter 5 there were some rewards at New U for staff (e.g., the fellowship scheme and central projects) but the case study lecturer did not consider these enough of an incentive for the majority of staff. In addition, there was the question of how much teaching and learning should be done on the web, as too much would be difficult for students to cope with, particularly when used as a supplement to existing teaching.

7.2.7 Summary

The use of the WWW for the case study module was intended to:

- Overcome reduced contact hours
- Be used as a supplementary resource with compulsory, assessed contributions to the discussion board
- Lead to improvements in students writing skills through the use of on-line discussion

The use of the WWW was developed within a school context where:

- Part of the lecturer's role was to develop initiatives using ICTs for teaching and learning
- The lecturer was motivated by the belief that appropriate use of technology could lead to educational benefits for students
- There was some drive towards increased amounts of WWW for distance learning
- Institutional incentives were not felt to be a motivating factor for staff to develop ICTs for teaching campus based students

The student cohort can be defined as:

- “Traditional”, i.e. aged 21-23, entered university after completing A-levels
- Confident users of the Internet

Students’ used the website:

- For brief periods of time on-line with preparation carried out off-line, typically accessed once/twice a week
- In the ways intended by the lecturer

Students’ opinion of the website from the questionnaire data:

- Easy to access, enhanced understanding of German culture and improved key writing skills; but
- Problems with nature of medium to discuss topics (e.g. lack of interaction) and difficulties with time management

Students’ opinion of the website from the qualitative data:

- Students primarily used the discussion board. The module information, text based materials and remainder of interactive tools were rarely used, typically due to other sources of the same information
- Use of discussion board allowed students to learn about others opinions, allowed for in-depth discussion, construct an argument, put personal views across clearly and improved writing skills; but
- Too small a number of participants for the discussion board to work very well

Factors that may have influenced opinion and use of the site:

- Good accessibility (both skills and access to computers)
- Reasonable usability
- Assessment driven
- Too few participants for discussion board

The relationship between students and staff and the use of the WWW:

- Use of WWW had no negative influence on student - student or student - staff relationship
- Use of WWW allowed for students to put honest views across to the lecturer
- Pre-existing close-knit nature of group is likely to have had a significant influence on-line interaction

Student demand:

- Is demand for increased amount of the WWW for teaching and learning within modules
- No demand for the WWW as a replacement for “traditional teaching” due to social nature of learning, value of campus based experience and limited potential of technology
- Rising costs of campus-based education may lead to increasing numbers opting for a web-based distance learning programme

7.3 Case study 6

The website was created as a supplement and partial replacement to a Cultural Studies module for use by first year students reading a Marketing degree. The research took place in the spring semester (January – April 2001). The discussion below highlights the main themes identified from analysis of six data sources:

1. Questionnaire 1 distributed to the students in a lecture at the start of the semester, after being briefly introduced to the website. The response rate was 59%.
2. Questionnaire 2 given to the students at the beginning of their final lecture of semester 2. The response rate was 70%.
3. The ASSIST inventory that was given to students in the sixth week of the semester in a lecture. The response rate was 57%.⁴⁴
4. Semi-structured interviews with two students that took place in the second half of the semester prior to questionnaire 2.⁴⁵
5. Semi-structured interview with the case study lecturer that took place at the end of the semester.
6. Analysis of the website.

The discussion below is split into seven sections. The first section explores the aim and content of the case study website. The second student characteristics, and the third the students' experience. The fourth explores the potential influence the use of the web may have on student and staff relationships. The fifth examines the demand for the use of the web in teaching and learning and the sixth the departmental context in which the initiative took place. The final section summarises the findings.

7.3.1 Aim and content of the case study website

The initial aims of the case study site are explored below, based on the analysis of the interview with the case study lecturer, analysis of course documents and studying the website.

⁴⁴ There are a total of 69 students who took this module. 41 students completed questionnaire 1, 48 questionnaire 2 and 39 the ASSIST. Non-response occurred because students were not in the lecture.

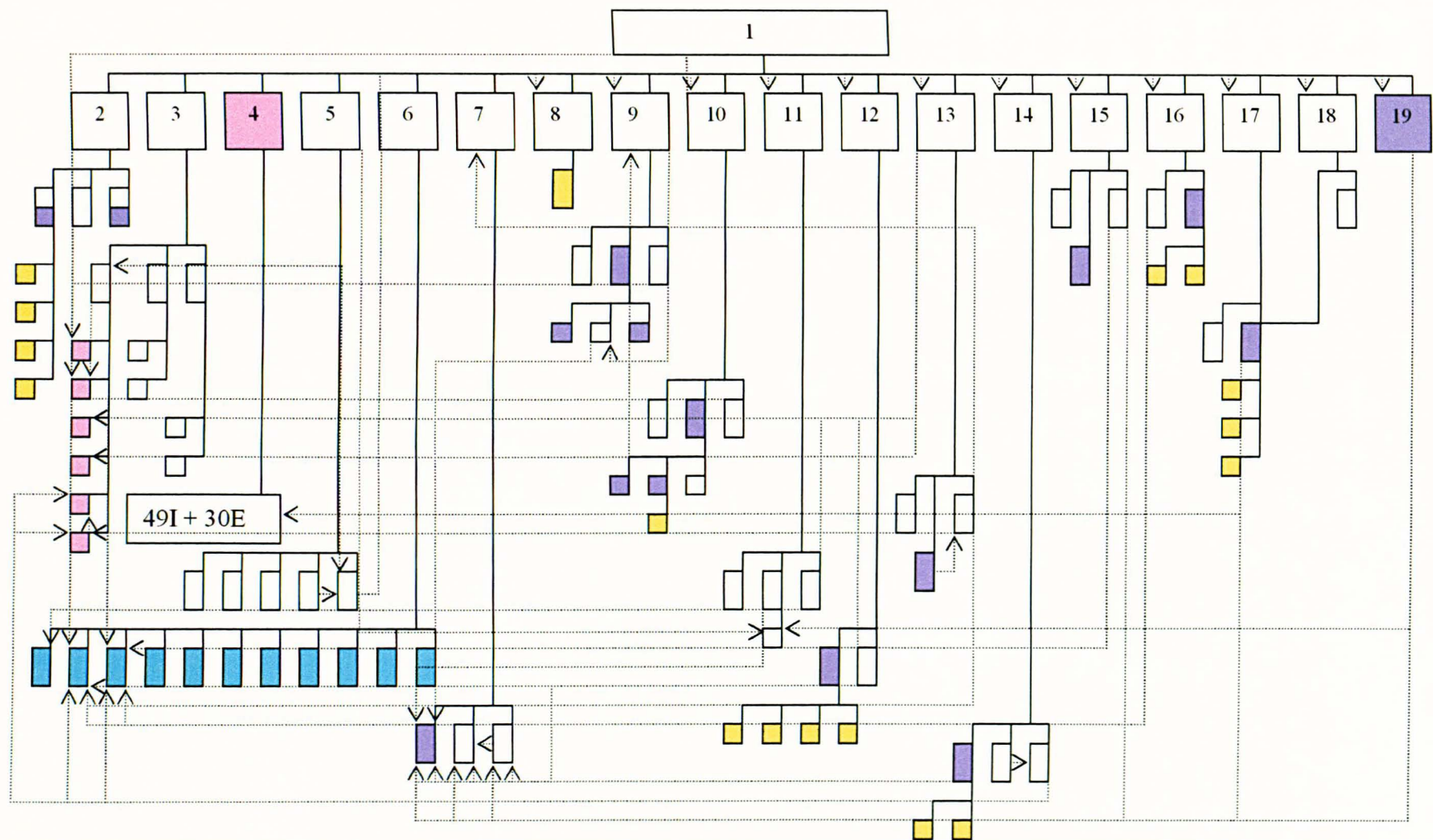
⁴⁵ Before the first questionnaire and the ASSIST inventory students were asked if they would like to take part in a semi-structured interview or focus group. Eleven students volunteered. Three took part in the interviews, 1 taped failed and has therefore not been used in the analysis. No focus group took place for this case. Three dates and meetings were set up but despite the additional incentive of refreshments plus the usual payment no students attended any of the meetings. This may be because of other work and time commitments.

