Barriers and enablers to teachers’ adoption of online teaching at an Australian University

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I hereby certify that:

Except where due acknowledgement has been made, the work is of the author alone; the work has not been submitted previously, in whole or in part, to qualify for any other academic award; the content of the thesis is the result of work has been carried out since the official commencement date of the approved research program; any editorial work, paid or unpaid carried out by a third party is acknowledged; and, ethics procedures and guidelines have been followed.

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Summary

For almost as long as online teaching has been possible there has been a perception on the part of students, administrators and some teachers that there are some barriers to the adoption of online teaching at the tertiary level of education. The term “online teaching” in this study refers to all possible types of teaching which takes place over an electronic network, including wholly online, a combination of face to face and online (often referred to as “blended learning”).

Many studies have investigated the reasons for this lower than desired adoption rates. The first of these were undertaken in the late 1990’s not long after the Internet became commonly available. There was something of a peak in this research topic during the period 1999 – 2004, which has since slackened, but nonetheless still attracts researchers. An indication of the perceived need to investigate this lack of adoption can be seen in journals such as the Online Journal of Distance Learning Administration (http://www.westga.edu/~distance/ojdla/) which had more than 812,000 visitors in the period from its first issue in 1998 to December 2011.

Most of the previous studies have been quantitative in nature and have often been survey based. This study varies from much of the prior work as it is qualitatively based. A qualitative approach was selected as the topic being researched had to do with the “why” of human behaviour, and it appeared that it was necessary to investigate the feelings and motivations of the individuals who were making decisions to adopt, or resist adoption of online teaching in a way which a survey based approach could not.

The setting for the investigation was a large Australian University with more than 75,000 students across six campuses and with a number of partner institutions. The University itself had previously identified a lower level of adoption of online teaching than the University Council desired. The researcher conducted interviews with a number of teaching and support staff in order to discover what barriers or enhancing factors to adoption might be present.

This interview data was then intensively examined using grounded theory as a guiding principle. University documentation was also examined. This documentation included a survey undertaken several years before in conjunction with a group of similar Australian Universities as well as policy and procedural documentation.

There are four high level findings of this study. Two of these are related to teachers specifically. These are:

- Time is seen as a significant factor in the uptake of web based teaching, but the issue is somewhat paradoxical in that more experienced teachers often see flexibility of time as an advantage.

- Teacher self-efficacy and factors which enhance or detract from a teacher’s feeling of efficacy are powerful motivators or de-motivators for the uptake of web based teaching.

Two other findings are related to the institution. These are:

- That a number of aspects of the technical infrastructure have a significant influence on the uptake of web based teaching.
This study both confirmed previous research and identified a different as well as a more subtle factor affecting teachers’ adoption decisions. As with previous research, teachers identified a lack of time, resources and support as factors which discouraged the adoption of online teaching. Due to local circumstances, they identified technical issues such as unreliable University computer systems and difficult user interfaces as obstacles as well. Unlike other research this study also identified a somewhat paradoxical factor in the issue of time.

**Time as a paradoxical factor**

Other studies frequently identified lack of time for preparation of material and teaching as a barrier to the adoption of online teaching. In this study that problem was also cited, mainly by inexperienced teachers, or those who had not taught online. Conversely, some participants had taught online for 15 or more years, and these participants spoke with considerable enthusiasm about the advantages of teaching in an online mode and in particular about the flexibility of time and place which it afforded them. One of the unexpected findings of this study was that time to prepare and teach was not seen as a problem by those with experience with online teaching, but was seen as a problem by those who had not taught online and had no direct experience.

**Self-confidence and fear**

Another unexpected finding was the role of self-confidence and the related concept of self-efficacy. Detailed analysis of the transcripts and audio recordings as well as careful listening revealed that those teachers who had not invested themselves in online teaching appeared to lack the confidence to do so, and they often expressed doubts about their ability to teach students effectively in an online mode. These participants felt that teaching online would take more time, although they had not had any experience which had confirmed that belief. A number of these participants also suggested that additional support, especially technical support was needed.

The idea of “fear” was raised by a number of participants. This was often expressed as fear of the technology, fear of failure, and fear of being embarrassed by students who appeared to more knowledgeable than the teacher. This always arose unprompted during the interviews and in the case of teachers with little online experience they expressed this as a fear they held. More experienced online teachers did not express any concerns about their capability to teach online, but in a few instances they did provide an opinion that fear was an important issue for less experienced colleagues.

**Technical issues**

A number issues which were related to the information technology systems were raised by participants. In the participants’ view, these issues all presented barriers to adoption. The problems which were mentioned included software interfaces which were difficult to use, lack of reliability and a need for better IT support. In several discussions a lack of hardware and software was provided as a problem for teachers who were teaching students how to use specific software packages. These issues were not widely raised in other studies and it was not clear whether the institution in the present study was unique in having these problems or whether the qualitative approach simply allowed the discovery of barriers which were not revealed by a quantitative approach.
Institutional and cultural factors
A number of participants raised issues which were related to institutional policies. While a number of other studies have discussed whether policy changes can engender a greater degree of adoption participants in this study were often unaware of policies concerning online teaching. Policy did play a significant role in the form of support for teachers to learn about online teaching, with a number of participants, particularly those who were inexperienced in teaching stating that more support should be provided by the institution.

Conclusion
This study revealed several issues which previous research did not uncover such as the importance of self-confidence, and the paradoxical nature of time which was seen as an advantage by experienced teachers, but a problem by those with less experience. Other factors such as technical infrastructure matters appeared to be unique to this study. A number of institutional policy related issues such as lack of recognition and support for online teaching arose as they have done in other studies, but these matters appeared less important than other studies have indicated.
Chapter 1: Introduction

1.1 Introduction to chapter

This chapter provides the setting and rationale for this study. The chapter discusses the assumptions upon which the research is based, explains why the topic must be investigated and describes those aspects of the issue, such as the effectiveness of web based teaching which are beyond the scope of this study. A research question is posed and an explanation provided for the particular approach adopted.

1.2 Context

One of the fastest growing trends in Western higher education is the increase in online delivery. Online education can produce better learning outcomes at a lower cost (Twigg, 2003), yet there appears to be some resistance from teachers to the adoption of online teaching methods. This study examines the reasons for this apparent resistance, and investigates some of the factors which inhibit or encourage the adoption of online teaching and the implications of those factors.

The focus of the research is the tertiary education sector, in this case meaning all post-secondary education. Tertiary education was selected because it has been an area of significant growth. In Australia there were 1,192,657 higher education students in Australia (Commonwealth of Australia 2011) enrolled in tertiary institutions, a figure which includes traditional teaching and technology enhanced teaching. This is an increase of 71% since 2000 (Commonwealth of Australia 2001).

“Online teaching”, while seemingly a straight-forward phrase has a variety of meanings, and is still evolving. Online teaching has a long history for what appears to be a new technology. The first instances of online teaching were started in the 1980’s (Harasim, 2000). Preceding this was the use of computer conferencing in 1972, leading to face-to-face university courses being supplemented in the mid 1970’s by e-mail and computer conferencing. Distance education, which has much in common with online teaching has been offered since the 19th century. Research has been published since the early 20th century on aspects of distance education. The first studies were on the effectiveness of paper-based correspondence.
education, and called “Comparative Media Studies”. This type of study later focused on the electronic delivery of teaching.

An awareness of this historical view is useful, as many of the challenges and advantages of earlier modes of “education at a distance” act as a prologue to today’s challenges in online teaching. These common factors between paper-based correspondence education and current web-based teaching are explored in the following chapter.

A number of factors have fuelled the growth of online education over the past 20 years. These influences are related to technology and to demand factors. The technological aspect includes the reduction of a wide range of costs of information technology infrastructure such as personal computers, internet connectivity, and enterprise level hardware and software. As these infrastructure related aspects of online delivery become lower in cost, an increasing number of teachers and students have access to the components required to learn and teach online. As a result of these changes it is now more likely than it was 20 years ago that teachers already possess basic computer skills, as well as skills in using software to create online learning materials.

Students also have an increased level of skill and confidence in the use of information technology, and consequently a heightened expectation of both the quality and the availability of online learning experiences. Most 18 year olds entering university in 2011 have lived in an era when personal computers have been relatively cheap and easy to use, and broadband Internet access commonplace. Many have had a childhood where playing console games (such as Playstation, Wii, or PS2) was an everyday occurrence, and using computers in education started at the pre-school age.

While these changes in technology have made online teaching more accessible, and raised the expectations of learners, there have been other changes in the educational environment. These changes have been driven by government policy and societal expectations and started just after WWII. They have been further accelerated, particularly in Australia, by government policy.
The first of these influences, “massification” refers to the shifting of tertiary education participation from a small elite to a relatively large proportion of the population. Hastened by Commonwealth government policy, and in common with many developed countries Australian higher education grew quickly. In the late 1980’s the Australian Commonwealth government committed to an expansion in higher education enrolments, and in the ten years following, enrolments and graduations grew by more than 50% (Karmel, 2003). As a result of these changes, funding to the post-secondary sector in the country also grew. This increase in expenditure was seen as unsustainable, particularly by the Commonwealth government. Commonwealth funding for higher education was restricted, although student numbers grew. From 1994 to 2011 the total operating grant to Universities had not increased in real terms, and the operating grant per student had fallen in real terms in that period (Universities Australia 2011).

The increased technological possibilities, combined with changing student expectations, and a reduction in real funding led tertiary institutions, particularly in Australia, to seek more economical and effective ways to deliver education. One of the mechanisms for cost savings which has been considered has been online teaching. This has been seen as cost effective, as teaching cost would be reduced with an increased student to staff ratio and less classroom space would be needed. Cost reductions as a result of online teaching have been difficult to identify, but some administrators still see this as a potential benefit.

Throughout this study the word “teacher” has been used to refer to everyone working within a tertiary institution who has a primary role in educating students as a group. There is a variety of terminology used to describe these people, including professor, associate professor, lecturer, academic, teacher and tutor. The word “teacher” has been chosen to describe most directly and succinctly the nature of the role, and has been used consistently throughout this study.


1.3 Research problem

A survey sponsored by the Sloan Consortium showed that 63% of U.S. chief academic officers say that online education is critical to their long-term strategy (Allen 2010, p. 6), and that there was nearly a 20% increase in the number of students taking at least one course online in the U.S. (Allen 2003, p. 2). In spite of these positive attitudes towards online learning, there appears to be considerable resistance from teaching staff to teaching online.

Not long after online education became accessible, there arose a perception that teachers were adopting this mode of teaching less often than institutions had hoped and there appeared to be some resistance to teaching online. This desire of institutions for more online teaching arose in spite of the somewhat chimerical nature of the claims of cost-effectiveness. The problem of insufficient adoption of online teaching was seen as early as the mid 1990’s (Galusha 1997, Gellman-Danley & Fetzner 1998), and since then a number of studies have been undertaken into why there is a resistance to online teaching. It has often been suggested that there are barriers, either explicit or implicit to teachers adopting online teaching. The themes common to the various studies into the barriers to online teaching are outlined in the following chapter. The problem of a low rate of adoption seems to have been persistent across the 15 years that online teaching has been a technical possibility. The perception of a low rate of adoption also appears to be common across both North America and Australia. This perception might be seen as lacking an empirical basis, as there is little in the literature which defines how much online teaching is “enough”, or even any common understanding or measure around how to measure the uptake of online teaching empirically.

1.4 Purpose

This study is being undertaken to find out if there are distinctive influences which can be identified that encourage or discourage teachers to adopt online teaching. Identification of these factors may assist those working in tertiary education in several ways. For managers who wish to encourage online teaching, this information may assist them in motivating teaching staff to undertake more online teaching. For teachers, knowledge of the factors which others have found significant may assist them in adopting online teaching in a more timely, efficient and enthusiastic manner.
Greater knowledge of the factors which contribute to a low rate of adoption of online teaching will help the tertiary education sector move to online modes thereby increasing student satisfaction. Some in the sector also believe that cost savings can be achieved and student outcomes improved. (Twigg, 2003)

1.5 Research questions

This study will investigate these barriers, as well as examining enhancing factors to the adoption of online teaching. There are two research questions which were the guiding principles of this study:

“What are the barriers and enhancing influences in the adoption of web based teaching by teachers?”

And

“How might these barriers be overcome?”

1.6 Assumptions

This study is based on a number of assumptions. These are:

1.6.1 Assumption 1: That online teaching is worth doing

This study is predicated upon the idea that teaching online will provide a net benefit for learner and the institution. This assumption is built upon several well established facts. The first of these is the consistently expressed desire of students for more online content. Evidence of this desire is provided in Chapter Two of this study. There are a number of studies which show that online teaching can produce better results at a lower cost (Twigg, 2003, Means et.al 2010). A clear indication of the desirability of online learning is the growth and popularity of online universities such as OUA, (Open Universities Australia) and the Open University in the UK. These institutions have demonstrated rapid growth, and a wide spread. OUA has grown from a revenue base of $AUS 12.6 million in 2003 to $AUS 118 million in 2010, and saw a 81% growth in revenue in the period 2008 to 2009 alone (Open Universities Australia, 2011). The Open University in the U.K. had more than 250,000 students, and £ 421 million in income in 2009/2010. This research is built upon the work of Twigg (2003) and many others who have empirically shown the advantages of online teaching.
teaching, as well as taking the stated student need for online material as sufficient evidence that more online teaching is desirable.

1.6.2 Assumption 2: That teaching online is technically possible

It is assumed that online teaching is possible. This assumption is based on the fact that Australia and other western countries have a strong and robust Internet infrastructure, that reliable and usable software (such as commercial or open source learning management systems) exists, and that students often have a personal computer, or access to a personal computer which they can use competently. Few, if any of these assumptions would have been valid prior to the early 1990’s, and these are still not valid assumptions in developing countries.

1.6.3 Assumption 3: That the level of adoption of online teaching has been lower than anticipated

An implicit assumption of this and many other studies is that there is an insufficient quantum of online teaching occurring. This topic is further discussed in Chapter Two, and in the case being examined there is both a stated desire on the part of the university to encourage more online teaching, and a clear message from student that more online teaching is desirable and necessary.

1.6.4 Assumption 3: That there are distinct enhancing and inhibiting influences on adoption which can be identified

That there are definable, identifiable factors which encourage or discourage teachers to adopt an online approach is assumed. It is further assumed that these can be named, bounded and described at a useful level of detail.

1.6.5 Assumption 4: That the practitioner can identify these factors

This examination is built upon the concept that those who are central to a phenomenon such as online teaching have an understanding of the factors which contribute to their behaviour. It is also assumed that these teachers have the degree of self-realization and awareness necessary to identify these factors, and can express these to the investigator.
1.7 Rationale and significance

There are a number of reasons why it is important to undertake this research. These reasons range from broad societal expectations and the possibilities presented by new technology to cost-efficiency and effective space utilization. The wide availability of post-secondary education is an identified goal of the Australian and many other governments. It is widely recognized that the proportion of the general population with a Bachelor’s level degree is closely related to national economic well-being as well as individual satisfaction.

Online teaching has the potential to lower the cost of post-secondary education, and make it available more broadly which would bring many benefits to society and individuals. If the factors which discourage or enable online teaching can be identified, post-secondary institutions might be able to take action to ameliorate possible barriers and thereby encourage more online delivery. In addition to the economic rationale for increased online teaching, there are also benefits to individuals. The following section discusses the impact of online delivery to both learners and more broadly to society and institutions of higher education.

1.7.1 Importance of online delivery to the learner

There are a number of reasons that online delivery is important to learners. These reasons range from the aspirational such as the ability to enrich and empower themselves to the practical including avoiding inconvenient and time consuming travel to classes.

1.7.1.1 The dawn of a new age in Australian post-secondary education

Tertiary education has traditionally been the preserve of a relatively small segment of society. In Australia in 2007, approximately 29% of 25 – 34 year olds held a degree level qualification (Bradley, 2008). The changing nature of work and an economy which is moving into a post-industrial era also act as a significant driver in encouraging government to encourage and support higher education, as well as proving the motivation for more individuals to take up higher education.

A significant factor preventing more people from studying at post-secondary level is the cost of study, whether this is borne personally or by the government and society more generally.
Online teaching has the potential to reduce the cost of education and in the case of government funded education, allow more people to attain a tertiary qualification.