The website was used as a supplement and partial replacement to a module in Cultural Studies that was designed to improve Business students' awareness and understanding of other cultures to help prepare them for their "year out." Face-to-face teaching took place via a two-hour seminar each week for the first eight weeks of the semester and for the remaining weeks the face-to-face teaching was replaced by web-based discussion. Use of the discussion board for these latter weeks was assessed. The use of the remainder of the website was a voluntary supplement to the module.

The lecturer's interest in using the web for his teaching began in 1996 and arose from a combination of studying for a CertEd and using web-based discussion boards as part of the course, discovering WebBoards were cheap, available at New U and easy to use, the need to design a new module, awareness of the potential benefits using the web could have, and enjoyment of designing websites. He thought the use of a website and discussion board would have a number of benefits for the students. It would assist in accommodating different learner preferences and styles, help students discuss topics (e.g. sexuality and race) that they may find difficult in face-to-face seminars, help organisation by providing information about the module on a week-by-week basis, and the use of on-line MCQs based on the reading may help students test their understanding and encourage them to read more. While recognising it was a "tall order", the lecturer hoped the students would become more tolerant, more appreciative of other cultures and differences within cultures. An important, but lesser, goal was to encourage students to develop communicative skills, such as textual analysis and interpretation, to see the value in reading, and to improve their written communication skills at the more informal end of Business practice (i.e. email and WebBoard discussions).

The website has six main sections, *module overview*, *assessment*, *maps*, *resources*, *study aids* and *online conferences* (see figure 7.3.1).⁴⁶ Each of these sections has been categorized into three areas: module information, text based supplementary

⁴⁶ From the home page each of these sections can be accessed plus a *week-by-week* guide (one section for each week - represented by the numbers 8-19 in figure 7.3.1). The numbers in other boxes i.e. 49I and 30E represent 49 further internal pages and 30 external pages not represented on the map due to space constraints.

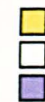


Key

1 Home Page
2 Module Overview
3 Assessment

4 Maps
5 Resources
6 Study Aids

7 Online Conferences
8-19 Week 1 – Week 12
Other interactivity



External link
Internal page
Email



Other New U site

Figure 7.3.1 Map of website

learning materials and interactive tools and are discussed in turn below.

7.3.1.1 *Module information*

This category comprises of: a *module overview* which provides module information, e.g. reading lists, external links (see section 7.3.1.3), the semester schedule, and information about staff. *Assessment* provides details on coursework and exam requirements and provides interactive MCQ tests to enable students to check their understanding of the reading (see section 7.3.1.3). The *week-by-week guide* includes a summary of what happened the previous week, what to expect in class, and the tasks to complete for the seminar. These materials may help the students in a number of ways: they may provide an organising function, assist with time management and with revision and preparation of coursework.

7.3.1.2 *Text based learning materials*

A number of the *week-by-week guides* contained text based learning resources, building on work discussed in class. The *online conference* section contained tips on how to use the site and details about netiquette. In the *maps* section students could access basic details (e.g. size of population) about European countries. The *resources* section encompassed a table amalgamating all the empirical findings from the key text and *study aids* provided details about a variety of key skills, such as, essay and report writing. These kinds of materials may help students enhance understanding of what they have learned in class and provide easy access to a range of important materials closely related to the module.

7.3.1.3 *Interactive tools*

The MCQs accessed via the *week-by-week guides* or the *assessment* sections provide instant feedback that students can use to check their understanding of the weekly reading.

Within the *maps* section students can use an interactive map to find out more information about each country and access relevant external links. An *on-line conference* (WebBoard) is used to debate topics related to class and may encourage student-to-student and tutor-to-student communication (Barron, 1998:364); helps students who are shy in seminars to have their say (Chickering and Ermann, 1996:4); and could encourage students to try their best as they are aware their work is on show (Bonk et al., 1999:8). In this case the contributions to the board were assessed for

part of the module. This may enhance participation, though assessment may lead to the nature of the contributions changing and assessment criteria taking priority over debating the topic freely (Bonk et al., 1999:10). There are a series of external links throughout the website to provide students with additional relevant resources. These may save students time obtaining resources and can make learning more efficient (Chickering and Ermann, 1996:5), encourage students to explore the topic in more depth, help them to gain an overview of the whole topic, and stimulate personal interest in the subject. Further, the lecturer encourages the students to contribute to the list and this may enhance a collaborative approach to learning (Bonk et al., 1999:6).

7.3.2 Student characteristics

As can be seen from table 7.3.1, the responses to questionnaire 1 demonstrate that in some respects the student cohort can be described as “traditional,” 98% (40) were full time students and 76% (31) of the students were aged between 18-20. However, while 59% (24) students did A-levels prior to university, the remainder have accessed higher education through various alternative routes. In addition, there are a significant proportion of Erasmus students in the group who had undertaken a French Baccalaureate prior to attending New U. Thus the students are likely to have a variety of different experiences and views that may enhance discussions (both on-line and face-to-face) though it may also increase the probability of misunderstandings occurring. Further, this diversity in the cohort may influence expectations and ability to use the WWW.

Age Range	Degree	A levels	GNVQ	Access	BTEC ND	Baccalaureate	Other	Total
18-20	0	22	6	0	0	3	0	31
21-23	2	2	0	1	1	2	1	9
24-26	0	0	0	0	1	0	0	1
Total	2	24	6	1	2	5	1	41

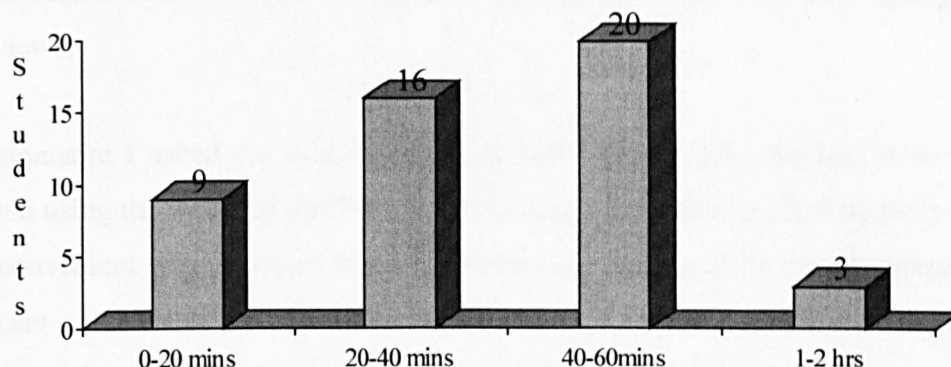
Table 7.3.1 Students age and qualification prior to attending university

7.3.3 Student use

The following discussion is split up into three sections: 1) the amount of time students spent using the site; 2) students’ opinion and purpose for using the site; and 3) factors that may have effected students’ use and opinion.

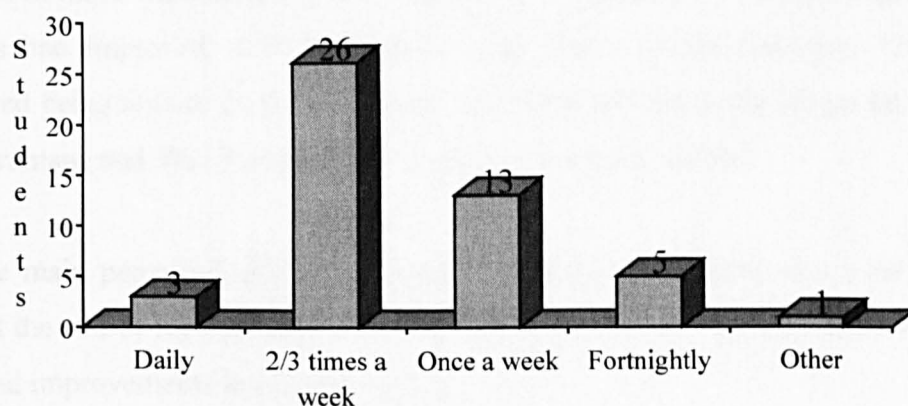
7.3.3.1 *The amount students' used the website*

On questionnaire 2, the majority of students estimated that they spent 40-60 minutes on-line per session, though 52% (25) students estimated they spent less time per session on the website. The responses are summarised in graph 7.3.1.



Graph 7.3.1 Typical period of time spent on-line for the module website per session

In addition, students typically reported that they accessed the site two to three times a week. The results are shown in graph 7.3.2.



Graph 7.3.2 Number of times accessed the case study website

There was no relationship between the amount of time spent on the website per session and the frequency with which students reported accessing the case study website (see section 11.4 in the appendix). The majority of students reported using the site for a similar amount of time to that spent in a face-to-face seminar per week. It is possible that students are over estimating the amount of time spent on-line, though given that a proportion of the face-to-face teaching was replaced by on-line

discussions it would be expected that at least for those weeks of the course time on-line would be similar to the face-to-face contact it is replacing.

7.3.3.2 *Students' opinion and purpose for using the site*

This section is divided into two parts, the first explores the data from the two questionnaires and the second examines the findings from the focus groups and interviews.

Questionnaire 1 asked the students what the main benefits they thought there would be from using the web. Of the 35 students who answered: 63% (22) thought it would be a convenient way to access relevant information that could be used to prepare for seminars or catch up on missed work and 23% (8) students thought it would be useful to debate issues and gain a greater understanding of different cultures.

Questionnaire 2 asked the students what had been good about using the web. Of the 46 students who responded: 33% (15) students appreciated reading, writing and learning through other people's opinions posted on the discussion board. They felt it had provided a wider perspective on specific topics and an opportunity to learn about the views of those who did not speak in face-to-face situations. 15% (7) thought their IT skills had improved. 13% (6) noted it had been a useful resource. 11% (5) considered being able to do the work from anywhere and not having to go into New U an advantage and 9% (4) enjoyed the change of teaching method.

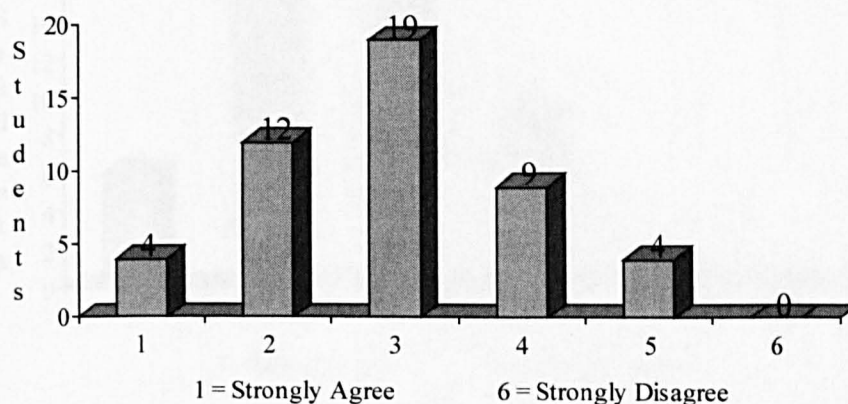
Thus the main perceived advantage, access to relevant resources, was a far lesser theme at the end of the module, more significant themes were learning about other's views and improvements in IT skills.

Prior to using the web for the module students were asked, on questionnaire 1, what their main concerns were. Of the 27⁴⁷ students who responded to the question: 29% (8) of the students had no concerns, 29% (11) students were concerned about access, either due to the availability of computers or technical failures. 26% (14) were concerned about using the web correctly, either due to using the on-line discussions or navigation.

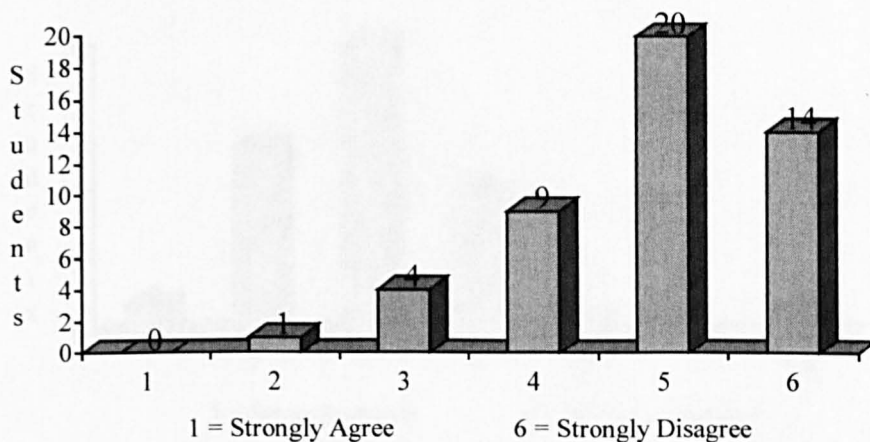
⁴⁷ 14 students did not respond to the question. This may be because they had concerns, particularly as all the students continued to fill in some of the remaining questions.

On questionnaire 2, the students were asked what had been bad about using the web. Of the 39 students who responded: 8% (3) of the students said nothing; 23% (9) experienced difficulties accessing the site due to the reliance on university facilities or specific technical difficulties. 15% (6) of the students had problems posting contributions due to the nature of the medium, for example, not knowing who they were talking to or concerns of others interpreting their comments in the wrong way. 13% (5) students raised problems related to time / time management issues due to difficulties with finding the time to use the medium or forgetting to use it. 10% (4) of the students thought the quality of discussion was not as good as it could be either because it was not open or in-depth enough. A further 10% (4) of the students raised concerns about the lack of weekly face-to-face contact with the lecturer or students and 8% (3) students expressed concerns of using the Internet to learn, e.g., difficulty with finding appropriate information sources.