1.7.1.2 Supporting a variety of learning and life styles

Online teaching can support a wide variety learning styles. Due to the self-paced nature of asynchronous online teaching prospective students who may struggle to succeed academically in a traditional classroom may find success in the online environment. Students with work or family commitments which preclude, or make face-to-face attendance difficult also find online learning more supportive of their needs.

Students often have a limited amount time available for study. There are a number of factors which can reduce the availability of time for study. These include a financial need for part-time work, family commitments, business related travel or work requirements, or a range of personal reasons, such as a disability which prevents or makes attendance at face-to-face classes difficult. Studies have shown a lower level of academic achievement for students working part-time (Metcalf 2003, Salamonson, 2006, Watts, 2000). Online study, particularly in asynchronous mode can reduce or eliminate travel time and provide a flexibility of time for students enabling them to study at their own pace, in their own place and on their own schedule, possibly counteracting the effects of part time work.

1.7.1.2 Preparing graduates for emerging workplaces

Work is increasingly based on technology, and familiarity with technology is required in most workplaces and professions. Learning online provides a practical introduction to working with technology and prepares graduates to work and learn online, both skills that will increasingly be called upon in the future.

1.7.1.3 May increase student satisfaction

A contentious point within higher education is the degree to which “Net Gen” students demand or expect online delivery. Since at least the late 1990’s writers have claimed that a new generation of learners was entering higher education. These students were often called the “Net Gen” or “Digital natives” (as opposed to “Digital immigrants” born before 1980). The case for a teaching approach tailored for these new generation learners was made by Prensky (2001) and Oblinger (2003) and frequently promulgated through universities. The idea was that post-secondary students often had an expectation for online learning.
opportunities. This might be due to the media-rich environment in which they have grown up, setting expectations for more engaging, interactive environments than traditional face-to-face teaching sometimes provides.

Since that time there a more nuanced understanding appears to have arisen, and a more critical view taken. Jones (2010) and Kennedy (2010) have suggested that there are different groups within the “Net generation” with different skill levels, expectations and levels of interest. The common message between these more recent writers is that caution is required when making generalisations about these incoming students. Nonetheless there are still many predictions of an increase in student demand for online content.

1.7.2 Significance of online learning for the institution

Institutions delivering higher education are costly to operate. In the U.S. post-secondary education represents a considerable community expense. The NCES reports that in 2009-2010 post-secondary institutions expended $US461 billion. (Digest of education statistics, 2010). In Australia in 2007 (the most recent year available) the overall cost is $A17.3 billion (Finance 2007: Financial reports of higher education providers, 2008). Learners and funders have expectations of a high level of service delivery, and against that expectation, costs still need to be contained. There appears to be a general expectation that online delivery can contain costs, either through a reduced need for building and other infrastructure or through increased teaching efficiencies. It also appears that there is a lower degree of adoption of online teaching than might be desired. If the factors which contribute to this reduced adoption can be identified they may be rectified, or reduced, and more online teaching may result with more efficient use of physical facilities and possibly reduced costs.

Significant sums are being invested by tertiary institutions into providing the infrastructure required to provide online education. This investment is placed in network infrastructure, hardware, software, training of students and support staff and the resources required to create online learning materials. Every university has an expectation that this investment is well placed, managed and exploited. Given that much of investment outlined above is in the nature of fixed (or “sunk”) expenditure, it is in the interests of tertiary institutions to maximize the return on this investment.
While there have been few, or no demonstrable cost savings in teaching online to date it is possible that there may be savings or cost containment in the future. One aspect which has a potential to generate savings is by reducing the need of space within Universities. These savings will eventuate if institutions can reduce the need for additional physical classroom space as universities, particularly in Australia. One way to do this would be to provide more online teaching.

The Australian government has set a target of 40% of 25 – 34 year olds having a bachelor’s degree by the year 2025 (Transforming Australia’s higher education system, 2009, p. 12). The number of students in higher education will grow significantly under this policy. The current post-secondary education rate for this age group is 32%. An attainment of the goal of 40% would increase student numbers by 25% from the current 857,384 equivalent fulltime students (Summary of the 2010 Higher Education Student Statistics) to 1,071,730 equivalent fulltime students. With a conservative assumption that there is no total population growth, this is an increase of 214,346 equivalent fulltime students.

Providing facilities for these additional 214,346 students will entail considerable cost. Using figures from TEFMA (Tertiary Education Facilities Management Association) to allow 14.5 square metres of space for each equivalent full time student (Bradley, 2009, p. 11), and construction costs of $ 2,975 per square meter (Rawlinsons, 2011, p. 40) the additional space required for these students will cost $ 246 billion to build. In addition to the cost to build such space, running costs typically cost on average $70. / square meter / annum (Property and campus services, 2011, p. 9), providing an additional annual operational cost across Australia of $ 217.5 million.

An increase in the rate of space utilization would reduce this cost, but the complexity of obtaining improved space utilization is well documented in the literature (Beyrouthy, et.al. 2009). It appears unlikely on the basis of past experience and research that significantly improved space utilization rates can be obtained while teaching in a traditional mode. Greater adoption of online teaching could significantly reduce this projected additional expenditure, freeing up funds to be used in more productive ways.
1.8 Limits to this study and the effectiveness of online teaching

The effectiveness of online teaching has been questioned by many administrators and teachers. In some studies of barriers and enablers to online teaching, teachers have said that doubts about the effectiveness of this mode of learning has been a barrier to the adoption of online teaching. To investigate this area would broaden the study to the extent that there would be insufficient depth of analysis. This aspect of online teaching has been investigated in considerable depth by other researchers over a long period of time.

The effectiveness of any mode of teaching is difficult to measure due to a number of factors. These include lack of ability to control dependent variables, the wide variety of cultural expectations around the teaching mission, and variety of ways to measure teaching effectiveness. Nonetheless the effectiveness of online teaching is a contentious topic, on which much has been written. An illustration of the scope of the issue of the effectiveness of online teaching can be seen in the web site www.nosignificantdifference.org which supports Russell’s book “The no significant difference phenomenon” (2001).

Russell originally contended that there was no significant difference in outcomes for online teaching when compared with more traditional modes. The supporting website cites more than 355 studies which demonstrate both no significant difference and significant differences in the effectiveness of online teaching. The collection provides a useful illustration of how long the issue of teaching effectiveness has been investigated, with studies from as early as 1928. This early research was called “Comparative Media Studies”, and assessed the effectiveness of correspondence education.

More recently a report commissioned by the U.S. Department of Education (Means, 2010) analysed over 1000 studies of online teaching and applied a rigorous screening methodology to ascertain those which were methodologically sound. The study then examined 45 studies in detail and found that there were minor differences in outcomes between various teaching modes, with blended teaching being slightly more effective, but that this may have had more to do with “time at task” by students. This lack of clarity around the effectiveness of online teaching calls for significant and dedicated study.

Another limitation of this study was the focus on teachers. While other studies (Berge & Muilenburg, 2000, Betts 1998, Maguire, 2005) have investigated both administrators’, (such
as Deans’) as well as teachers’ attitudes towards the adoption of online teaching this study concentrated on teacher’s attitudes only. This approach was taken in order to provide for the depth of analysis required to explore teacher’s attitudes as a distinctive and pivotal factor in the adoption of online teaching.

1.9 Summary

This introduction has provided the background and rationale for the research which follows. The chapter has provided a rationale for the study and explained why this is important for the sector and for students. A research question has been posed to guide the investigation, and a number of assumptions outlined and made explicit.

The next chapter discusses the research which has already been done into barriers and enablers in online teaching, and discusses a number of theories into why innovations and especially teaching innovations may be adopted or rejected by practitioners.
Chapter 2 - Literature Review

2.1 Introduction

This chapter presents an analytical review of the prior research on barriers and enablers to the adoption of online teaching that underpins this study. The focus is on identifying and describing the factors which influence why teachers participate or do not participate in online teaching in a tertiary education environment. The chapter will also discuss some of the research approaches and methodologies used in prior research.

This chapter covers the following themes:

2.1.1 The semantics of online teaching:

There is an abundance of terminology around the act of online teaching. The first major section of this chapter will identify and discuss the various terms used throughout the literature, clarify the terminology used in the remainder of this thesis, and situate it in the field of online education. In this study the term “Web Based Teaching” (WBT) is used to gather together all of these terms. The rationale for the use of this preferred term is provided later in this chapter.

2.1.2 The literature of adoption theory

Adoption theory provides a coherent explanation for why certain innovations are adopted, and the influences around adoption of a wide range of innovations. Adoption theory has been used by a number of authors to provide a conceptual frame for the uptake of web based teaching. Several popular adoption theories which have been applied to web based teaching are explored in the next section. To the degree that an adoption theory is valid and robust, it can provide us with a framework against which to track the introduction of an innovation such as web based teaching. The third section of this chapter summarizes the use of adoption theory in the area of web based teaching.

2.1.3 The literature on motivation and change in teaching

There is an extensive literature on the factors which influence anyone to teach. A subset of this literature investigates the motivation to take up online teaching. This literature on motivational factors in teaching is assessed in relation to web based teaching in the fourth section of this chapter, with a special focus on teacher self-efficacy, and the impact that self-efficacy appears to have on the decision to take up web based teaching.
2.1.4 The literature on barriers and enhancing factors to the adoption of online teaching

These sections on adoption theory and teaching motivation are followed by a brief historical overview of the literature around barriers and enabling factors, first internationally, then within Australia. Further sections then provide a summary of the current literature, starting with the findings of the most comprehensive meta-analyses, and moving onto specific issues around online teaching which have been consistently identified in the literature.

The time span covered by this literature review is broad, as it traces several key concepts in teaching generally. A broad time span is also necessary to demonstrate the changes in barriers, especially as these relate to familiarity with web based teaching.

2.2 The semantics of online teaching

2.2.1 Overview

Before examining barriers and enablers to online teaching, it is important to define what is meant by “online teaching”. This section will explain how the focus of this study has been defined.

The phrase “online teaching” has many meanings – and these have changed over time, and are still evolving. In a historical vein, the genesis of online teaching was seen in early correspondence education, the effectiveness of which has been assessed since the 1890’s. Larreamandy-Joerns (2006) provides an historical background which puts forward the view that distance education and online teaching have a connection and that by examining the history of distance education educators can learn more about the online environment. Until the mid to late 1980’s, teaching of students at a distance was carried out via paper based materials delivered via the postal service. This earlier mode of correspondence education evolved into “Distance Education”, a term which was used extensively and was clearly defined until the 1980’s. The term “Distance Education” is still used, as witnessed by the 32 different journals (as at 13 May 2011) listed in Ulrich’s (Ulrichsweb) with the phrase “distance education” in the title, or the more than 6,000 books which are identified by Amazon.com as having some focus on “distance education”.

The definitions for distance education provide the broadest umbrella to cover the many teaching practices entailing a separation of teacher and learner which are in place today. The United States Distance Learning Association defines distance education as:
(1) A generic, all-inclusive term used to refer to the physical separation of teachers and learners. (2) [Distance Education, Distance Learning, Distributed Learning] The application of information technology (and infrastructure) to educational and student related activities linking teachers and students in differing places. (3) The student and instructor are physically separated by any distance. All communications are mediated by some type of electronic means in real or delayed time. Location is of no significance. (4) The organizational framework and process of providing instruction at a distance.

Distance education takes place when a teacher and student(s) are physically separated, and technology (i.e., audio, video, and computers, print) is used to bridge the instructional gap. (5) The organizational framework and process of providing instruction at a distance. Distance education takes place when a teacher and student(s) are physically separated, and technology (i.e., voice, video, data, or print) is used to bridge the instructional gap. (Simonson 2008, n.p.)

Since the advent of the World Wide Web there has been considerable adoption of more descriptive terminology, including “online teaching”, “blended teaching”, “hybrid teaching”, “web enabled instruction”, “adjunct mode”, “mixed mode”. While these forms often reflect the delivery mechanism accurately they add little in the way of clarity. The ERIC thesaurus (http://www.eric.ed.gov/) lists 22 related terms, including “online courses”, “open universities”, “virtual classroom”, and “web based instruction”. This wide range of terminology is an indicator of the fluid nature of the field. While “online teaching” is used as the over-arching term for teaching which involves some separation of teacher and learner there are a number of variants. These include fully online, online with a face-to-face component and blended teaching. These are discussed in detail below.

2.2.2 Fully online teaching

This is teaching as delivered through the Open University in the UK, (http://www.open.ac.uk/) or many of the courses delivered through Open Universities Australia (http://www.open.edu.au/). “Fully online” normally indicates that all interaction between teacher and learner is handled over the Internet. This aligns with the 1988 definition by Keegan which is a very widely used definition for “distance education” in the literature. Keegan defines “distance education” as

Distance education and training results from the technological separation of teacher and learner which frees the students from travelling to a fixed place ... and at a fixed time... to meet a fixed person in order to be trained or educated (Keegan 1988, p.7).
Just as this definition is more specific than the broader definition provided earlier, much of the literature fails to differentiate the degree of “online”. As a result there exists in much of the literature a conflation of all types of web based (or online) distance education. This lack of definition in what is a rapidly developing field confuses research results and leads to some unclear conclusions.

2.2.3 On-line teaching with a face to face component

Some teaching arrangements which are referred to as “online teaching” consist of varying degrees of online teaching, along with a face-to-face component which acts as a supporting element to the online component. This mode differs from “blended teaching” as it is primarily but not entirely online.

Some examples of this mode in Australia include some of the Open Universities Australia courses leading to a Bachelor of Applied Sciences award provided by RMIT University in Victoria, which are primarily online, but include several compulsory residential sessions and the Bachelor of Applied Science (Library and Information Management) course at Charles Stuart University in Wagga Wagga, New South Wales. These are primarily online and include a brief compulsory face to face residential component. Other Australian universities offering a face to face component in online courses are Monash University, Macquarie University, Deakin University and the University of New England.

2.2.4 “Blended” teaching

The term “blended teaching” has largely replaced the term “hybrid teaching”. This is a very common form of “online” teaching at present. In the Encyclopaedia of Distance Learning (Howard, 2005), Graham and Allen explain the background to the term “blended learning”. They claim that it was a replacement for the earlier term “hybrid learning”, and follows a change in the corporate sector. They reflect upon some other definitions, and suggest that these definitions could be used to describe almost any learning environment, including a combination of lecture and textbook readings. However, they go on to suggest that it is “the combination of instruction (both methods and delivery media) from two archetypal learning environments: a traditional face to face learning environment and a computer mediated or e-learning environment” (p. 172)

One of the common factors in the many definitions of online teaching, although not always present is the assumption of asynchronicity. Maguire states that “Most definitions specify that distance education is teaching and learning that occurs asynchronously – the learner(s) and instructor separated by time and space – using a variety of technical media to support the teaching and learning” (Maguire 2005,p. 1).
Blended learning differs from “online with a face-to-face component” because the emphasis is on the face-to-face, with the online component supporting the face to face component.

This study is concerned with all of the varieties of “online teaching” described above. An overview of the literature appears to show that the majority of online teaching, particularly in Australia at this time, is blended teaching. In “Building a nation of leaders”, the author states that

The most successful education models are those that blend the best aspects of both the traditional classroom and technological innovations. This blended model holds the most promise for making change on the scale needed to help quickly build a nation of learners (Building a nation of leaders 2003, p.25).

In this study, the term “web-based teaching” (WBT) is used as a surrogate for all of the above terms such as “fully online”, “blended teaching”, and “hybrid teaching”. Web based teaching includes those activities identified by other writers as “distance teaching”, as almost all distance teaching in the developed world is now provided via the Internet. “Web-based teaching” (WBT) is used to include all use of technology in the delivery of teaching and support of learners to any degree in or beyond the classroom. It includes the use of computer simulations, the use of online quizzes and testing, and the use of interactive and potentially student driven tools such as blogs and wikis. It also includes face-to-face teaching which is made available for later review through systems such as Lectopia, Elluminate or Blackboard Collaborate, and the use of Learning Management systems such as WEB CT, Blackboard or Moodle to deliver learning content. It does not include non-mediated, self-directed learning such as a student might attain through the use of library resources.