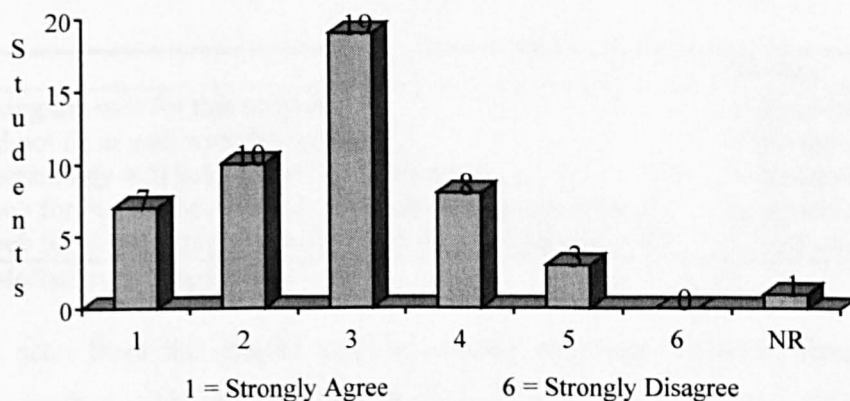
On questionnaire 2, the students were given a series of statements and asked to indicate their agreement or disagreement with each statement on a scale from 1 (strongly agree) – 6 (strongly disagree). Levels of agreement with five of these statements: 1) *I enjoyed using the web for this subject*; 2) *the web did not fit in well with the course*; 3) *using the technology will help get me more marks*; 4) *using the web for this module helped me to learn about the subject*; and 5) *using the web for this module was well worth the time I spent on it* are summarised in graphs 7.3.3-7.3.7.



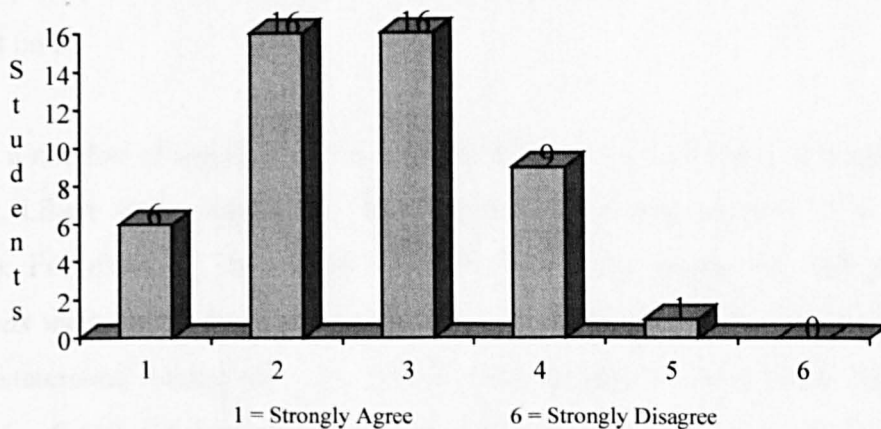
Graph 7.3.3 Agreement with the statement, “I enjoyed using the web for this subject”.



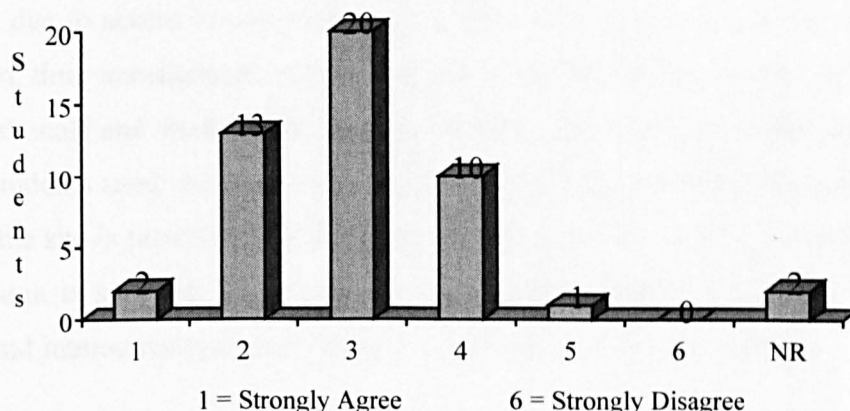
Graph 7.3.4 Agreement with the statement, “the web did not fit in well with the course.”



Graph 7.3.5 Agreement with the statement, “using the technology will help me get more marks.”



Graph 7.3.6 Agreement with the statement, “using the web helped me to learn about the subject.”



Graph 7.3.7 Agreement with the statement, “using the web for this module was well worth the time I spent on it.”

The median level of agreement for each of the statements is summarised in table 7.3.2.

Statement	Median
I enjoyed using the web for this subject.	3 (agreement)
The web did not fit in well with the course.	5 (disagreement)
Using the technology will help get me more marks.	3 (agreement)
Using the web for this module helped me to learn about the subject.	3 (agreement)
Using the web for this module was well worth the time I spent on it.	3 (agreement)

Table 7.3.2 Median levels of agreement

As can be seen from the graphs and the median responses to each statement, in general, students thought the web did fit in well with the rest of the course, they enjoyed using it, thought it helped them learn and would get them more marks (which is perhaps unsurprising given that it was assessed) and was worth the time they spent on it.

There are a number of significant relationships between each of these statements and the other Likert style statements on questionnaire 2 (see section 11.4 in the appendix). For example, agreement with the statement, “*using the web for this module was well worth the time I spent on it,*” is significantly related to agreement with the statement, “*using the web for this module helped me to learn about the subject,*” ($\tau_b=0.663$, sig level=0.000, N=46) and also with the statement, “*I enjoyed using the web for this subject,*” ($\tau_b=0.291$, sig level=0.021, N=46).

In sum, the students found the use of the web for the module useful for learning about others experiences and opinions, it improved IT skills, and was thought to be a

useful and convenient resource that fitted in well with the module, was enjoyable, helped them to learn and to get more marks. However, students encountered difficulties due to access to computers, difficulties with posting due to the nature of the medium, time management, concerns about the quality of discussion and reduced contact with staff and students. In the next section, more in-depth understanding of what the students used the case study site for and the perceived usefulness of each section of the site is provided from analysis of interview data. Similar to section 7.3.1 the discussion is split into three sections: module information; text based learning materials and interactive tools (see figure 7.3.1 for an overview of the site).

Module information

In general, neither interviewee had used the *module outline* or the *assessment* section of the website. This was primarily because they already received the information on paper. The parts of the *week-by-week guides* that can be categorised as module information was used by one interviewee on a weekly basis to find out what was happening in the following weeks seminar (although she did not use the information specifically to prepare). Despite the lack of current and predicted future use (particularly of the *module outline* or the *assessment* sections) the interviewees thought the features should remain on the site for clarity, completeness, and in case they misplaced the paper based versions.

Text based learning materials

Text based resources that were part of the *week-by-week guides* had not been used by either interviewee, both of whom felt that in general the information was not that helpful. Although one interviewee thought she might use it in the future for assessments. Both interviewees had read the tips on how to use the site and details about netiquette in the *online conference* section. Both interviews had also accessed the details about European countries in the *maps* section but thought it was too basic to be a great deal of help. The table amalgamating all the empirical findings from the key text based in the *resources* section had not been used by the interviewees and was not perceived to be that helpful as they already had the information in the book. The *study aids* had not been used by either student because they did not feel they had particular difficulties they needed to sort out. Despite this, both thought the facility may be useful for other members of the group, to help overcome differences in the student cohort (that included students from different backgrounds and international

students) or for those students who had learning difficulties but wanted to keep these problems private. In summary, these features of the site were not that well used but the interviewees felt they should remain on the site.

Interactive tools

The MCQs accessed via the *weekly guides* or the *assessment* sections were used on a weekly basis by one interviewee to test her understanding of the reading. She liked the facility for the instant feedback, that it was anonymous, and that it helped her find out the gaps in her reading. The other student had looked at the tests but had not used them because he did not do the reading properly and he did not like tests though he thought they were a useful facility for some students. The interactive map within the *maps* section was not considered to be that useful by either student and the associated external links not that helpful as they were not thought to be particularly relevant to young people or the module.

The *on-line conference* was the most frequently used part of the website and this may be because it was the only part that was assessed. However, both interviewees read and contributed to the discussion board prior to the beginning of assessment. They thought the main benefits were hearing and sharing others opinions, learning about different countries and cultures and practicing writing skills. Both students thought this facility was appropriate for this course, as students views and experiences were particularly important as opposed to other parts of the degree programme that contained, at this stage, a lot of facts to learn. Despite this, the case study lecturer did not feel the board had worked as well as previous years. For example, there had been around 50% less postings than in previous comparable sized years.

Both students found the WebBoard easy to use and were fairly web literate with previous experiences of using on-line discussion boards. While the interviewees had contributed to the board both expressed difficulties with using the web to communicate. Both students were aware that they had to write in good English. As Jenny explained,

You have to really concentrate and like spell everything correctly because [the lecturer] says you are going to lose marks if you don't like put full sentences...I normally write how I talk [when using on-line discussions] which isn't properly (laughs) so it is a bit awkward.

Indeed, the lecturer encouraged students to concentrate on their quality of English by including it in the assessment criteria (though in fact it was not assessed). While this may have encouraged good English the lecturer felt this may have put off students from using the facility because of the extra time taken to check spelling and grammar.

Both interviewees were also concerned about other students misinterpreting their messages, particularly due to the lack of non verbal communication when using the board. Indeed, this had happened to one of the interviewees. The other interviewee, Jenny, was particularly conscious because she already felt she did not “fit” with the rest of the class:

I don't want to offend anyone or anything because in class I was the only one out of the thirty of us that actually said we were European apart from [the lecturer]...and everyone thought I was really odd because I said I was European and that, you know, I said I agreed with the Euro and going into Europe. So they just look at me like I am mad you see.

Both students had begun to use the WebBoard prior to assessment to practice before their postings were assessed and because they were interested. One of the students thought they would research the topics more prior to posting a message, adopt a more serious tone and be very careful about the quality of English of the postings when they were assessed.

The case study lecturer moderated the board through ensuring postings were acceptable, introducing new topics, answering questions or helping the flow of discussion if needed. Both students who were interviewed thought this was important. One student thought he should contribute more by concluding each topic, pointing out good responses, and highlighting other issues that could have been discussed. Indeed, prior to this research, in the first year the discussion board was used, the lecturer had contributed, but after receiving feedback from the students, he no longer participated to a great extent, as the students seemed to prefer it. Thus, he did not think this was a reason why the discussions had not worked as well this year.

Both students thought the contributions to the discussion board should be assessed because email was an important skill (although it may penalise those with less advanced IT skills), was less time consuming to earn assessment points compared to

an essay, and to motivate people to contribute. However, they felt assessment did have a negative influence on the quality of the discussions. For example, there were a large number of comments that said the same thing, and one interviewee thought that the postings were always politically correct and not controversial. Indeed, at the end of the semester the lecturer thought the students were tending to be strategic in their discussions and only posting messages because they had to, not because of an interest in discussing the topic and were aware of the marker when writing. He noted,

This year they were all really politically correct...I asked the [students] whether it was true that they were thinking much more about who is marking this and there were lots of nods. So this year they are not discussing out of interest they are really thinking what is [the lecturers] opinion on this going to be. [The lecturer] will want us to be cool and politically correct therefore we are going to write messages in that vein. That is really disappointing I am really annoyed about that.

Despite these difficulties the lecturer still thought the on-line conferences had been particularly useful for students who did not seem to benefit or come across well in face-to-face discussions. In the next section factors that may influence student use of the website are explored.

7.3.3.3 *Factors that may influence student use and opinion*

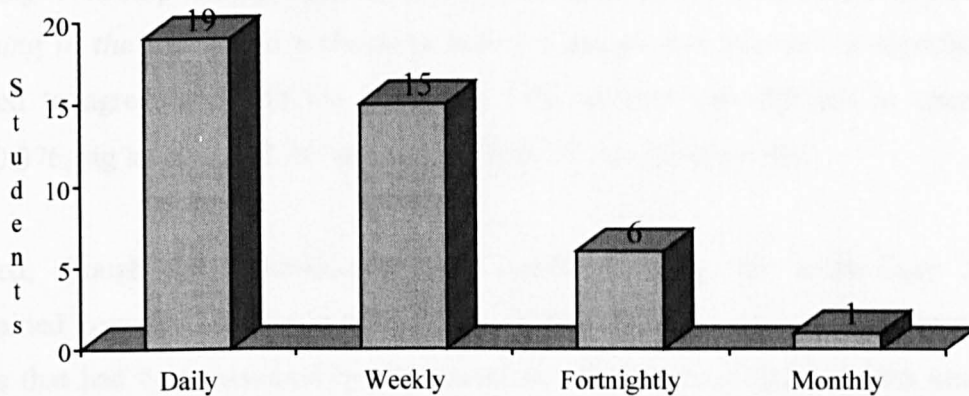
In this section factors that may affect student's use and opinion of the website are explored: accessibility, usability, and the general student experience.

7.3.3.3.1 *Accessibility*

Two aspects of accessibility are considered here: Internet skills and access to computers.

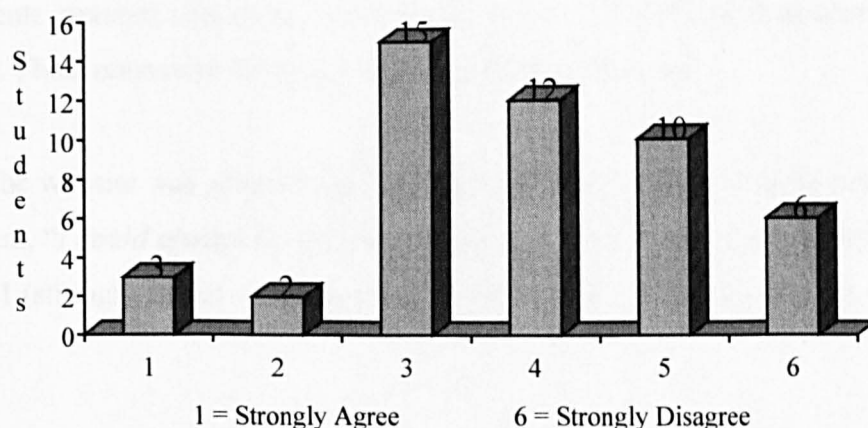
Internet skills

On questionnaire 1, the majority of students were frequent users of the Internet with 83% (34) of the students accessing the Internet at least once a week prior to the start of the module. The results are summarised in graph 7.3.8.