The above section describes and differentiates several types of online teaching. It claims that a number of different modes of teaching are called “online teaching” and suggests that the phrase “web-based teaching” (WBT) is used to cover all types of teaching which is online, whether it be blended (with both face-to-face and online components) or totally online. This study excludes teaching which is entirely face-to-face.

The next section discusses “adoption theory”. Adoption theories provide constructs against which the uptake or rejection of a new way of working or practice might be understood. Broadly based adoption theories, which might apply to any new way of working, or practice are discussed in the following section.
2.3 Literature of adoption theory

This section discusses adoption theory in both general and education specific contexts. Adoption theory is relevant to this research to the extent that it may provide guidance as to why teachers may choose to adopt or avoid WBT, but it does not go to the heart of teachers’ adoption decisions.

Web based teaching (WBT) is an innovation in teaching practice. Within adoption theory the term innovation has a specific meaning and is commonly defined as “an idea, practice, or object that is perceived as new by an individual or other unit of adoption.” (Rogers 2003, p.11). This study is concerned with the adoption of WBT by teachers. There are a number of general adoption, or innovation theories which attempt to explain why an individual or group might or might not adopt a particular innovation such as WBT. There are also several widely accepted theories regarding the adoption of educational change. The following section of this chapter discusses various theoretical approaches to the adoption of innovations. The section starts by discussing several well-known adoption theories used in the field of education, and then moves onto a more general and more widely used adoption theory put forward by Everett Rogers.

2.3.1 Education specific adoption theories

Theories which have been popular in the field of education in particular have been Fuller’s “Concerns Based Theory” (Fuller, 1969), which was followed by Hall and Hord’s “Concern Based Adoption Model” (Hall, 1987, 2001). These theories examine and attempt to explain why teachers adopt or reject teaching innovations. Each of these theories has strengths and weaknesses, and has assumed a degree of popularity and application in research at some time.

Fuller’s “Concerns Based Theory” (Fuller 1969) has been widely used in the field of education, and critically examined by a number of writers. The Fuller model was further developed by Hall and Hord in their “Concerns Based Adoption Model”. Both of these theories recognize the concerns of those affected by a change. These theories encourage the party driving the change to recognize and address the concerns of individuals affected by a change. The approach encouraged by Fuller and Hord and Hall has been criticized as privileging the individual teacher over the teaching role, and emphasizing the personal rather than the political or broader questions. Specifically Conway and Clark claim that “the consequence of Fuller’s concern-based model ... [is the] promotion of an individualistic, cautious and conservative approach to teacher education”(Conway & Clark 2003, p. 467).

Regardless of the merits or criticisms of the models of Fuller or Hall and Hord, they have limitations when used as a framework for reviewing influences on the adoption of WBT. Both of these provide a focus on
the training of teachers at the initial stages of student teaching rather than ongoing development of a specific competence such as online teaching. While the Fuller approach, and later development by Hall and Hord have been useful in the past, particularly when viewing the training of teachers in a pre-service environment, they are too specific to the pre-service environment, and have less transferability to the uptake of specific skills. In any case, none of these frameworks has approached the universality of Rogers “Diffusion of Innovation” approach.

Two commonly used generalist adoption models are the Technology Adoption Model (TAM) (Davis 1985) and Rogers’ Diffusion of Innovation (Rogers 2003). Prior research into the adoption of WBT appears unable to make a close fit between existing generalist adoption theories such as Rogers’ and TAM and WBT. These generalist theories are both described below. There also appears to be little congruence between theories of education innovation adoption such as the “Concerns based adoption model” or “Concerns based theory”, both outlined below and the adoption of WBT.

2.3.2 Roger’s Diffusion of Innovation Model

The “Diffusion of Innovations” by Everett Rogers is widely known both within and beyond sociology. Rogers’ model was first published in 1962, and revised a number of times, most recently with a fifth edition in 2003 (Rogers 2003). The Rogers model has been used in many fields, including agriculture, family planning in developing countries and technology adoption to explain the resistance to and acceptance of a wide range of innovations.

There are several key concepts to the Rogers model. According to Rogers, there are four main elements of innovation. These four elements are:

- The innovation itself: Rogers (2003, p.11) refers to this as “an idea, practice, or object that is perceived as new by an individual”.

- Communications channels: Here Rogers (2003, p. 18) goes beyond the everyday concept of a communications channel, and explains that “most individuals do not evaluate an innovation on the basis of scientific studies of its consequences”. They instead rely on a subjective evaluation of an innovation, as passed on to them by others.

- Time: The third element in Rogers’ innovation process is time. It is time which gives this theory focus on adopter categories, as Rogers classifies adopters into five distinct groups according to when they adopt an innovation.
• Social system: The social system is Rogers’ fourth element. Rogers defines a social system as a group of people, a group of groups, or organizations. The key element is that they are interrelated, and working towards a common goal.

These four principle elements are used as a frame in which the innovation process is set and measured. The adopter categories which Rogers suggested are:

• The *innovators*

• The “*early adopters*”

• The “*early majority*”

• The “*late majority*”

• The “*laggards*”

A few writers on barriers to the adoption of WBT have used Roger’s theory, (Dooley and Murphrey 2000, Graham 2006, Wilson & Stacey, 2003). There have been many more studies which have used this approach to examine the uptake of computers in education, or educational technology in general.

Jacobsen (2000) in particular examined Rogers’ “early adopters” of educational technology and compared these to the “early majority” and suggests a number of practical steps to speed the adoption of WBT, including:

• Changing communication channels so that Presidents, Deans and Directors all use e-mail as the primary means of communications.

• Using early adopters to move potential users from the “knowledge” stage to the “persuasion” stage, through in-house demonstrations, campus conferences and symposia.

• Forming “Technology Roundtables” which include early adopters and mainstream faculty.

• Creating training modules, which involve the early adopter group.

• Including students in the faculty development plan, as (at least at the time of the Jacobsen study) students often had a better grasp of the technology than teaching faculty (p. 24).

Jacobsen makes the point that “If campus wide integration plans are developed on the assumption that everyone will naturally use computers as readily and as easily as the early adopter, then they are bound
to fail” (p. 25). A diverse approach is recommended by Jacobsen. She suggests a number of different strands are required and that it should be recognized that:

Developing awareness that the adoption of information technology for teaching and learning is a complex, barrier-ridden and time–consuming process will help institutions understand that expectations for campus-wise technology integration will not happen overnight, and must allow for a cyclical and iterative implementation and evaluation process (Jacobsen 2000, p. 26).

The Rogers theory is based on the assumption that the innovation being examined is a new way of working, and that there is a binary divide between those adopting an innovation and those who have not yet adopted that innovation, and that once adopted, the use of the innovation continues.

Rogers’ concepts are not entirely applicable to the phenomenon of online teaching. Adoption theory arose out of Roger’s work as a rural sociologist, and his early interest appears to have been driven by the adoption of hybrid corn on his family’s farm (Dearing 2008, p. 102). A distinguishing characteristic of Rogers’ theory is the view that change is a binary construct and that an individual or group can be defined as having adopted, or resisted adoption of a change. In many of the phenomena which have been examined using Roger’s theories a binary division can be made. Using the hybrid corn as an example, either the corn which a farmer chooses to plant is a hybrid variety or not, and there is no “semi-hybrid” corn.

The phenomena of online teaching is not so well defined or differentiated as many of Rogers’ examples. There is no binary divide or marker which can denote that a teacher is teaching online. While there are teachers who have no online interaction, and many others who teach exclusively online, there are many who may have a relatively passive role in online work. They might use e-mail from time to time, or as strictly necessary, or may just put course details on a learning management system with no further content of interaction.

The lack of utility of Rogers’ work for this study was due to the nature of the adoption of online teaching, particularly at the University being studied. Online teaching in various forms had been in place for many years at this institution, and almost all participants had taught online to some extent at some time in the past or were doing so at present. As a result, teachers could not be classified into the accepted Rogers categories. For example, someone who may have been in the “early majority” not long after the WBT was introduced may have dropped it later, and would now be considered to be in the category of “laggard”, as they were not using the technology at this time. Nevertheless, the Roger’s model was useful in guiding the development of the investigator’s interview script.
2.3.3 TAM 3: A Technology Adoption Model

While the Rogers model has very general applicability and a broad reach, there are other theories which have been developed for their application to the adoption of modern technology. Davis (1985) proposed a technology adoption model (TAM) which provides a framework to explain and classify the factors which influence an individual or group to adopt a new technology. This was updated by Venkatesh and Davis (2000), and later by Venkatesh and Bala (2008), who suggested TAM 3. TAM 3 in particular suggests a number of practical interventions to encourage user acceptance of a technological innovation. Some of the determinants of success include:

- User participation in the pre-implementation and implementation stages of the technology
- Incentive alignment so that users feel that the new system “fits with his or her job requirements and value system” (Venkatesh & Bala, 2008, p. 298)
- Training
- Organizational support
- Peer support

TAM has not been without its detractors, with Chutter (2009) claiming that there are some doubts about its theoretical robustness and practical effectiveness. Nonetheless, several concepts are significant when examining the applicability of TAM 3 to WBT. Venkatesh and Bala claim that “for a voluntary system interventions that will influence the determinants of perceived usefulness will be important to implement.” (p. 304).

Neither the general literature of innovation adoption, nor specific theories about the adoption of technology or educational innovations appear to greatly assist with understanding why teachers might choose to adopt WBT. In an effort to explain what motivates teachers in a more general sense some education specific motivational theories are considered.

2.4 What drives motivation and change in education?

This section considers motivation theory as it applies to WBT. Elsevier’s Dictionary of Psychological Theories states that “motivation theories deal with the reasons that behaviors occur and refer to the internal states of the organism as well as the external goals (rewards and reinforcers) in the environment” (Elsevier’s Dictionary of Psychological Theories). Motivation theory is examined because it speaks to the affective elements of an individual’s decision to act in a certain way, or in this specific case to adopt or resist the adoption of WBT.
2.4.1 Motivational theory and teaching

The role of motivation in teaching has been a highly contested area for many years with many studies investigating the role of various motivational factors. One widely quoted theory of what motivates teachers has been put forward by Deci and Ryan (1985), Self-Determination Theory. This theory claims that humans are most powerfully influenced by internal drives, and a feeling of personal reward. In contrast, extrinsic motivators such as financial incentives, including additional payment act as weaker motivators and have less influence on decisions to act.

Given that teacher autonomy is seen as an important factor in teacher performance (Firestone & Pennell, 1993) the role of teacher autonomy in choosing to adopt, or resist WBT also becomes a critical issue. Further development of Deci and Ryan’s Self Determination Theory leads to their contention that some motivators don’t just determine what actions will be taken, but will also drive decisions concerning overall orientation.

2.4.1.1 Intrinsic versus extrinsic motivators and enablers

The literature on barriers and enablers to the adoption of WBT contains extensive references to intrinsic and extrinsic motivators of teachers. Intrinsic motivators are defined as “incentive to engage in a specific activity that derives from the activity itself... rather than because of any external benefits that might be obtained” (VandenBos 2007, p. 498). In contrast to this extrinsic motivators are “an external motivation to engage in a specific activity, especially motivation arising from the expectation of punishment or reward” (VandenBos 2007, p. 360). Some of the intrinsic motivators in WBT include the personal satisfaction in trying a new way of teaching, the opportunity to use technology in an innovative manner, and the feeling that the teacher has assisted students in a manner which they find useful. The literature has shown that extrinsic motivators, while not as strong, are factors such as increased pay, and decreased face to face teaching or research workload. These are discussed in greater detail below.

2.4.1.2 Intrinsic motivators in WBT

The concept of intrinsic versus extrinsic motivation is important in relation to WBT, because a number of significant writers (Betts 1998, Larson 2005, Parker 2003, Schifter 2000) have concluded that intrinsic motivators are a powerful influence in encouraging teachers to take up distance education incorporating online teaching. Larson (2005, p. 110) claims that “Intrinsic motivation to teach online plays a significantly greater role than do external motivation factors.” Betts (1998, p.10) also claims that “Distance education participants will continue and/or increase their participation in distance education, if their needs are satisfied”. Parker (2003, p. 5) points out that “The analysis of over one hundred articles lead to the conclusion that faculty generally teach in distance education programs for the same reasons (incentives)
they teach traditional courses; for intrinsic rewards”. Newton (2003, p.39) makes an even stronger case, saying “there is a willingness to participate in the activity and this willingness appears to be almost entirely due to the intrinsic values which academic staff place on teaching and learning.”

A number of writers identify specific intrinsic motivators that encourage teachers to teach online. Maguire (2005, p. 4) summarizes their arguments in this way:

Much of the literature supports that intrinsic motivators are stronger than extrinsic motivators when it comes to participation of faculty in online teaching. Intrinsic motivating factors include a personal motivation to use technology (Betts, 1998; Bonk, 2002; Rockwell, et al 1999; Schifter, 2000) or perceiving teaching via distance learning as an intellectual challenge.

Other writers point out the self and student benefit which is raised in many studies – “they [teaching staff] perceive teaching via distance learning as a benefit to them in that it is an opportunity to use technology more innovatively and to enhance course quality” (Maguire, 2005, p. 4).

Larson (2005) used a case study approach to examine the motivators and barriers experienced by five nursing teachers at Broward Community College in Florida. This study uncovered the same issue of intrinsic motivation in community college teachers as was found in higher education teachers: “What was more important to them than any external rewards, were the intrinsic rewards such as a feeling of accomplishment and personal satisfaction. This supports the literature that suggests that faculty are motivated by intrinsic rewards rather than extrinsic rewards” (p. 104)

Larson refers to “facilitation factors”, which appear to be intrinsic motivators in this case. “The other facilitation factors that were identified from this study included the perception that the case study participants felt that students learned more in their online courses and that offering a flexible form of instruction (online) was an important service that they needed to provide to them.” (p. 106). Larson is also explicit about the most powerful motivators and says that the excitement of learning how to teach in a new way is an effective encouragement to teach online. The intrinsic factors noted by Betts include “factors such as intellectual challenge, personal motivation to use technology, ability to reach new audiences that cannot attend classes on campus, and opportunity to develop new ideas positively influenced faculty participation in distance education (1998, p. 191)

Other factors which have been shown to influence the adoption of WBT easily fit the definition of intrinsic motivators. Several studies mentioned that the use of technology itself was an intrinsic motivator (Bonk, 2001; Rockwell, et al, 1999; Schifter, 2000). Some faculty stated that teaching via distance learning added to their overall job satisfaction (Betts, 1998; Schifter, 2000) and that teaching online provided optimal
working conditions, as they were able to “teach” at any time and from any place. Faculty also stated a feeling of self-gratification from teaching online (Rockwell, et al., 1999, p. 4). A final intrinsic motivator was that “Faculty note their interest in getting more of their students involved with technology, as they realize the importance of technology in all areas of today's world.” (Maguire p. 4)

Parker’s (2003) meta-analysis of intrinsic motivators was slightly different, and showed that there were three variables which were consistently mentioned in the literature and were statistically significant. These three variables were self-satisfaction, scheduling flexibility and the satisfaction of reaching a wider audience. The remaining motivators were mentioned in less than half of the articles and these seemed to have little influence in motivating faculty.

In summary the literature tells us that intrinsic motivation has the same strong role in WBT as it has in face-to-face teaching. The specific motivators in WBT are often connected to the technology, such as the personal satisfaction arising out of the teacher learning how to use the technology, and the impression teachers have that students find an online mode more useful and that they can reach more students when teaching online. It has also been reported that teachers find the flexibility of scheduling motivating.

2.4.1.3 Extrinsic motivators in WBT

According to Deci and Ryan (1985) extrinsic motivators generally do not influence behaviour to the same extent as intrinsic motivators regardless of the field under investigation. According to most researchers in teacher motivation in the classroom, extrinsic motivators are less powerful than intrinsic motivators. Extrinsic motivators come from outside the individual, and might include money (in the form of additional pay), praise by others, or simply recognition by others. Extrinsic motivators may also include negative consequences such as loss of prestige, reduced pay or benefits or other penalties.

Within WBT Parker (2003, p.5) identified “stipends, decreased workload, release time and new technology as the extrinsic motivators”. The literature shows a marked division in approach between administrators and teaching staff on the topic of extrinsic motivation. Specifically, some of the motivators which administrators thought were useful were not actually attractive to teachers (Rockwell, et. al., 1999). The motivators which administrators thought would be effective include extra pay, recognition and awards, and royalties on copyright material. However, these were all shown in the Betts survey (1999), which is one of the earliest, most replicated and influential of the studies into barriers and enhancing factors to “not significantly influence faculty participation” (p. 191).

Conversely, some surveys reported that extrinsic motivators such as financial rewards (Betts, 1998, Dooley, 2000, McKenzie, 2000, Muilenberg & Berge, 2001, Parker 2003, O’Quinn & Corry,2002,) have
significant influence on the decision to use WBT. The idea of WBT assisting in career advancement, a clear extrinsic motivator arose in studies by Betts (1998), Bonk (2001), Rockwell, et.al. (1999) and Schifter (2000).

There is no clear explanation for these contradictory findings where some studies have reported that extrinsic motivators could be important and other studies, as well as broader research into the motivation to teach, reported that intrinsic motivators are more important.

### 2.4.2 Self efficacy, confidence and teacher motivation

Adopting an innovation, particularly one which requires a degree of technical knowledge such as WBT requires persistence. New skills are needed to operate hardware and use software effectively as well as discovering how to teach at a distance. Rewards are often found only after some time, energy and will have been expended. The resolve to persist requires confidence that the continued effort will be rewarding, and a self-confidence that these new skills can be mastered.

The role of confidence in WBT is written about obliquely, and has some parallels with the idea of teacher self-efficacy. The general concept of self-efficacy was first put forward by Bandura (1977) in an attempt to explain why different modes of psychological treatment can be productive, and to ascertain why some modes are more successful than others. In his article he suggests that an individual’s beliefs about eventual success, and their self-belief in whether they can cope with negative outcomes but persist determines the degree to which they will persist. Bandura says:

> Given appropriate skills and adequate incentives, however, efficacy expectations are a major determinant of people’s choice of activities, how much effort they will expend, and of how long they will sustain effort in dealing with stressful situations (p. 194).

According to Bandura, “expectations of self-efficacy are derived from four principal sources of information: performance accomplishment, vicarious experience, verbal persuasion, and physiological states” (Bandura, 1977, p. 191). Bandura (1977), Armor et.al (1976) and others have examined the concept of self-efficacy, and placed this in the context of teacher success.

At approximately the same time as Bandura was publishing his research, Armor et. al. (1976) developed ideas first suggested by Rotter (1966) that a teacher’s belief in his/her ability to control the reinforcement of his/her actions (as opposed to the factors of reinforcement being external to themselves) has a significant influence on their persistence. The word “persistence” in this case has a specific meaning of continuing to pursue a goal in spite of obstacles. This concept of teacher persistence was termed “teacher
self-efficacy” and has a long history of being measured and regarded as having some significance in teacher success and effectiveness.

Teacher self-efficacy has been explained as “a judgement of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (Tschannen-Moran & Hoy 2001). The idea of teaching self-efficacy has been extended into computer self-efficacy for teachers. This is further developed by Paraskeva et. al. (2008). While this study examined secondary school teachers’ willingness to adopt new technology, the parallels to tertiary teaching as demonstrated by Tschannen-Moran and others listed above make this a useful framework examining the behaviours of tertiary teachers in relation to WBT. Paraskeva et.al. (2008) specifically looked at computer self-efficacy in Greek secondary school teachers with comments which are applicable to the case being examined here.

A common theme in the literature of teacher self-efficacy is the need for the teacher to believe that they have the ability make a difference to students and improve learning outcomes in spite of set-backs and difficulties. This study will explore links between a teacher’s sense of self-efficacy and their adoption of WBT.

2.5 The literature of barriers and enhancers of WBT:

2.5.1 Overview of the literature

The literature concerning barriers and enablers to WBT adoption that lies beyond teacher motivation is extensive. Most of the studies performed to date are quantitative, and a number are based on surveys done previously by Betts (1998) and Berge (1999). The following section discusses what other researchers have found when investigating barriers and enablers to the adoption of WBT.

In the early 1990’s the first of the research on barriers to adoption of WBT was published. These studies were generally referring to online teaching as it was done at that time. Students would dial into a computer system with a modem attached to their own computers and an analogue (voice) telephone line, and in some cases, they would connect to the Internet. There are no monographs on teaching online at that stage, but a series of articles commencing with Leggett and Persichitte (1998) started to investigate why there may have been barriers to the adoption of online teaching. As with most of the literature since that time, there is little empirical evidence provided that there was insufficient adoption of these new modes of teaching, nor was there any indication on how much WBT would be sufficient. In a pattern
largely replicated by the research which followed the methodology was largely survey based, allowing little opportunity for the teacher’s voice to emerge.

The work which Leggett and Perschitte used as a reference point was done by Cuban, in 1986. Cuban investigated the lower than expected uptake of the leading technology of the time, film, and provided some reasons why teachers tended not to use film in the classroom. In “Teachers and machines: the classroom use of technology since 1920,” (1986) Cuban argued that barriers (at that stage) had not changed in the previous 50 years, and that the reason that more teachers did not use film more frequently was due to specific operational problems (p. 18):

- Finding the right film for the curriculum
- Lack of access to equipment
- The high cost of films and equipment
- Lack of skills in using equipment and film

These problems with film were indicative of future problems with computer-based technology, and applied not just to film, but most media which were used as an alternative to traditional face to face teaching.

This early work by Cuban led Leggett and Perschitte (1998) to conclude that there are five categories of barriers to the uptake of any new teaching technology: time, expertise, access, resources and support (TEARS). These categories of problems with technology in teaching, and especially the Leggett and Perschitte study guided Berge (1999) to his series of studies (Berge 1999; Berge & Muilenburg 2000; Muilenburg & Berge 2001; Cho & Berge 2002; Berge 2003; Berge & Muilenburg 2003). These studies explicated barriers to teaching using technology which were found in institutions at every level, from primary to post-secondary.

A parallel stream of research was an early study by Galusha (1997) who analysed barriers to online learning. Galusha included a section on barriers to teaching online, and foreshadowed the same issues which appeared in subsequent studies – these are:

- Lack of training in course development
- Lack of support for distance learning in general
- Inadequate faculty selection
• Lack of basic skills or hardware
• Threat to tenure and staffing issues
• Lack of professional respect

The barriers mentioned by Galusha and Leggett and Perschitte have echoed over time. There have been relatively few changes in the list of barriers to adoption since these early studies in spite of significant changes in the available technology.

Maguire (2005) has presented the most comprehensive summary of the literature discussing and investigating barriers to online teaching. In her literature review, Maguire summarized the key findings of 13 selected studies, ranging from 1998 to 2002, and then analysed these into intrinsic and institutional barriers, and intrinsic, extrinsic and institutional motivators.

The major barriers Maguire identified were:

• Lack of technical support
• Lack of time to develop and maintain courses
• Concern about course quality
• Lack of grants for materials
• Lack of release time
• As well as the barriers listed above, a series of motivators were also identified.

Maguire also identified some enhancing factors. These are:

• Personal motivation to use technology
• Opportunity to use technology more innovatively
• Credit towards promotion

There was little commonality of barriers to online teaching among the studies Maguire reviewed. Thirteen studies were reviewed out of a possible 31 which were identified. The articles were selected for review on the basis of currency and were all set in institutions of higher education. A content analysis approach was used and inhibiting and encouraging factors were largely taken verbatim with minimal interpretation or...
There was a broad spread to the factors mentioned in the 13 studies in spite of the researchers often using similar instruments (generally a web-based survey), in similar institutions (generally four year, degree granting institutions) in the same geographic area (U.S.), and in studies undertaken over an extended period of time. Nonetheless, there are some common factors in all of this research, and across a number of studies. The most common barrier to online teaching— as shown in both the Maguire article and others - is lack of technical support. Sometimes this is expressed as support for course development, and at other times it is stated as a less specific need, and would appear to be more related to the actual use of technical infrastructure such as computers, modems and software.

Another study done by Wallace (2004) again found technical support to be an important barrier. This similarity in barriers over an extended period of time is unexpected as the technical aspects of using the Internet appear to be largely simplified. Until around 2000 it was necessary to have a modem, often a separate device from the PC, which connected to the Internet or a learning management system through an analogue telephone line. These additional steps and devices meant that there was more to learn about and more opportunities for technical problems.

Most or all of the respondents to the more recent Wallace study which took place in 2003 / 2004 would have reliable, high speed network access, in comparison to the previous studies, many of which included research done in the 1990’s when dial-up modems were not uncommon, and web page creation was generally done with a package such as FrontPage. This level of sophistication in the technology in past years made it more difficult to create material, and to interact with students online in contrast to the present.

There are several other common characteristics in the literature on barriers to the adoption of online teaching during the period since 1990:

- There is a lack of evidence for low uptake of WBT. Generally, most studies did not provide any evidence of why it was assumed online uptake was lower than anticipated. It seems to be a given that there should be more online teaching and that there are inhibiting factors to teachers adopting WBT.
• There is little information about corrective actions. In some cases corrective action is obvious, and in a few articles it is suggested, but in most articles barriers are simply ranked and listed.

• There is a strong quantitative approach in the studies undertaken. There has been a great use of a survey methodology, with several surveys acting as the keystone works, and subsequent studies being based upon, or replicating the original surveys in totality.

• There is a lack of information about enablers. Most research in this area investigates barriers. Enabling factors are seldom mentioned or examined.

A common factor in all of the above studies is the use of a quantitative approach with a survey being the most common data gathering instrument. Elsewhere in this study the advantages of a qualitative approach are outlined.

There does not appear to be any systematic examination of what has changed since these studies and analyses were done, and whether the changes in technology, making network access faster, more reliable, and easier to use have lessened the importance of these technical factors, nor does there appear to be much research which privileges the teacher’s voice and lived experience. In spite of the work which has been done to date, further study is needed to test several aspects around the question of the adoption of WBT.

2.5.2 Specific barriers and motivators

While there was considerable agreement amongst researchers on the idea that intrinsic motivators were more important than extrinsic motivators, the lists of barriers were long and diverse. Naturally, a “barrier” can often be turned into a motivator by applying different treatment. For instance, “Lack of financial incentives” might act as a barrier, while “Additional payment for WBT” might act as an incentive.

Some of the groups of inhibitors (or conversely potential or actual motivators) include:

• Influences relating to personal aspects:
  
  o Time
  
  o Attitudes of colleagues
  
  o Impact on promotion and tenure

• Influences relating to resources
Barriers and enablers to teachers’ adoption of online teaching at an Australian University

Chapter 2 – Literature Review

2.5.2.1 Time as a barrier

Time is consistently identified in many studies as a barrier to the adoption of WBT. According to Berge and Muilenburg (2000) “Throughout the literature on barriers to distance education, time is consistently ranked highest or near the highest in surveys on impediments to distance education” (p. 5). The Cho and Berge study (2002) also claims that “in all stages of design, development and evaluation distance education courses almost always require greater time commitment than the same instructional objectives or goals when using an in-person classroom” (p.29).

The Maguire (2005) meta-analysis claims that out of the 13 articles studied in depth, “Lack of time to develop and maintain course material” was mentioned as a barrier in seven of the 13 studies, “Lack of release time” in another five (there are two studies which mention both) and “Time taken away from research” was mentioned in one study.

McKenzie et. al. (2000) also reported that “the vast majority of the faculty, 76%, felt they spent more time preparing and delivering WebCT courses compared to traditional face-to-face courses.” (p.3).

There are two distinct aspects of time which are identified in previous studies as a problem for teachers. These are time to create course materials and time to monitor student discussions and interact with students.

2.5.2.1.1 Time to create material

There has been much research into the inhibitors to the adoption of online teaching and lack of time to create online material is consistently the single factor most often mentioned in these studies. A common topic in the literature is the amount of time it takes to create the material which is used by students.
online. This time is typically used to create web pages, populate LMS shells, and to create online assessment tasks. No study could be found that claimed that less creation time was needed for online material, and while studies varied in their reporting of how much additional time is needed, they were consistent in the assertion that it does require an additional commitment of time.


Larson (2005) reported that

> There were two primary inhibitors to teaching online at Broward Community College: inadequate course development time in relation to when the actual online courses were scheduled to begin and poor expectations as to how or what the online course should look like (Larson 2005, p. 104).

MacArthur (2003, p.56), also in the community college area, found that “they [the teachers] feel that the increased time it takes to design online courses may not be worth the effort.” An associated concern with time was the lack of production support and training which are discussed later in this chapter.

The actual time to create WBT courses has been studied much less than barriers to the uptake of WBT. However, Cavanaugh (2005) had several teachers maintain a time log while teaching the same class online and face to face. The online section had 15 students, the face to face section, 40 students. The preparation time for the WBT section in this economics class was 35 hours, and for the face to face, three hours.

In a broader study Warner-Thomason (2009) studied the time required by four teachers working entirely online, and four teachers working entirely face-to-face. She found that creation time was generally much greater for online than for face to face, but these findings were complex, as more activities were created for the online offering, and that when total teaching time per activity was accounted for, less time was consumed for each activity on line, but many more activities were used (p. 154).

2.5.2.1.2 Time to teach

Some studies found that teaching online can also take more time than teaching face-to-face. Two of these studies which clearly describe and track the additional time required for online teaching are Cavanaugh (2005) and Tomei (2004). An additional study by Sieber (2005) is more descriptive and anecdotal but the conclusions are similar to those of Tomei and Cavanaugh.
Cavanaugh (2005) studied the amount of time taken to teach online using teacher managed time logs. He clearly demonstrated that teaching as well as preparation for WBT takes more time than teaching face-to-face. In the Cavanaugh study student interactions by e-mail and telephone were shown to be more frequent, and that each interaction took more time than in a face-to-face context. The student-led nature of the online teaching mode was implicated as driving the requirement for additional time, but time required to set up and maintain the online environment was also demonstrated to take time which did not need to be allowed for a face-to-face mode.

The Tomei study also focused on a single course and examined actual instructor behaviour while teaching a course which had both face-to-face and students who worked online only. Time logs were kept, and the number of formal interactions (such as e-mails) were counted. The delivery of instructional content was noted as particularly time-consuming in the online mode. The study reported that “For delivery of instructional content, the impact on teaching load was 59.18 hours compared to 41.25 hours of traditional [face-to-face] instruction.”

Sieber (2005) describes the many factors which can drive a greater time requirement for teaching online. The article relates the time required to a series of factors including hardware and software capabilities and problems, and grounds her comments in real world experience. She describes the need for an emphasis on writing skills and the time-consuming nature of teaching these skills, and the student centred nature of quality online teaching. Sieber suggest that smaller online class sizes may overcome the requirement for additional time to teach using WBT techniques.

The studies outlined above demonstrated that, at last in those cases studied, that teaching online required more time on the part of the teacher than teaching face-to-face. Each of these studies employed a different methodology and each appears robust and valid.

2.5.2.1.3 Time release

Time release, the practice of replacing the online teacher with another while the teacher with WBT responsibility prepares material, or performs other duties connected with WBT is seen to be attractive by many teachers. However, this not often offered by administrators. Parker (2003) reviewed an NEA report which said “that 84% of today’s higher education faculty have similar teaching loads regardless of the delivery mechanism” (p. 4)

When time release is available, it does not necessarily result in more online teaching. Seaton-Sykes (2003, p. 103) reported that in some cases, time release was available, but it was not always possible to get replacement staff to take timetabled face-to-face classes. Larson (2005) reported that “Despite
compensation and release time for several of the participants involved in the study through grant dollars, that was not a significant extrinsic motivation factor for them to develop and teach online” (p. 104).

2.5.2.1.4. Time: a summary

Lack of time is consistently presented as a barrier to WBT. The time required to learn about, create and teach online is seen as a problem. There are some dissenting voices in the literature. Contrary to the above evidence, Harasim (2000) reported that “both classroom instructors and distance educators reported that the second offering was somewhat easier and that the third offering required a “similar workload” (p. 58). It may be the case that as online teaching becomes more common, and there is more re-use of content, time release may be less of an issue. In the Warner- Thomason study (2009) it was found that the total teacher time taken per activity for creation and delivery was actually slightly less for the online version, but there were three times as many activities in the online version (p.154, p 189).