Graph 7.3.8 Frequency of access to the Internet prior to the start of the module

Few students had been trained in using the medium. Prior to the start of the module only 15% (6) of the students reported receiving some kind of formal training in using the WWW, the majority 85% (35) of students had not. This lack of training, particularly for those who were not frequent users of the web may have an influence on students' use of the site. In general, the training for the module was satisfactory. Students median level of disagreement with the statement, "*I would have liked more training in the use of the technology before I began this module,*" on a scale from 1 (strongly agree) – 6 (strongly disagree) was a 4. The responses are summarised in graph 7.3.9.



Graph 7.3.9 Agreement with the statement, "I would have liked more training in the use of the technology before I began the module."

However a significant minority 42% (20) of the students would have liked more training. Not surprisingly, agreement with the statement "*I would have liked more training in the use of the technology before I began this module*" is significantly related to agreement with the statement, "*the website was difficult to operate,*" ($\tau_b=0.376$, sig level=0.002, N=48). See section 11.4 in the appendix.

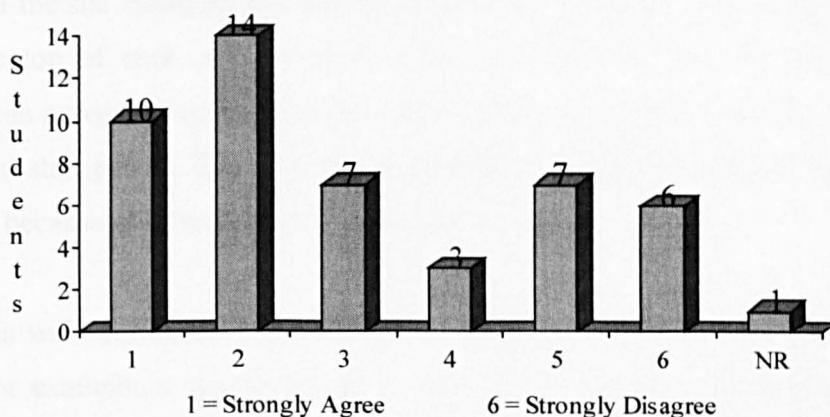
Indeed, though the interviewees were confident using the technology Jenny explained how she had taught most of her friends how to carry out basic computer skills that had been assumed by the university. She also pointed out how students who had a lack of skills experienced further difficulties due to the slow speed of computers at the university. She said,

Well my friend is a mature student...and when she was at school ten years ago there weren't computers at school. The first time we used the computer she was petrified of it, she thought the mouse was going to eat her or something, she just wouldn't touch it and she gets really upset because she thinks she is doing something wrong because it is going really, really slow and you try to explain, but she just gets frustrated with it because she thinks she is doing it wrong.

Availability of computers

Of the 38 students who responded to the question on questionnaire 1, 68% (26) reported that they had access to the web from their term time address and 32% (12) did not. Of the 48 students who responded to the question on questionnaire 2, 46% (22) of the students reported accessing the site from home and university, 38% (18) of the students reported accessing it from university and 17% (8) students accessed it from home. Thus, university facilities were important in this case.

Access to the website was generally good. Students' median level of agreement with the statement, "*I could always access the web for this course when I wanted to*", on a scale from 1 (strongly agree) – 6 (strongly disagree) was a 2. See graph 7.3.10.



Graph 7.3.10 Agreement with the statement, “I could always access the web for this course when I wanted to.”

Both interviewees accessed the web for the module at home and on campus. Both found the computer rooms busy, but could find a computer if they were careful about the time they came to use the facilities (e.g. not at lunchtimes). Neither student reported significant problems accessing the site from home. Ease of access is important. For example, agreement with the statement, “*I could always access the web for this course when I wanted to,*” is positively correlated with agreement with the statement, “*using the web for this module helped me to learn about the subject,*” ($\tau_b = 0.325$, sig level=0.007, N=47) and negatively related to the statement, “*the web did not fit in well with the course,*” ($\tau_b = -0.269$, sig level=0.027, N=47).

7.3.3.3.2 Site usability

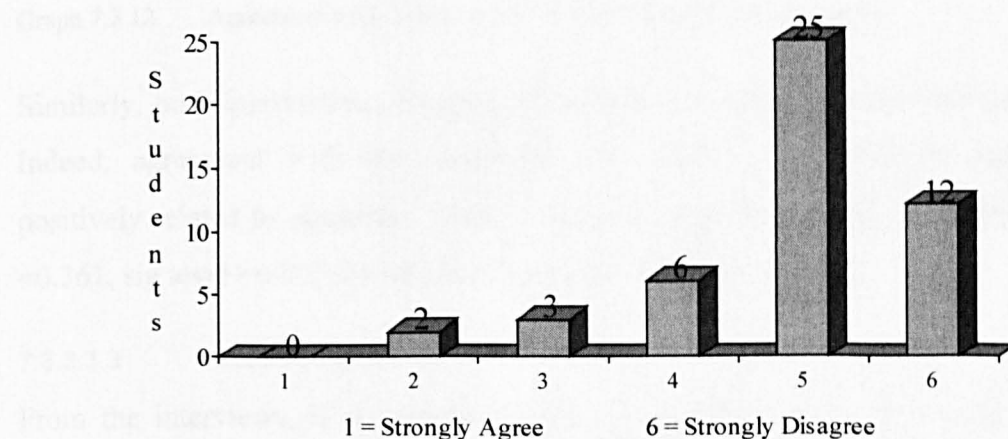
This section considers usability of the site. The first part considers this issue from the findings of the usability analysis and the second from the student perspective.

As can be seen from figure 7.3.1 the website is primarily hierarchical in structure, students can explore topics at differing levels of depth and have some control over the way they navigate the site. There is some overlap with a referential structure, where students do not really have any structure imposed on them and they can navigate their own way through a site (Oliver and Herrington, 1995:12). This perhaps reflects the lecturer’s aim for students to learn about specific topics, but also to develop their independent learning skills (and this was mirrored throughout the face to face component of the course).

The navigation of the site is clear. The home page takes students to any of the main sections of the site. Students can navigate their way through the site using: the menu across the top of each page, internal links, and the back and forward browser. Students can access certain parts of the site, e.g. the weekly self-tests, from a variety of different start points. There are few multimedia features on the site, but this was deliberate because of a concern with download times.

The site is well presented and corresponds with a number of principles for good design. For example, a similar format is used for each screen, blank space is used appropriately and a page based screen presentation is utilised which ensures the website is accessible to all, regardless of computer type or size. Scrolling on some pages is required but is not excessive. The amount of text on each page is limited and well set out. The colour combinations do not strain the eye, the background is simple and there is a large contrast between text and background screen (Barron, 1998:360).

Students thought the website was easy to operate. On questionnaire 2 students rated their agreement with the statement, “*the website was difficult to operate,*” on a scale from 1 (strongly agree) – 6 (strongly disagree) with a median of 5. The results are demonstrated in graph 7.3.11.