In most studies done so far, “lack of time” is seen as a barrier to the adoption of online teaching. There are many aspects of this “lack of time”. They include time to create materials, time to deliver content and time to assess student work. It would appear that teachers are not often offered the chance to be relieved from their normal duties in order to prepare material and learning activities, and teaching loads are seldom reduced to recognize the additional time required to teach online. When funding is offered for teaching relief this offer can be difficult to take advantage of due to challenges in finding suitable teaching staff.

2.5.3 Attitudes of colleagues

The second influencing factor in the adoption of WBT is also related to the personal aspect of teaching and is the attitude of colleagues towards the practice of WBT. The attitude of colleagues has been shown to be a significant barrier to adoption. This problem is expressed in many different ways in the literature, but often is focussed on matters such as promotion policies and assessment for promotion. These issues around promotion are covered more completely later, but other attitudinal problems also include a lack of respect from fellow colleagues and concerns about the poor quality of information on the Internet.

In regard to the issue of respect, Galusha says that “Although distance learning is not new, it has not received respect in the academic community because of the number and seriousness of the problems presented here” (1997, p. 14). Some of the problems she refers to include a tendency for more academically junior staff to be used for online teaching, and a lack of experience by senior academic staff in using the online mode. This lack of respect can also play out in the area of promotion, as those
assessing a candidate for promotion may not have any online teaching experience, and may underestimate the pedagogical skill, time and effort which is required to teach online.

Other teachers have concerns about appearing to be yet one more source of poor quality information available on the Internet (Dooley & Murphrey, 2000), and feel that presenting their teaching on the Internet would devalue their position in the academic arena. This attitude ignores the quality of some information on the Internet, such as the MIT materials available online, and relates to a general community perception that much of the factual material on the Internet is of dubious quality.

Institutional culture, including organisational policy is also provided as an example of a barrier to teaching online – many teachers see a lack of policy, or conflicting or unclear policy as evidence that their employing institution does not take online teaching very seriously, or that the institution may be unclear about what is seeks to gain from online teaching (Maguire, 2005, p. 4).

2.5.4 Institutional culture

The underlying culture of the institution can act as a strongly motivating or inhibiting factor. Muilenburg and Berge (2001) suggest that

Organizations are resistant to change. Without a shared vision for distance learning, a strategic plan, and key players within the organization who are knowledgeable and supportive of distance learning, implementing a distance learning program is a slow and difficult process (p. 7).

McArthur (2003) points out that “Lee (2001) further supported this finding [that institutional culture was an important factor] by indicating that faculty motivation was much higher in institutions that had a strong level of academic and professional support for providers of distance education” (p. 2).

There are many reasons for a lower level of adoption than desired, and institutional culture is a pervasive factor. Institutional culture has been defined as “the deeply embedded patterns of organizational behaviour and the shared values, assumptions, beliefs, or ideologies that members have about their organization or its work” (Peterson & Spencer, 1991, p. 142).

There are several different areas in which institutional culture impacts on WBT. Three broad areas are first, the effect of administrative structures, second the influence more senior academic staff such as Deans can have on the adoption of WBT, and the third is the effect of policies. These problems with WBT around culture are multifaceted, and intertwined.
The Muilenburg and Berge (2001) study posits that:

Managing distance learning programs through the existing administrative structure can be problematic. Partnerships among different units, within an organization or among different organizations require agreements on fiscal issues such as costs, tuition and fees, and distribution of revenue, as well as scheduling and issuance of credits (p. 7).

The apparent inflexibility of administrative structures and policies can act as a subtle or obvious inhibitor at the institutional level. These arrangements appear to be created with an assumption of traditional face-to-face teaching and can be inappropriate for WBT.

The second cultural impact was raised in the Betts (1998) study at George Washington University which stated that “Deans who support distance education and/or have experience with distance education at GWU will continue to have an increased number of faculty participating in distance education” (p. 10). This study showed that although Deans were generally supportive of the idea of online teaching (expressed as “distance education”), the actual amount of online delivery within their faculties was directly related to their own experience with WBT. The exposure of Deans to WBT also had an impact on adoption of WBT by newer staff. The staff in schools which were lead by a Dean with WBT experience were shown to be more likely to have taken up WBT. Conversely those schools lead by Deans without WBT experience had a lower percentage of faculty participating in WBT (Betts 1998, p. 190).

The third aspect of institutional culture which impacts adoption of WBT is policy. Other writers have found that policy in particular seemed to have little direct effect on the use of WBT by teaching staff. Larson found that at Broward

The case study participants were very tolerant of the policies that Broward Community College had established regarding online instruction and these institutional policies had no real impact on facilitation and inhibition factors in teaching online. The primary inhibition factor that impacted the participants seemed to be the “double-standard” of institutional management of the entire online course development process and, to an extent, the online delivery process (p. 107).
2.5.5 Institutional capability

Some writers, especially (2001), point out that different institutions have varying levels of capability in relation to online teaching. In this case the term “capability” refers to the skills, experience, infrastructure and financial resources of the organisation which can be applied to online teaching. The term “capability” refers more to the measurable aspects of an institution’s commitment to WBT, while the phrase “institutional culture” as used in the previous section speaks more to the overall ethos of the organization.

Muilenburg and Berge (2001) claimed that the capability level for an institution had a correlation with some, but not all barriers. They also found that “barriers associated with ‘organizational change’ are more critical than ‘social interaction and quality concerns’, ‘technical expertise’, and ‘threatened by technology’ (p. 8). They did not find that “administrative structure” is more critical than the factors listed above. Not surprisingly, they also found that “educators perceive fewer or less intense barriers in organizations that are more capable for delivering distance education” (p. 8). Pajo also found that “The salience of distinct barriers at different points in the innovation adoption process suggests that organizations must adopt a flexible strategy for their elimination” (p. 8).

2.5.6 Financial barriers

The issue of financial barriers to the adoption of online teaching arises in almost every study. Specifically, many teachers and administrators claim that more direct or targeted financial rewards would encourage more online course development and teaching (Maguire, 2005, Newton, 2003, Berge 2003). This perception varies between administrators and teachers. In the Rockwell study, (1999, p. 7), and in Schifter (2002) the authors show that administrators were more likely than teachers to see financial rewards as incentive, and that teachers found that monetary rewards were neither an incentive nor a barrier. Larson (2005, p.111) also found that faculty see compensation as neutral, and not as a primary motivator.

The institutions have responded to this lack of priority by teachers either by design, or by accident. An NEA study reported in Parker (p. 4, 2003) showed that 63% of US higher education teachers develop and teach online with no additional remuneration. It would appear that although there is a perception that additional payment would encourage more online teaching, this is probably a weak incentive. It is an extrinsic rather than an intrinsic reward, it is not offered by most institutions, and several studies have shown many teachers do not see this as a significant motivator.
2.5.7 Promotion and tenure
A common challenge identified by most of the studies (Betts, 1998, 1999, Bonk, 2001, Galusha 1997 McArthur, 2003, Moore, 1990, Parisot, 1997, Schifter, 2001) is the need for formal recognition of online teaching in promotion policies, and as most of the studies are U.S. based, tenure. Moore claims that “No barriers are as formidable as those associated with faculty promotion and tenure procedures.” (1990, p.2) Maguire (2005) points out that “Time devoted to teaching or developing online courses is not as highly regarded as time spent on research or even time spent teaching “traditional” face to face courses” (p. 6).

McArthur et. al. (2003) provides evidence of the obverse of this negative effect on promotion and the gaining of tenure in a study on community college teachers’ attitudes towards online teaching. Here it was observed that “It seems that community college professors (who do not have to publish papers in order to gain tenure) were more supportive of distance learning than tenure track university professors.” (p. 2)

The inclusion of online teaching in promotion and tenure policies is seen by teachers as an indication of institutional support. As Maguire (2005) says “when faculty members feel institutional support, their levels of motivation and dedication are increased. Faculty indicate that this support can be demonstrated with credit towards tenure and promotion.” (p.4)

It would appear that those on promotion committees have not taught online themselves, and as a result do not understand or appreciate the complexities and challenges of this mode of teaching. Those responsible for making promotion decisions may undervalue the skills demonstrated and may have less regard for WBT experience as relevant or important in promotion decisions. There does not appear to be any convincing research into the effect of promotion policies on WBT adoption, or empirical evidence that online teaching does impede academic progress, but the literature indicates there is a perception by teachers that this is the case.

2.5.8 Professional development and training in technology
Lack of knowledge in how to use this new technology in teaching is often seen as a problem by teachers, and professional development is viewed as the solution. Galusha (1997) claims that “teachers may lack the basic skills or hardware to fully participate in distance education” (p. 12), and McGovern and Gray (2005) say that “many staff are daunted by the need to develop the skills needed to put courses online.” (p. 396)

Teachers are clearly in favour of more instruction in how to use the medium. Betts (1998) found that “Faculty and deans acknowledge the potential of distance education in postsecondary education and
would like to take part in seminars, workshops, and faculty development programs” (p. 10) Larson (2005) also found that “Professional development in the form of mentor assistance played a key role in facilitating online instruction at Broward Community College” (p. 108). Kosak (2004) also says that “The training was in fact, relevant and helpful for educators teaching online” (p.23).

Lack of support is frequently given as a barrier, but is not often defined. Some of the support issues relate to areas such as pedagogy, and in many cases, the term support is used to indicate supportive policies. In some cases, the call for support is more specific, and reference is made to technical support, however there is obviously a range of support issues. Galusha (1997, p. 12) mentions “lack of support by the faculty” (which may refer to the attitudinal factors mentioned above) as an inhibitor.

Newton (p. 8, 2003) mentions lack of pedagogical support for those new to WBT, but there are relatively few studies which are so explicit. By far, the most common category of support barriers cited in other studies is lack of technical support. Berge, (1998), Betts, (1998), Bonk (2001), Larson (2005), Rockwell, et.al.,( 1999), Schifer, (2000) all mention lack of technical support for teachers. Larson (2005) is more specific in stating that “major inhibitors were related to poor professional development planning and delivery in the form of structured, large group workshops” (p. 108).

Somewhat oddly, nothing in the literature makes it clear whether the skills sought are technical in nature (for instance how to re-format documents for the web, or specific skills linked to using the learning management system), or the deeper pedagogical skills such the effectiveness of student centred learning, or more specific skills in such areas as facilitating online discussion which are needed to teach in such a different environment.

2.5.10 Different perspectives on the effectiveness of distance education

Teacher scepticism about the effectiveness of online teaching surfaces often in the literature. Maguire (2005) found “concern about course quality” mentioned in various forms in five of the thirteen studies which she reviewed (p. 10). Muilenburg and Berge (2001) also mentioned that “There is concern over a lack of research supporting the effectiveness of distance learning as well as a lack of effective evaluation methods for distance learning courses and programs” (p.7). Given the prominence of this doubt about the effectiveness of WBT when identifying barriers to the adoption of this mode of teaching , this section will explore the different perspectives on this scepticism

The Jones, Lindner, Murphy and Dooley study, (2002), quoted in Kosak (p.9) claimed that the attitude of faculty to online instruction affects the willingness of instructors to teach online. Some instructors express concerns about the effectiveness of this form of instruction for student learning. This concern about
effectiveness may be linked to the impact of faculty attitudes to colleagues who teach online which was outlined in section 5.3 of this chapter, where it is reported that some faculty may not regard WBT with the same respect that they hold of face-to-face modes.

This lack of faith in the efficacy of online teaching is unfounded, according to many studies. The most cited author on the topic is Russell (2001), author of "The No Significant Difference Phenomenon". In this book, now in its fifth edition, he reviews 355 articles, papers and studies which show there is no significant difference in student outcomes between delivery modes. Specifically, he makes the case that online teaching does not improve student learning. The book, also supported by the website http://www.nosignificantdifference.org/ provides a number of articles demonstrating strong and well researched evidence to say that distance, and in most cases online, teaching produces results which are no worse, nor any better on the whole than face to face teaching. This evidence weakens the case of teachers who are sceptical about the effectiveness of online modes.

In a 2004 meta-analysis of 232 studies covering 688 independent achievement, attitude and retention outcomes were analysed (Bernard et. al. 2004), and effect sizes of zero were noted with a wide degree of variability between studies, casting some possible doubt into the validity of the original research. These authors did note that for synchronous applications, the mean achievement sizes were greater for classroom or face to face instruction, while asynchronous teaching showed a greater effect size when the mode was distance education. When discussing the effectiveness of online modes Bernard et.al. (2004) conclude that “in an overall sense classroom instruction and DE are comparable” (p. 416).

Another and even more compelling view of online delivery is supported by Shachar and Neumann(2003). In a meta-analysis of 86 empirical studies, covering 15,000 students, Shachar and Neumann report that “in two thirds of the cases, students taking courses by distance education [in this case online teaching] outperformed their student counterparts enrolled in traditionally instructed courses” (p.1). In the conclusion, they also go on to claim that “the results of the meta-analysis show a strong positive trend indicating that DE is an effective form of instruction. This analysis demonstrates that students engaged in DE academically outperform their F2F counterparts” (p. 13). The same analysis shows that “The attitudes and satisfaction of students using distance education also are characterized as generally positive. Most of these studies conclude that, regardless of the technology used, distance education courses compare favourably with classroom-based instruction and enjoy high student satisfaction.” (p.3)

The most recent and methodologically rigorous study was commissioned by the U.S. Department of Education and published in 2010 (Means et.al. 2010). This study was originally aimed at assessing the effectiveness of online teaching in the K-12 level, but found there were too few studies of that level to
make meaningful and reliable conclusions. Instead it analysed 1,000 studies which covered all levels of education and located 45 which were methodologically sound enough for consideration. These studies had either randomized samples, or a quasi-experimental design along with objective measures of success which provided an acceptable level of validity to the findings.

The results of this meta-analysis were a finding that online teaching can produce slightly better student outcomes, but other variables come into play, such as a finding that students appear to spend more time on-task when working online than in a face-to-face setting. The Department of Education study (Means 2010) also indicated that a blended mode was the most effective, but overall there were only slight differences between fully online, blended and face-to-face.

In summary teachers’ concerns about the efficacy of WBT appear to be largely unsupported by research. This is a contested area which is complex and will require further investigation in the future. The evidence to hand does not form a strong basis for rejecting or avoiding WBT, but in examining teachers’ reasons for adopting or avoiding adoption of WBT it is important to recognize the complexity of the argument and significant amount of research which has been done in the area of the efficacy of WBT.

2.5.11 Differences between administrators and teachers

The Betts (1998) study compared the views of administrators with those of teaching faculty. In this research, “the data analysis did not reveal a significant difference between what faculty and deans identified as motivating factors, such as technical support provided by the institution, intellectual challenge and increase in salary. However the data analysis did reveal significant differences between what faculty identified as inhibiting factors and what the Deans perceived as inhibiting factors” (Betts 1998, p. 191). Specifically issues such as release time, lack of technical support, workload allocation and lack of grants for materials and other expenses were more important for staff than Deans realized.

The Berge-Muilenburg study (2000) on the other hand concluded that

Perhaps the most startling aspect of the barriers perceived by managers and administrators is that they appear to be nearly identical to those identified by respondents from the other four job functions.[support staff, teaching faculty, researchers, and students] (p. 4)

This study found that there was a different priority order of inhibitors, but that there was a recognition of a need for change by both administrators and teaching staff.

The effects of exposure and previous experience may have had some effect on the acceptance of the online mode. McArthur (2003, p.2) found that “professors who were department chairs, or tenured were
also more accepting of online instruction than non-tenured professors”. In a similar vein at George Washington University, Betts (1998) found that it was those who were already tenured were more likely to take up WBT, and that those staff who were not yet tenured were less likely to try WBT (p. 190). Some writers have suggested that this may be related to the time consuming nature of WBT, and that those with tenure have less need to contribute to research, or participate in non-teaching activities such as University committees.

In an opinion piece, Oblinger (2001) claims that “One of the fundamental challenges with distributed learning may be a matter of values. Today’s higher education leaders have a particular definition of education and a set of values that derive from our experiences in the 1950s, ‘60s, and ‘70s. We are now dealing with the first generation of students who have never known life without PCs (created in the ‘70s) or the Internet (largely a ‘90s phenomenon)” (p. 26). This assertion is challenged by Betts’ findings which run somewhat contrary to both accepted wisdom, and Oblinger’s claim above. Betts says that “With regard to age and tenure status, faculty 45 years old and older and faculty in non-tenure accruing positions were found to be the most active in distance education” (1998, p. 190).

By way of summary there is a variety of evidence on the inhibiting and enabling factors identified by administrators and those identified by teachers. There is a large degree of agreement between these two groups, but in some cases administrators appear unaware of the strength of some inhibiting factors found by teachers, such as promotion policies.

2.6 A current Australian perspective

There has been little written about barriers and enabling factors to online teaching which is specific to the Australian context. There have been some studies into the adoption of online teaching more generally. The most important of these was probably the study undertaken by the Australian Technology Network (ATN) (Platts 2004), which surveyed staff and students of the five ATN Universities in 2004.

The Australian Technology Network consists of Curtin University, RMIT University, the University of South Australia, the University of Technology Sydney and Queensland University of Technology. These five universities share a common heritage of being former Institutes of Technology, and attained University status as part of Australian higher education reforms in the late 1980’s and early 1990’s. All of the ATN group have some focus on technology, and their predecessor institutions tend to have lengthy histories in the Australian context as technical institutes.
While not focused on barriers specifically, there was a section of questions in the Platts survey on “Potential disadvantages of online learning” (p. 23). Respondents were asked to indicate strength of agreement with four statements concerning online teaching – these were:

- “Takes time to gain confidence in use”
- “Takes too much time”
- “Difficult to use”
- “Don’t use much – too busy”

On a five point Likert scale, the highest score of the four questions asked was “Takes time to gain confidence in its use” which scored a mean rating of 3.2. The individual scores for each University ranged from 3.0 to 3.6. This suggests that Australian teachers share some of the same concerns around lack of technical support and professional development as their U.S. counterparts.

The next highest scoring question, “takes too much time to set up and administer” scored 2.7, with a similar range of 2.3 to 3.0. The Statement that the system was “difficult to use” only scored a mean of 2.3 – again with a similar range of 2.0 to 2.7. The statement “[the learning management system] Isn’t greatly used because I’m too busy with other work” received a score of only 2.0 on the same five point Likert scale.

From all of the above, it can be inferred that one problem reported in the overseas literature also appears in the Australian context. This can be seen in the statement “Takes time for me to gain confidence in its use” which received considerable agreement.

In a later section of the Platts (2004) paper, respondents “were asked if they could make better use of online learning if they had more staff development opportunities” (p. 31), about the type of staff development which would be useful. Respondents were provided with three options that included:

- Hearing about the ways other staff use online
- Access to case studies on a website
- Time release for new developments
Of these three options, the first, “Hearing about the ways other staff use online” was seen as having the greatest value with 86% of respondents saying this would be “some help” or a “great help”. “Time release for new developments” was almost equally popular with 84% of respondents saying this would be “some help” or a “great help”.

2.7 Future research

While there has been much research done already, many writers expressed a need for additional research. The suggestions for more research ranged from general recommendations for a stronger research base underpinning efforts to encourage online teaching (Berge & Muilenburg 2000, p. 1), to more specific suggestions. Some of these include:

- Studies in private industry (Betts 1999, p. 200)
- Studies on older faculty (Betts 1998, p. 199)
- Studies across different levels of education (Cho & Berge 2002, p. 30)
- Studies into administrators’ thoughts and views (Maguire 2005, p. 8, Seaton-Sykes 2003, p. 210)
- Studies into workload adjustment (Larson 2005, p. 110).

This wide variety of suggestions provides an idea of the need for further research into specific aspects of WBT.

In addition there has been a call for consistently rigorous research into teachers’ adoption decisions. Bernard et.al. (2004), state that “DE research is of low quality, particularly in terms of internal validity” (p. 416). This statement echoes that findings of the U.S. Department of Education (Means 2010) research which examined 1132 studies and found 46 which fulfilled the necessary criteria of having a controlled quasi-experimental design, or random assignment of learners, and objective measures of student learning effectiveness (p. xii). Both Bernard et.al. (2004), and Means (2010) noted the high level of researcher/participant crossover with consequent questions about researcher objectivity and lack of specific measures of learning effectiveness. It would appear that much of the research in this field is performed by teachers or practitioners in areas which support WBT such as educational design or media production.
Several writers (Maguire, 2005, p. 7; Muilenburg & Berge, 2001, p. 7) suggest a qualitative, rather than a quantitative approach. The lack of studies which utilize a qualitative methodology is notable, particularly given the prevalence of a quantitative approach relying on surveys in the existing research. A qualitative approach can provide another way to understand the motivations and requirements of those involved in WBT. Consideration of the use of a qualitative methodology may be relevant as it can provide a way of understanding behaviour and the factors which lead teachers to adopt or avoid WBT.

2.8 Closing

This review of previous research has provided background into general and specific theories of the adoption of innovations. The role of intrinsic and extrinsic motivation in teaching has been discussed. Previous studies into barriers and enablers to online teaching have been placed into a contextual framework, and specific barriers which were found in a number of studies have been discussed. The chapter closes with a summary of future research needs from the literature.

The next chapter discusses the methodology used to carry out this investigation, provides a rationale for this methodology, as well as setting out some possible limitations to the approach and how these limitations were managed.
Chapter 3 - Research Design

3.1 Introduction

The previous chapter covered what the literature tells us about web based teaching, and suggests the factors which may be influencing tertiary educators to adopt or avoid online teaching. There are a number of elements which have some influence over teachers’ adoption decisions and these have been well investigated previously within various institutions, and across a number of institutions. This has provided a firm basis for comparability over time and across institutions, but has been constrained by the limitations of the research approaches employed. Most studies have been situated in North America, which has provided data that may not be transferable to the rest of the world. Most of these studies have taken a quantitative approach using a survey methodology, and often build upon previous work, using one of several common surveys with minor variations.

This chapter describes the research approach used to investigate the adoption or barriers to adoption of WBT (Web Based Teaching) by tertiary teachers to a greater depth than has been done previously and in a setting in Australia. The choice of a case study method is justified, and background is provided on both the method, and the setting selected.

Prior research provided valuable background information upon which to base the preliminary literature review for this study and the research design. This study departs from the quantitative work which has been carried out previously and examines the barriers and enhancing factors to the adoption of online teaching from a qualitative perspective. A qualitative approach was chosen because it “refers to the what, how, when and where of a thing- its essence and ambience” (Berg, 2007, p. 3). Teaching is an activity in which the affective domain plays an important role, and a qualitative approach was chosen to explore teachers’ adoption decisions.

In the case being examined a qualitative approach is particularly useful due to the personal nature of the decision made by teachers when considering whether to teach online or not. The qualitative approach allows for personal factors which motivate an individual to take action or not to be considered. A case study approach was used as the researcher had little control over contemporary
behavioural events (Yin 2009, p, 11). In Yin’s typology of case study approaches (Yin 2009, p. 7), this is of the “explanatory” type of study.

The data analysis and theory generation phases of the study are based on the guiding principles of grounded theory. The particular method of data analysis followed is largely based on Charmaz’s practice as constructivist and deftly avoids being mired in a “Glaserian vs. Straussian” dichotomy. This practice was chosen because the general approach espoused by Chamaz is one of practicality in adopting elements from both Glaser and Strauss, and a recognition that both traditions have strengths. Specifically, Charmaz posits that “sensitizing concepts may deepen perception, they provide starting points for building analysis, not ending points for evading it. We may use sensitizing concepts only as points of departure from which to study the data” (Chamaz, cited in Denzin and Lincoln, 2000, p. 515). The methods of data gathering include interviews and document analysis and the analysis looks for patterns and common threads connecting these different sources of information.

Two research question guided this study. The first is: “What are the influences upon teachers’ decisions to adopt or avoid adoption of web based teaching?” This question has to do with the intersection of personal motivation and institutional processes. It requires an exploration of how and why teachers choose to adopt or reject certain teaching modes, how these choices are made and the impact of the institution upon these choices. The issues being examined are personal and go to the heart of what motivates an individual to teach. Simultaneously these motivations and choices are affected by institutional policies and technical matters.

The second research question is “What are the implications for institutions of these influences?” The complex web of the technical, institutional and personal cannot be meaningfully analysed by quantification based research methods.

3.2 Rationale for a qualitative approach

The selection of a qualitative approach is built upon the rationale stated by a number of writers, including Patton (2002), Yin (2009), and Bryman (2004, p. 145) for using qualitative analysis to investigate complex individual behaviours. Patton says that “Qualitative methods are ……ways of finding out what people do, know, think and feel “ (Patton 2002). The highly personal nature of the act of teaching and decisions made on how to teach makes a qualitative methodology appropriate to discover those factors which encourage or discourage WBT.
There are a number of aspects to the research questions which support a qualitative approach (Marshall & Rossman 2011):

- **Choice of teaching mode:** Within higher education teachers are often provided with a choice of the mode, or modes in which they teach. Without this choice there would be no need to perform this investigation as the amount of teaching done online would be set by institutional directive. The fact that teachers can elect to teach in various modes means that it is important to explore how and why they choose the modes of teaching which they do. These choices are made by individuals, and are driven by individual perceptions and needs. A qualitative approach is especially powerful for unlocking these individual needs and perceptions.

- **Behaviours which are influenced by the setting:** While teachers can often choose the mode in which they teach, these choices are influenced by institutional policy, norms and expectations. A qualitative methodology, which is sensitized to the nuances of this intersection of the personal and the institutional, is the most productive approach for investigating the interplay between the personal motivations and institutional directives and directions.

- **The highly personal nature of teacher motivation:** The factors which influence teachers are deeply rooted in their own values, beliefs, and assumptions. A quantitative approach does not capture these closely held viewpoints and can miss the basis for the most powerful motives behind a teacher’s decision to adopt or reject a mode of teaching.

- **The limitations of the survey method:** Any survey instrument, such as is often used in a quantitative approach carries with it a pre-ordained reality, and a set of assumptions based on the researcher’s prior experience and their own reality. While this limitation may be seen in any methodology, the adoption of a qualitative approach provides for an alternative view and allows for a triangulation with previous research. Although often informed by past empirical studies and assumptions about the present it is now timely to balance the findings of quantitative research with those provided by in-depth analysis of teachers’ lived experiences. The use of a qualitative approach allows the teacher’s voice to emerge, and with it the discovery of their deeper motivations, needs and concerns.
The quantitative approach which has been traditionally and extensively used to investigate the adoption of WBT and which has been analysed in the previous chapter has provided many useful insights to the factors which influence teachers. The approach of this study has been grounded in previous surveys and prior investigations. Building up a considerable body of knowledge the teacher’s voice and the practitioner’s lived experience can be easily missed in a quantitative approach, to the detriment of useful outcomes.

3.3 Use of the case study methodology

3.3.1 Selection of a case study methodology

A case study methodology is used in this instance as it is especially useful when looking for patterns of complex behaviours, when events are contemporaneous or when it is not possible to control events or behaviours. This piece of research is concerned with “why” online teaching may, or may not be taken up by teachers at a particular institution. There are several aspects of the research questions put forth in this study which lend themselves to a case study approach.

Yin (2009) specifically sets three conditions (p. 8) which may lead a researcher to use a case study. These include “(a) the type of research question posed, (b) the extent of control an investigator has over actual behavioural events and (c) the degree of focus on contemporary as opposed to historical events”. This study fulfils almost all of these conditions for a case study approach. These are explored below

- The type of research question posed: The question posed is a “why” question – that is: “why (or “why not”) might a teacher adopt online teaching?” The explanatory nature of the answer to this question lends itself to a case study approach.

- Control over behavioural events: A researcher’s inability to control the events leads to a case study approach being preferred. As this research is examining the behaviour of a number of individuals, and investigating why they have taken certain actions in the past, and may be continuing to take such actions in the present, “control” over their behaviour by the researcher is impossible.

- Focus on the contemporary: The adoption of WBT is still in a state flux and is not of a historical nature. According to Yin this makes it a strong candidate for a case study approach.
Yin (2009) identifies four “types” (p. 46) of case studies. The differentiation between these types is based largely on the type of research question being asked, the characteristics of the cases which are available, such as single or multiple contexts, and need for replication.

This study is what Yin (2009) identifies as a “Type 1” (single case, holistic) design, as it is describing “a representative or typical case” (p. 48). In this case, a single University is studied in order to “capture the circumstances and conditions of an everyday or commonplace situation” (p. 48). This study endeavours to explore and explain the elements which motivate individuals to take certain actions. The case study approach, and in particular the “Type 1” approach, allows the researcher to delve into and expose the more personal reasons why individuals elect to take up online teaching, or alternatively avoid this mode of teaching delivery. This approach yields a more nuanced understanding of these motivations, and therefore may lead the way to more effective interventions, or alternatively a more informed decision not to intervene in the process.

### 3.3.2 Potential challenges with a case study approach

The case study approach is not universally accepted as a valid research technique. According to Yin (2009, p. 14) some criticism of this approach is based on sloppy procedures, poor analysis or lack of rigour. These concerns are addressed below, and later in this chapter with a description of the processes and analysis undertaken.

There are some disadvantages to the case study approach. These can be divided into the theoretical acceptability of the approach and practical disadvantages of the application of the approach. The first of these theoretical challenges relates to the lack of potential replication and the second challenge is an inability to generalize.

#### 3.3.2.1 Lack of potential replication

The inability to replicate any given case study is often raised as a weakness of the method. In this study that is not seen as a significant problem, as the findings can be compared to similar work at other institutions, and in any case the findings apply only to the case at hand. Strauss and Corbin (1998) claim that given identical circumstances, good qualitative research can be replicated. However, they do acknowledge that “it is nearly impossible to replicate the original conditions under which the data were collected” (p. 266). Later in this chapter sufficient detail is given to allow replication at another site.
3.3.2.2 Inability to generalize
A frequent criticism of case study research is that there is inability to generalize results. Denscombe describes this as “credibility of generalization” (2010, p. 62). In this study these potential criticisms are unfounded as the intention is to present the factors which encourage, or discourage WBT in a single institution, and to compare these factors to those discovered in other studies. It is intended that these results can be generalized to theoretical propositions, not to the population at large. Along with claims of lack of generalization, a qualitative approach is sometimes criticized as poor quality research. Potential criticism relating to research quality has been avoided through the full description of data collection and analysis techniques, and the basis of these techniques on sound design principles.

3.3.2.3 Subjectivity
While the matter of subjectivity is often levelled at the qualitative researcher as a weakness of the approach, it can also be seen as a strength. Mies and Shiva (1993) refer to this as “conscious partiality” (p.38), and discuss it as an advantage, and as the opposite of a detachment from the subject of the research, which they claim can lead to reported behaviour being in line with researcher expectations rather than actual behaviours. They claim that by becoming closer to the “subject” of the research, indeed becoming part of the research setting, the researcher can discover richer and more authentic insights. This concept is also referred to as “insider knowledge”.

Beyond the theoretical challenges, there are also practical disadvantages. The first of these is practical challenges is concerned with the quantity of data collected and management of that data. The second of these challenges relates to possible subjectivity. These potential problems are discussed below.

3.3.3 Avoiding problems through design
Careful research design has been employed to avoid problems with the mass of data collected, and the manner with which that data might be successfully manipulated and analysed. This potential problem of having too much data has been avoided by several means.

There was careful consideration of the research question prior to the investigation commencing, in order to confine the research to a single institution. It was considered that a single institution would reveal more data than an inter-institutional approach, as the issues could be explored in greater
Another potential problem inherent in a case study approach and the mass of data which it can generate was obviated with rigorous data management routines, which are described in a later section of this chapter. A final element in the avoidance of having too much data was the recognition of when data saturation was reached. This recognition was achieved through processing and coding interviews as they were carried out, and building coding paradigms as interviews accumulated. This approach also provided the advantage of allowing for the progressive adjustment and revision of the interview schedule.

3.4 The case institution

The following section describes the setting for this study and explains why this setting was chosen. A brief history of the selected institution is provided to establish the context of the study and explain the relevance of this institution to the research question. Challenges associated with the setting are explored and the means by which these challenges were overcome are described.