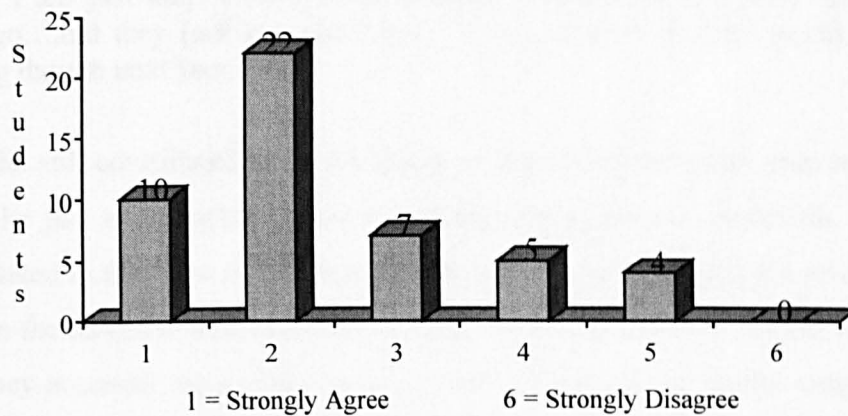


Graph 7.3.11 Agreement with the statement, “the website was difficult to operate.”

Both interviewees thought the website was easy to navigate though one student typically went directly to the discussion board and did not use the remainder of the site. Both interviewees thought the home page was attractive, easy to understand and well laid out. However, one student suggested that more information could be provided on the home page as to what each section contained, through the use of a

pop up box. Thus, the website seems straightforward to use and is unlikely to have a negative influence on students use of the site. Agreement with the statement, “*the website was difficult to operate*” is correlated with other Likert style statements on questionnaire 2 (see section 11.4 in the appendix). For example, it is positively related to the statement, “*the web did not fit in well with the course*” ($\tau_b = 0.341$, sig level=0.007, N=48).

The students thought the website was well presented. As can be seen in graph 7.3.12 the students median response to the statement, “*the website was well presented,*” was a 2.



Graph 7.3.12 Agreement with the statement, “the website was well presented.”

Similarly, both interviewees thought the website was attractive and well presented. Indeed, agreement with the statement, “*the website was well presented,*” is positively related to agreement with, “*I enjoyed using the web for this subject,*” ($\tau_b = 0.361$, sig level =0.003, N=48). See section 11.4 in the appendix.

7.3.3.3.3 Student experience

From the interviews, it is possible to gain some insight in to the overall student experience of which the use of technology and the module is part. Both interviewees appreciated the way of learning promoted by the module compared to the more didactic methods in most of their other classes. Indeed, both students participated in on-line and face-to-face discussions. Despite this, the two students differed in their preparation for class. Jenny was a conscientious student who did the reading prior to each class and worked hard, though noted few people did the reading or the on-line MCQs. As she commented,

I don't see the point in being there [if you don't do the reading] because you should discuss what you have read so if you haven't...then you just sit there in silence.

In contrast, Tim referred to the tensions between social life and university work throughout the interview. While interested in the module, primarily motivated by interest rather than a career in marketing, he viewed the first year as having a more social focus, with harder work to be done in the later years of the degree programme. He did not tend to read much of the book and if he did do any he tended to skim read the chapters. He had competing pressures on his time, as he explained,

I don't like the book but then again I haven't really given it that much of a chance. I am just lazy....We live on campus where there is a pub...and my mates go...and they [ask me and I go]...You just don't do [the work] I am thinking though next year I will.

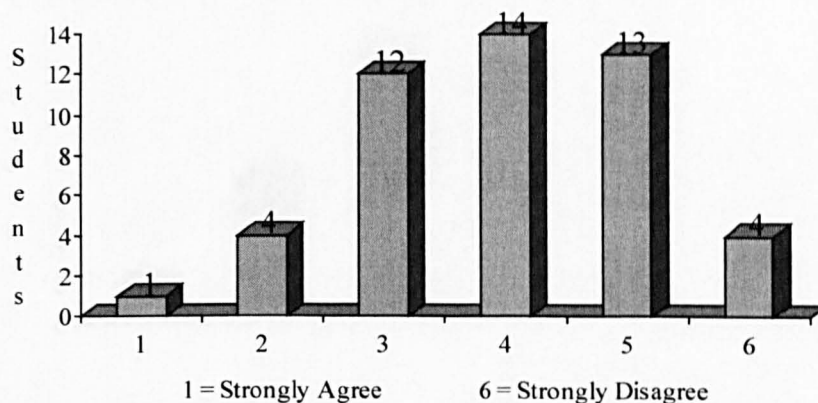
However, he still contributed in class because it was more interesting than remaining quiet and he felt at university it was something that everyone should do. Indeed, perhaps related to this view of the first year as more social and doing the minimum is reflected in the incentive of assessment. Indeed, on questionnaire 2 the students were asked if they accessed the website more at certain times of the course compared to others. Of the 36 who answered, 50% (18) students reported they used it more when it was assessed or they had to use it in the latter part of the course. Indeed, the lecturer commented that students had not participated in all aspects of the module as much as he had hoped because there was too heavy a workload, with too much assessment (developed to accommodate different learning styles) for a first year optional module.

7.3.4 Student-staff relationships

This section is divided into two areas; the first explores the use of the web and the relationships between the students and the second between the students and the staff.

7.3.4.1 *Student – student relationships*

In general students disagreed with the statement, “using the web for part of this module meant that I didn't get to know the other students in my class as well as I usually do.” As seen in graph 7.3.13 the median response was a 4.



Graph 7.3.13 Agreement with the statement, “using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do.”

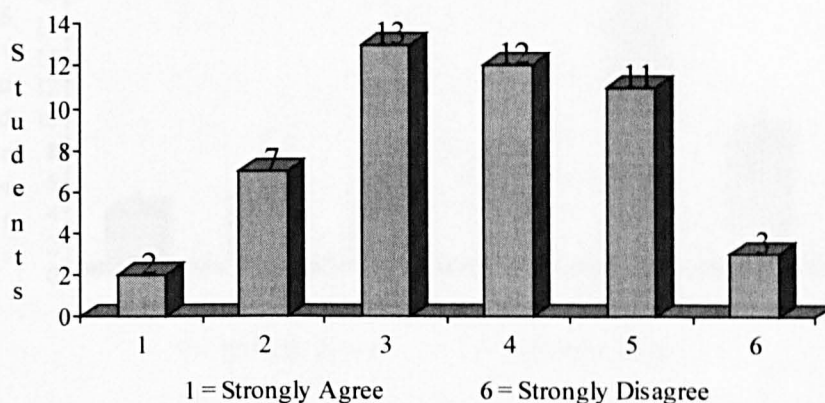
Thus, for most students, the web had not had a negative effect on relationships between students and indeed may have enhanced relationships as students were sharing opinions, although some face to face discussion had been replaced. However, the interviewees did not think it helped them to get to know students any better, partly because on-line discussions mirrored face-to-face discussions and because on-line conversations would not translate to speaking to other people face-to-face. As Jenny commented,

It seems if someone in my group says hello all the people in my group will reply to them saying hello and then the same in other groups. Nobody is sort of really crossing over...you just stick to your groups...people will start to talk to each other [on-line] but I don't think we will actually know who they are [in person] we will only know who they are on the computer.

The case study lecturer believed that in previous years the discussion board had helped students to find out about each other, for example, if they were homophobic or racist, and perhaps tried to change their friend’s views. Indeed, this was an important aim of the module but, given the politically correct nature of the discussions this year, it may not have worked as well.