The setting for this study is RMIT University. RMIT is a large Australian university, with more than 70,000 students (2008 Pocket Statistics). The University has a comparatively long history in the Australian context. Founded in 1887 as the Working Mans’ College it was specifically created to provide the “working classes” with a means to “better themselves”. Originally funded with a large component of financial support by Frances Ormond, the institution has a long history of workplace integration, and in the current vernacular, “real world education”. Throughout most of its history, RMIT has been known for high quality, and sometimes innovative technical education.

In more recent years, the reform of tertiary education in Australia has resulted in the amalgamation of a number of institutions with similar backgrounds with RMIT. In the years between the mid 1970’s and the late 1990’s the institution’s student population grew rapidly, with four other institutions being amalgamated with RMIT. In 1980, the Institute (as it was then known) population was 12,477 (Murray-Smith and Dare, 1987., p 467). By 2008 this had grown to 70,247 (Pocket statistics, 2008).

This growth produced a number of tensions and opportunities. Amongst the opportunities was an emphasis on the use of technology in teaching, and funding to support this direction. In the mid to later 1990’s, the University had a vision of every course being offered online, as can be seen in
“Developing a flexible learning environment at RMIT” (Armstrong, et. al. 1996). It appears that the University saw some possible advantages to this strategy. Some of these advantages included cost savings, meeting user expectations, and government and client demand for education (Armstrong, et al. 1996 p. 5).

In the early part of 2000, with the problematic introduction of a student management system and its’ collapse set the scene for a disproportionate focus on administrative systems and financial recovery. As a consequence the institutional focus on online teaching was reduced. In an organizational restructure following the collapse of the student management system the functional area which was supporting online teaching (Learning Technology Services) was split into two areas. These became the Educational Media Group, under the management of the Pro Vice-Chancellor Academic, and the Distributed Learning System, which became part of the Information Technology Services area. This meant that a division was created between two areas with responsibilities for WBT.

A number of projects intended to support web based teaching were not able to be followed through. One example of this was a plan started late in the 1990’s to annually review the 10% of programs which were lowest in terms of student outcomes. The aim of this initiative was to improve student learning and satisfaction outcomes. In the framework of Roger’s Diffusion of Innovations, it might be argued that the advances in WBT which were made prior to the malfunction of the student management system could not be sustained, and that had the momentum of the late 1990s’ continued, indeed, WBT may have had a greater impact on student outcomes.

By 2004 the proportion of web based teaching at the University was lower than at a number of similar institutions. This was illustrated in a study (Platts 2004, p. 42) carried out across all members of the Australian Technology Network (ATN). One of the findings of the survey was that support for this mode of teaching at RMIT was somewhat reduced. The evidence of this can be seen in the fact that in 2004, 66% of RMIT teachers used the LMS (Learning Management System) for “Level 1” (most basic) information distribution only as opposed to 46% of teachers at “all ATNs” (Platts 2004 p. 33). At the other institutions there was a greater proportion of “Level 3” (more advanced) use, meaning for moderated discussions as well as information distribution (p. 36).

The perception of insufficient progress was also shown in the Organizational Review of the University’s educational technology function (Review report : support systems and processes for
effective use of educational technology, 2005) carried out later in 2004. In the report of the Review of Education Technology, (Support systems and processes for effective use of educational technology, 2005), the first recommendation was that “clear targets be established for all RMIT courses to have a basic online presence in which supporting materials such as course guides, and assessment requirements are available to students prior to commencement of their course.“ (Support systems.... 2005, p. 2). While this was apparently based on the evidence collected as part of the Review, no empirical justification was provided, nor were any further details provided as to what an “online presence” meant.

In addition to the recommendation in the Review, and the evidence of the Platts study, there were several other reasons why it was decided that RMIT University would be suitable as the setting to be studied. These are:

3.4.1 Accessibility by researcher to teachers

The researcher is an employee of the university and is personally acquainted with some of the academic and support staff involved with the delivery and support of WBT at the University. This accessibility to the teachers as well as being part of the University community provides the researcher with information which would otherwise be unknown, or inaccessible to the outsider.

This personal connection also carries the risk of compromising the researcher’s objectivity. In order to obviate this risk, no interviews were held with close colleagues of the researcher. In addition the researcher’s position as a University employee in the role of librarian was made clear both when making initial contact with potential participants, and prior to the interview. Yin (2009, p. 113) speaks of the opportunities and problems inherent in the “participant-observer” role. The researcher was not directly a participant in the areas of the University supporting or delivering WBT. The University Library has no direct influence on the WBT, nor do any direct outcomes of the study or findings have any impact on the Library. Nonetheless a cautious approach was taken to avoid the risks Yin discusses. These include:

- The introduction of bias: The researcher carefully considered and documented his thoughts on WBT early in the study to provide a conscious and deliberate acknowledgment of preconceptions and bias. This documentation served two purposes. It required the researcher to consider and verbalize any preconceptions, and provided a record of these for later referral. This document was examined from time to time throughout the study.
Abandonment of a neutral stance: Awareness of possible bias, and the fact that the study was not focused on advocacy but instead was explanatory assisted the researcher to maintain neutrality.

It was explained in the initial contact e-mail, in a written statement and orally before the interview that all participation was voluntary, and could be withdrawn at any time. It was also made clear in the initial e-mail and at the commencement of each interview that this research was being undertaken independently of the researchers’ employment at the University.

Throughout the study any work or discussion in connection with the study was explicitly separated from the researcher’s usual duties in the University Library.

3.4.2 Extent of documentation available:
There is a rich selection of current and historical documents to be examined. This richness of documentation provides more depth of background than would be available if a number of universities were selected in a multiple case approach, or if the researcher was not a member of University staff. While this document availability was a driver in the selection of the case institution, the quantity of documentation meant that the researcher had to exercise some selectivity with a sensitivity to relevance in handling the documentation.

In addition, document analysis proved more challenging than might otherwise be the case. Some of the documentation is “grey” and includes items such as working papers and internal committee minutes or memos which may not be tracked or indexed. This required careful management of the records.

3.4.3 Current status and development of RMIT University in the exercise of WBT
The Review Committee (Review Report, RMIT University, 2005) examined documentary evidence as well as interviewing a number of students and University staff and which decided that more WBT was required. This perceived lower than desired adoption of WBT made this University an excellent setting for this study.

By way of background most teachers used the Blackboard learning management system. A few used Blackboard in conjunction with wikis, blogs or local software. At the time of data gathering few
teachers were using social media or other interactive platforms. The generally asynchronous nature of this mode may have had some impact on both the time commitment required of teachers and the nature of their interaction with students.

### 3.4.4 Variety of viewpoints

RMIT University is a large University, with a wide variety of disciplines and academic levels ranging from TAFE (Technical and Further Education – a tertiary entry level of study) to post-doctoral study. It should be possible to avoid, or alternatively to explore discipline and academic level influences in the adoption of web based teaching. Using purposive sampling methods, views from each of the academic Colleges (also known as Faculties at other Universities), and from several Schools (often called Departments in other universities) were chosen to provide a variety of viewpoints. It is not known if the adoption of WBT varies by discipline or academic level, and it appears there is no research on this aspect of WBT. In addition, there is a wide variety of adoption levels amongst the teaching staff, again providing a richer diversity of viewpoints.

### 3.5 Ethics

The data collection and handling protocol was constructed to conform with the University's ethics policies, with the School of Education ethics approval being obtained for the research design. The ethics approval document is included as Appendix 1. University wide ethics approval was not needed as the study was seen to be “low-risk”. All requirements of the ethics process were adhered to through the data gathering, analysis and storage process. All subjects were guaranteed anonymity, and offered the chance to withdraw at any time. The “Plain English consent form is included as Appendix 2. Data storage and control processes were explained, and carried out.

### 3.6 Methodology

#### 3.6.1 Background to the methodology

The approach taken is qualitative, building on the previous quantitative work which has been done by many others (Galusha 1997; Betts 1998; Berge 1999; Betts 1999; Berge and Muilenburg 2000; Harasim 2000; Cho and Berge 2002; Berge 2003; Berge and Muilenburg 2003; Seaton-Sykes 2003; Wallace III 2004) and has been suggested for further research by a number of researchers. This qualitative approach is particularly appropriate for those questions which ask “how” or “why”(Yin 2009).
3.6.2 Data Gathering

There were two ways in which data was gathered. These were interviews and document analysis. Each of these is detailed below.

This study is based upon the collection, and subsequent analysis of a series of semi-structured interviews and documentary evidence. The semi-structured interview technique was selected as providing the richest variety of evidence, and as explained above, insight into the “human” motivations, or influences upon the adoption of online teaching. A purposive sample of academics was selected using the “snowball” technique (Berg 2004), with attention being paid to teaching staff at a variety of levels of experience and approach, as well as a range of ages and spread of disciplines.

3.6.3 Interview methodology

The guided, semi-structured nature of the interviews meant that there was consistency in the topics covered, while allowing for individual differences, and allowing the interviewer to bring out the important experiences and viewpoints of each participant. An interview guide is included in Appendix 4. Following the “linear, but iterative nature” case study research (Yin 2009, p. 1) the interview guide was slightly modified between interviews, particularly in the early stages of the investigation.

Patton (1990) points out that “an interview guide is prepared to make sure that basically the same information is obtained from a number of people by covering the same material” (p. 283). Patton also points out that “An interview guide makes sure that the interviewer/evaluator has carefully decided how best to use the limited time available in an interview situation” (p. 283). These precepts were followed and a great deal of commonality was maintained throughout the interview process.

The actual interview times varied between 40 minutes and 90 minutes. Most interviews were completed in approximately one hour. Interviews were generally conducted in, or near the participant’s office. The location of the interview in the participant’s “territory” was deliberately chosen to promote a sense of comfort and familiarity in order to elicit franker and more direct views. This location also had the advantage of familiarizing the interviewer with the work environment of the participant. In some cases interactions with students and other faculty took
place during the interview providing another dimension to the context observed by the interviewer. During several interviews participants demonstrated points using their desktop computer.

### 3.6.4 Selection of participants

A purposively selected set of participants was used in order to ensure that a variety of viewpoints were considered, but that there was minimal replication of data. Bryman (2004) describes purposive sampling as selecting participants on the basis that they are “relevant to the research question” (p. 334). The participants were selected to provide a variety of viewpoints and teaching approaches.

Unlike a quantitative study, there was no attempt made to select participants from a representative sample. This would have been impossible in any case, as the list of possible criteria is far too long. The criteria could include gender, age, experience in WBT, experience with computers, experience in teaching, discipline, type of position (administrative or academic), or level or type of formal teaching qualification. Prior research has not shown that any of these factors, with the possible exception of type of position has any impact on WBT adoption.

In some studies position type has been shown to have some effect on the assumptions around the types of rewards which might be most effective in encouraging WBT. This issue is discussed in the previous chapter, as well as the Discussion chapter. In this study several staff were interviewed who had both administrative and teaching experience, as well as one person who had administrative experience only.

In order to ensure a variation in viewpoints, one of the criteria for participant selection was WBT experience. An attempt was made to interview teachers with little or no online teaching experience, teachers who currently worked routinely online and those who had previously taught online but no longer did so. No attempt was made to produce a representative sample, but following the principles of purposive sampling, (Bryman 2004) a cross section was sought in general terms.

Names of potential participants were sought from a number of sources within the University who worked in, or with the online environment. Initially these sources included the manager of the learning technology group (Edutag), as well as managers of production groups. Attendees of in-house or Educause conferences who showed an interest in online teaching were approached, as were winners of teaching awards who had exhibited an awareness of online teaching.
As interviews commenced, each participant was asked if they knew of others who may be interested and willing to be interviewed. In a number of discussions names of well-established, and enthusiastic online teachers were offered. In these cases it was explained that interviews with those resistant to online teaching were also needed – not just experienced online teachers. As will be explained in the Discussion chapter there is no established classification of WBT experience, so it was not possible, nor was any attempt made to seek teachers with specific levels of experience or interest.

A total of 16 interviews were held, however one was discarded as it was not possible for the investigator to persuade the participant to discuss any aspects of teaching. The participant had a number of issues with University administration, and continued to bring the discussion back to these issues. The 15 useful interviews provided a wide variety of experience in WBT as well as a wide variety of attitudes toward WBT. As can be seen from Table 1, a cross-section of age, teaching experience, and disciplines was obtained. As data analysis was carried out concurrently with data collection it became obvious after approximately a dozen interviews that new topics were not being discovered, and that data saturation was occurring.

### 3.6.5 Participants

The table below provides details of the participants’ background.

“Role” describes the current and past involvement the person has had in web-based teaching. “T” indicates a teaching role, “S” indicates a support role. Several participants had experience in both roles and are denoted “T & S”.

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Barriers and enablers to teachers’ adoption of online teaching at an Australian University

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Table 1 – Overview of participants

<table>
<thead>
<tr>
<th>Code</th>
<th>Age</th>
<th>Gender</th>
<th>Years teaching</th>
<th>Years involved in WBT</th>
<th>Years Support</th>
<th>Role</th>
<th>Discipline</th>
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<td>51 - 55</td>
<td>M</td>
<td>25</td>
<td>12</td>
<td>T</td>
<td></td>
<td>Physics</td>
</tr>
<tr>
<td>G</td>
<td>31 - 35</td>
<td>M</td>
<td>5</td>
<td>3</td>
<td>T</td>
<td></td>
<td>Geospatial sciences</td>
</tr>
<tr>
<td>H</td>
<td>51 - 55</td>
<td>M</td>
<td>12</td>
<td>8</td>
<td>S</td>
<td></td>
<td>Design</td>
</tr>
<tr>
<td>I</td>
<td>56 - 60</td>
<td>M</td>
<td>5</td>
<td>5</td>
<td>T</td>
<td></td>
<td>Textiles</td>
</tr>
<tr>
<td>J</td>
<td>41 - 45</td>
<td>M</td>
<td>N/A</td>
<td>15</td>
<td>S</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>K</td>
<td>46 - 50</td>
<td>M</td>
<td>23</td>
<td>6</td>
<td>T</td>
<td></td>
<td>Engineering</td>
</tr>
<tr>
<td>L</td>
<td>51 - 55</td>
<td>M</td>
<td>23</td>
<td>1</td>
<td>T</td>
<td></td>
<td>Civil engineering</td>
</tr>
<tr>
<td>M</td>
<td>46 - 50</td>
<td>M</td>
<td>6</td>
<td>6</td>
<td>T</td>
<td></td>
<td>Engineering</td>
</tr>
<tr>
<td>N</td>
<td>56 - 60</td>
<td>F</td>
<td>20</td>
<td>20</td>
<td>T &amp; S</td>
<td></td>
<td>Education</td>
</tr>
<tr>
<td>P</td>
<td>51 - 55</td>
<td>M</td>
<td>15</td>
<td>15</td>
<td>T</td>
<td></td>
<td>Education</td>
</tr>
</tbody>
</table>
3.6.5.1 Age of participants:
The spread of ages as seen in Table 2 reflects the University’s distribution of teachers by age with a preponderance of teachers over 45 years old, and a median age of teachers in the early 50’s. While no attempt was made to select a representative sample this apparent skewing of age distribution accurately represents the profile of the teaching workforce.

Table 2: Age distribution

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 - 35 years old</td>
<td>1</td>
</tr>
<tr>
<td>36 - 40 years old</td>
<td>2</td>
</tr>
<tr>
<td>41 - 45 years old</td>
<td>3</td>
</tr>
<tr>
<td>46 - 50 years old</td>
<td>5</td>
</tr>
<tr>
<td>51 - 55 years old</td>
<td>4</td>
</tr>
<tr>
<td>56 - 60 years old</td>
<td>6</td>
</tr>
</tbody>
</table>

3.6.5.2 Gender
Gender balance was not attempted but two females were interviewed. This low cross-gender representation is not seen as a problem as there is no indication in prior research nor in this study that gender has any impact on WBT adoption. An area for further research is the effect of gender on WBT adoption decisions.
3.6.5.3 Teaching experience
Although there is no evidence in prior research that teaching experience is a significant factor in the adoption of WBT, participants with a range of teaching experience were sought in order to ensure a wide range of views were canvassed. Table 3 shows the distribution of teaching experience.