7.3.4.2 Student – staff relationships

As can be seen in graph 7.3.14, students’ median response to the statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,*” was a 4.

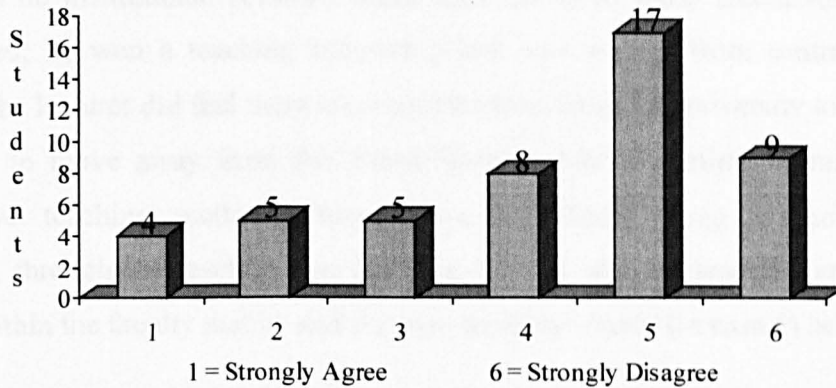


Graph 7.3.14 Agreement with the statement, “using the web for part of this module meant I didn’t get to know the tutor as well as I usually do.”

Agreement with the statement, “*using the web for part of this module meant that I didn’t get to know my tutor as well as I usually do,*” was positively and significantly related to agreement with the statement, “*using the web for part of this module meant that I didn’t get to know the other students in my class as well as I usually do*” ($\tau_b = 0.569$, sig level=0.000, N=48). Thus, those who thought the web had a negative influence on student relationships were likely to think it had a negative influence on relationships between students and staff. Those who felt they did not know the lecturer as well as usual may feel that way because the lecturer deliberately did not involve himself in the on-line discussions or because the web replaced some of the face-to-face teaching. Both interviewees obviously thought highly of the case study lecturer, and appreciated his method of teaching, but their impression of him appeared to be based more on his face to face teaching than from the website. Indeed, the case study lecturer did not think that his relationship with the students had changed, though he thought he found out more about them from reading their on-line opinions.

7.3.5 Student demand

The students did appear to want to use the web more in their teaching and learning. The majority of the students disagreed with the statement, “*I don’t want more modules that involve the web,*” with a median response of a 5. A summary of the results is shown in graph 7.3.15.



Graph 7.3.15 Agreement with the statement, “I don’t want to have more modules that involve the web.”

There appears to be some demand for more modules involving the use of the web, but there did not appear to be evidence from the qualitative data for demand for the web to replace a greater amount of face-to-face teaching. For example, one of the interviewees expressed a preference for keeping the face to face component of the module, partly because the seminars for this particular module were more interesting than most and because having web-based lecture notes etc would make learning more difficult as he would have to be responsible for managing his own learning and time.

7.3.6 Departmental context

There appears to be some encouragement at the departmental level to increase the amount of use of the web for teaching and learning. However, initially the case study lecturer operated without much support. He had a small amount of training from the central unit to use FrontPage and this had been all the training he had required. He had some IT support from the school for setting up the WebBoards and he had responsibility for putting on the students IDs and passwords. Setting up and running the site had taken a large amount of time, which he could not, “possibly quantify...it is a lot though.” He estimated the initial site took around two weeks of hard work over a holiday, but then updating each page was time consuming (particularly given the large numbers of pages and links on the site) as was dealing with technical problems, setting up student passwords, and moderating the conferences. Indeed, moderating was so time consuming he found it difficult to moderate more than one board per term.

As stated in section 7.3.1 his motivations were personal, and when he began there had been no institutional rewards. Since then however, more incentives had been introduced; he won a teaching fellowship and won money from central projects. Indeed, the lecturer did feel there was more impetus from the university to encourage lecturers to move away from the 2-hour lecture, 1-hour seminar format to more innovative teaching methods (though not necessarily using technology). For example, through the teaching and learning strategy and the teaching and learning forum within the faculty that he and the case study innovator (in case 5) held.

When asked what he thought the main factors involved in encouraging staff to change their teaching methods were he highlighted a number of positive features in his school: the opportunity to study for the CertEd with the central unit, the good relationship between IT and academic staff, and the technical infrastructure of the faculty. However, persuading some staff to think about changing their teaching was difficult, because of resistance to change and disenfranchisement with the university, and their suspicion that the use of technology was just another way to make them do more work.

7.3.7 Summary

The use of the WWW for the case study module was intended to:

- Be used as a supplement and partial replacement to the existing module
- To enhance students' cultural awareness and to develop communication and writing skills

The use of the WWW was developed within a departmental context where:

- There was some drive towards more innovative teaching and learning approaches
- There was good infrastructure and technical support
- The CertEd and central unit may help adoption of more innovative teaching approaches.
- However, staff resistance to change was a problem
- The lecturer's motivations were enjoyment, knowledge of technology available, and perceived educational benefits

The student cohort can be defined as:

- The majority were traditional, i.e. aged 18-20 and took A-levels. A significant minority were the same age group but took a less traditional qualification (e.g. GNVQs) and there were a significant minority of Erasmus students
- The majority were frequent users of the web, but few had formal training prior to the start of the module

Students used the WWW for the module:

- Fairly frequently, typically 2/3 times a week. The majority of students estimated that they spent 40-60 minutes on-line per session, though 52% (25) students estimated they spent less time per session on the website.
- In some of the ways intended by the lecturer, and was particularly worthwhile for students who found it difficult to participate in face to face discussions, but students appeared to be more strategic and less intrinsically motivated than previous cohorts

Students' opinion of the website from questionnaire data:

- Useful for learning about others experiences and opinions, improves IT skills, useful and convenient resource, fitted in well with the module, enjoyable, helped to learn and to get more marks (though assessed) and was worth the time spent using the medium
- Problems with access to computers and difficulties with posting due to nature of medium, difficulties with time management, concerns about the quality of discussion and reduced contact with staff and students

Students' opinion of the website from the qualitative data:

- Sections of the site such as module information and text based resources are not that useful but should remain on the site
- The discussion board used the most
- Benefits of sharing opinions and learning about different cultures and helped writing skills, fitted in well with course
- Problems due to quality of discussion and concerns about posting messages that others may interpret wrongly

Factors that may have influenced opinion and use of the site:

- Some difficulties with accessibility
- Good usability
- Prioritisation of social aspects of university life over academic work

The relationship between students and staff and the use of the WWW:

- Mixed. For the majority student-student relationship not negatively effected by WWW. However, for minority the use of the WWW may have had a negative effect, perhaps due to reduction in contact time, and may not improve relationships either as on-line comments are not linked with people in face to face situations and on-line groups mirror off-line ones
- Mixed, yet students may not feel they know the lecturer as well as usual – may be because of lack of contributions lecturer made to the on-line discussions or due to replacement of some seminars with on-line conferences.
- Lecturer feels he knows students better due to reading their comments.

Student demand:

- Is some demand for increased amounts of the WWW for teaching and learning within modules
- No demand for the WWW as a replacement for “traditional teaching” due to social nature of learning and lack of skills to manage time