**Table 3: Teaching experience**

<table>
<thead>
<tr>
<th>Teaching Experience</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 5 years</td>
<td>4</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>3.5</td>
</tr>
<tr>
<td>11 - 15 years</td>
<td>3</td>
</tr>
<tr>
<td>16 - 20 years</td>
<td>2.5</td>
</tr>
<tr>
<td>21 - 25 years</td>
<td>2</td>
</tr>
</tbody>
</table>

3.6.5.4 Length and depth of WBT involvement
Prior research did not indicate that years of involvement in WBT was a significant factor in a teacher’s adoption decision, but participants with a range of WBT experience were interviewed in order to ensure that a variety of levels of WBT experience were investigated. Due to the University initiative of creating a “Minimum Online Presence” every teacher had some online experience, even if this was cursory. The teachers interviewed had a wide range of involvement with some, such as Participant M, only using the Blackboard learning management system, and only for the posting of lecture notes. Others such as Participant C had used a variety of systems at different times and was, at the time of the interviewing, using WBT to a lesser extent than he had previously.
3.6.5.5 Role
An important research design decision was required around the issue of “role”. This study focuses on barriers and enabling factors to the adoption of WBT. While teachers were the primary source of data, some support staff were also included in order to provide a wide variety of viewpoints. These support staff have worked closely with teaching staff for many years and each had a valuable contribution to make to the discussion. There were no notable digressions of opinion between support staff and teaching staff.

3.6.5.6 Disciplines
The University teaches a wide variety of disciplines, with more than 1,000 unique “Programs”. A “Program” at this University is sometimes referred to as a course in other institutions, and consists of a series of separate units over a number of years leading to an award. Some examples of Programs are the “Bachelor of Information Management” or “Masters in Urban Design”. This wide variety of Programs reflecting many disciplines meant that it was not feasible to interview someone from each discipline or Program. Instead it was decided to seek participants who reflect a wide variety of disciplines to avoid any discipline related bias. A focus of future research may be the effect of discipline differences on teachers’ WBT adoption decisions.
3.6.5.7 Type of WBT involvement

Table 5 describes each participant’s type of involvement with WBT. While all had some involvement with WBT, most often this was of the asynchronous nature of a Blackboard course. There was a wide spread of experience with some participants (F, L, N and P) making very comprehensive use of a number of types of tools, including some social media tools such as Facebook. This may partially be a reflection of the technology available at the time of data gathering, which started in 2008. At that time social media, while available was relatively new and less widely used than in more recent years.

Table 5 - Type of WBT involvement

<table>
<thead>
<tr>
<th>Code</th>
<th>Role: Teaching or Support</th>
<th>Type of WBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>T</td>
<td>Blackboard</td>
</tr>
<tr>
<td>B</td>
<td>T &amp; S</td>
<td>Blackboard</td>
</tr>
<tr>
<td>C</td>
<td>T</td>
<td>Weblearn (local software)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blackboard</td>
</tr>
<tr>
<td>D</td>
<td>T</td>
<td>Blackboard</td>
</tr>
<tr>
<td>E</td>
<td>T</td>
<td>Blackboard</td>
</tr>
<tr>
<td>F</td>
<td>T</td>
<td>Wikis, Weblearn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Blackboard</td>
</tr>
<tr>
<td>G</td>
<td>T</td>
<td>Wiki, Blackboard</td>
</tr>
<tr>
<td>H</td>
<td>S</td>
<td>Support role only</td>
</tr>
<tr>
<td>I</td>
<td>T</td>
<td>Blackboard</td>
</tr>
<tr>
<td>J</td>
<td>S</td>
<td>Support role only</td>
</tr>
<tr>
<td>K</td>
<td>T</td>
<td>Blackboard</td>
</tr>
<tr>
<td>L</td>
<td>T</td>
<td>Wikis, Blogs, Facebook, Blackboard</td>
</tr>
</tbody>
</table>
3.7 Data analysis - the role of grounded theory

The meaning of the term “grounded theory” is contentious and has acquired various interpretations over time. At the most basic level and historically this approach indicated that the theory which was generated was grounded in the data which was collected. Over time a number of meanings have arisen for the term “grounded theory”, and methodological differences have led to various interpretations of this term.

This research uses grounded theory as a guiding principle in the analysis and coding of the data. In the division between “Glaserian” and “Straussian” paradigms, this research is more in the tradition of Strauss and Corbin, and relies on the pragmatism shown by Charmaz (in Denzin & Lincoln 2000). A full description of the methodology employed is provided later in this chapter. The following is a brief summary of the overall approach and principles followed and is offered to provide a context for the chapter.

A preliminary review of the literature was carried out and the primary data collection method was taped and transcribed interviews. Codes were generated and the “constant comparative” method employed. Memos (as described by Babbie 2011, p. 430) were generated. According to Strauss (in Legewie/Schervier-Legwie (2004)), there are three key elements to a grounded theory approach to data analysis, all of which have been fulfilled. These are:

- Theoretically sensitive coding
- Theoretical sampling
- Comparison between phenomena and contexts
Details on how these criteria have been fulfilled are contained in the next section of this chapter which describes the data collection and handling.

3.8 Interviewing and analysis

Interviews with those involved in WBT as a teacher as well as support personal played a central role in the collection of data. The interviews were transcribed, analysed, and coded. The following section describes how these processes were carried out and how research integrity was maintained.

3.8.1 The pilot interview process

Prior to the full round of interviews, a brief pilot study was conducted. The initial list of areas to be investigated was created from previous studies, and the researcher made these as broad as possible. These topics included:

- Participant impressions of possible barriers
- Technical barriers
- Support problems
- Institutional or cultural barriers
- Intellectual stimulation as an encouraging factor
- Specific actions the institution might take to encourage adoption of WBT

During the conduct of the pilot phase interviews participants were provided with opportunities to introduce any topic they thought relevant and encouraged to discuss the topic as broadly as possible.

The interview schedule (included as Appendix 4) and method of recording, transcription and analysis was trialled on three participants in support areas, several of whom had taught online previously and all of whom had extensive experience supporting other teachers in WBT. This support took the form of curriculum renewal, creation of learning objects and providing formal and informal training in online teaching. These trial interviews were invaluable in both checking the actual interviewing method being used and the method of analysis, as well as providing insights to online teaching at the University. Changes were made to the interview guide after each of the pilot interviews, with questions being altered to provide a greater focus on the lived experience of the participant and their opinions on WBT.
Interviewer bias was managed throughout the process of pilot interviews and substantive interviews. Using Babbie (2011, p. 340) as a guide, the researcher first consciously identified his own bias and preconceptions concerning the topic through a memo, which is a note written by the investigator for later consideration. The interview guide was constructed to avoid question bias to the greatest extent possible. Babbie (2007, p. 250) was also used as a guide to avoiding bias in questions. While Babbie’s focus in “The practice of social research” is on survey type questions the general guidance provided proved useful.

3.8.2 The interview process

Participants were sent a background letter (attached as Appendix 3) and an ethics consent form which was signed by the participant. Prior to the interview each participant was sent a copy of the interview guide. The use of the guide maintained consistency through the process, but the guide was altered slightly over time, as additional information was uncovered. A sample of the interview guide which was used is provided in Appendix 4. This guide was originally based on the previous work of others, especially Berge (2003) and Betts (1998), both of whom had carried out early survey-based studies into the adoption of WBT. This guide was modified as issues specific to the case being studied were revealed. Interviews generally took place in the participant’s office, and were recorded on a digital recorder as well as a small tape based dictation recorder for back-up.

3.8.2 Handling of interview data

In order to provide the richest and most accurate data, verbatim transcriptions were used for analysis. The first of the interviews was transcribed by the researcher in order to experiment with the concept that this would provide a deeper immersion in the data. This did not prove to be useful and all subsequent interviews were transcribed verbatim by a third party professional transcription service. Transcripts were later returned to the participant for correction of transcription errors or errors of fact. None of the participants suggested any changes.

Immediately after the interview, brief impressionistic notes were made by the interviewer. Within approximately a week, the researcher then listened to the recording to ensure that the entire interview was recorded correctly, and made summary notes of the interview itself, focusing on the issues raised by the participant. The recording was then sent off for transcription.

Upon return of the transcribed material, the researcher listened to the recording and read through the transcript to check for accuracy, and make any necessary corrections. The transcript was made
anonymous through the deletion of material which might have identified a participant, or their academic area. The transcript was then e-mailed to the participant for correction or comment.

Following soon after the check of accuracy and e-mailing the transcript to the participant, a memo was written with broad observations of the general tenor or direction of the participants’ thoughts recorded.

### 3.9 Data analysis

Analysis of the interview transcript was done using the Nvivo (versions 7 and 8) software package to produce information on trends in the data and common themes. The “constant comparison” method as specified by Glaser and Strauss was used to identify themes. The examination and coding process was iterative.

An important part of the investigation was the use of “memos” throughout the process. Memos are regarded as a useful tool in recording thoughts and insights to the data and form an audit trail of the development of theory as well as serving the more mundane purpose of avoiding repetition of previous stages. Memos regarding the researcher’s perspective and thoughts were also made after many interviews, and there were a number of progressive memos written and updated with the researcher’s thoughts on specific aspects of the investigation, such the impact of time on adoption. Memos to the researcher took two forms in this investigation, both recommended by Babbie (2011, p. 430). Each coding category was accompanied by a code note which described the scope of the code, and merges or splits of codes. Theoretical code memos were generated as notes to the researcher to trace development of ideas.

The researcher sought to become immersed in the data through repeated analysis using a variety of methods. In order to focus on the participant, minimal notes were made during the actual interview, with only two types of notes being made during the interview. The first of these were notes taken to remind the interviewer of topics to be investigated later in the interview, in order to fully explore issues which might otherwise be overlooked. The second type of note concerned observations of the setting or events which occurred, such as student interactions, or when the participant demonstrated something (for instance a website) during the interview which would not be reflected in the transcript.
The coding process was started early in the investigation and commenced with the completed correction of the transcript of the third interview. All three interviews were re-read and possible categories noted on paper. A “free-node” list (a list without any hierarchical structure) was created in Nvivo and another three interviews were coded against this list with additional categories being added as necessary. Once these six interviews “open coded” (Glaser & Straus 1967) were coded the category list was examined and categories were divided into “free-nodes” (those which did not fit any larger category) and “tree-nodes” which formed a hierarchical structure. Some examples of the free nodes categories were:

- What is online?
- Participant background
- History
- Lack of academic direction

By the end of the project there were 18 “free nodes”. Generally these acted as a “catch-all” for concepts which often did not initially appear to have a direct bearing on the study but had the potential to offer fresh insights or unique perspectives. A number of free nodes were taken into the tree nodes at various stages of the project when a pattern of participant thinking could be discerned.

Tree nodes by contrast were developed about one-third of the way through the project, after the sixth interview and were initially built upon the free nodes identified earlier. By the end of the project 72 tree nodes had been developed. These were organized into a three level hierarchy. At the top-most level the tree-nodes were placed in one of two broad categories (Enhancing Factors and Barriers), and this pair of level two categories then had a number of level three sub-categories, which in turn had a series of level four sub-categories.
Under “Enhancing factors” there were 14 level two categories. Some examples of these level two categories included:

- Advantages of online (general)
- Advantages for students (which had five level three subcategories)
- Advantages for teachers (which had three level three subcategories)

Under “Barriers” there were 20 level two categories. Seven of these in turn had a series of level three sub-cATEGORIES. For example under the broadest category of “Barriers” the second level sub-category of “Policy related barriers” had a total of four level three subcategories, one of which was “Lack of explicit policy”. The coding schema was progressively revised and refined through the process. The final coding scheme is included as Appendix 5.

All transcripts were examined at least twice, and most were examined at least four times, with a maximum of approximately six months between examinations. During the second and subsequent examinations, additional notes were created discussing the investigator’s thoughts about the teaching approach, the tenor of the interview and the non-verbal clues and feelings of the participant which did not necessarily come out in the transcript but were evident in the tone of the interview.
After this process there was still a significant amount of uncoded, yet potentially relevant material. This was then printed and hand-sorted into various combinations of both new and existing themes. The hand sorting process provided a refinement of the schema which did not appear during the work with Nvivo. This final step yielded several new categories, and assisted in grouping some of the previous categories into larger themes. A final list of themes and categories is provided as Appendix 5.

3.10 Documentary evidence

Documentary evidence including internal reports, such as the “Review report...” (2005), surveys such as the Platts ATN survey (Platts 2004), and University policies were collected and examined for a number of reasons. The findings, data and statements made in these documents were compared with participants’ comments. These sources provide triangulation with participant’s thoughts, by contrasting and supporting the impressions of the participants, and establishing trends in the University thinking and approach to online teaching. This documentary evidence was also used to establish whether University policy supported WBT.

This examination was done in response to the claims by several writers in the area such as Berge (2003) and Gellman-Danley and Fetzner (1998) that institutional policy has a significant role in encouraging the adoption of WBT. Documents were also analysed using the Nvivo software package, and themes identified and compared with participants’ perceptions, as well as being compared to the barriers and success factors outlined in prior studies.

3.11 Conclusion

This chapter describes the methodology and procedures used in this study. It provides background information on the case which was selected and why that case was chosen. The use of the semi-structured interviews and document analysis as part of a qualitative approach was justified, and the method of analysis was explained.

The next chapter provides an analysis of the results of the study. Trends and influences which were identified were analysed against the research questions which guided this research, and conclusions drawn.
Chapter 4 - Findings

4.1 Introduction

This study investigates the factors which influence the adoption of online teaching, and attempts to answer two research questions:

“What are the barriers and enhancing influences in the adoption of web based teaching by teachers?”

And

“How might these barriers be overcome?”

This chapter outlines the results of the investigation, and describes what the participants and data analysis revealed. While the words of the participants are quoted extensively, the arrangement and discovery of the influencing factors was based on the analysis of the interviews and documentation.

Organizing the findings on the basis of the broad categories which arose from the analysis rather than grouping these according to the questions asked provides a more coherent structure. This method of organisation also caters for the reality that barriers can also be enablers if treated in a different manner. To provide an example, “lack of time to prepare materials” might be given as a barrier, but if time is provided for preparation, this becomes an enabler.

Broadly speaking there are three clusters in which participants identified barriers or enablers to the adoption of WBT. These three clusters of influencing elements were around personal factors, technical factors, and institutional, or cultural factors. Each of these areas can be further dissected into several sub-categories. In outline form, these factors can be expressed as follows:
Cluster 1: Personal factors

- Time

**Finding number 1:**

*Time is seen as a significant factor in the uptake of WBT, but the issue is somewhat paradoxical in that more experienced teachers often see flexibility of time as an advantage.*

- Self confidence

**Finding number 2:**

*Teacher self-efficacy and factors which enhance or detract from a teacher’s feeling of efficacy are powerful motivators or de-motivators for the uptake of WBT.*

Cluster 2: Technical infrastructure

**Finding number 3:**

*That a number of aspects of the technical infrastructure have a significant influence on the uptake of WBT.*

Cluster 3: Institutional and cultural factors

**Finding number 4:**

*That institutional and cultural factors have a significant impact on the uptake of WBT by teachers*

Extensive use is made throughout this chapter of the participant’s actual words. This is done to give an authentic voice to the participants, and to capture the nuances of their thinking. Participant code and line numbers are provided with each quotation. The line numbers refer to the Nvivo transcript line. Square brackets [like this] denote researcher comments which are added in order to provide context which would otherwise be obvious if the full transcript was being read. In some cases where information which could identify the participant has been removed the information in the square brackets provides an indication of what has been removed and if necessary sufficient detail to give context to the statement.
4.2 Cluster 1 - Personal Factors:

Time (the first major sub cluster) and teacher self-confidence (the second major sub cluster) together formed the greatest barriers, and in some cases, motivators, for teachers to take up WBT at the case University. “Teacher self-confidence” covers a number of issues, including a fear of failure, a lack of confidence, and a fear of technology. All of these factors could act as a de-motivator, or conversely, as a motivator for WBT. The distinguishing characteristic of both of these factors are that they are deeply rooted in personal practice, self-perception and self-management.

The sense of the participants’ feelings on these issues cannot be measured in simple arithmetic terms, but was clearly heard during interviews. During the initial interviews, upon reviewing recordings and in re-reading transcripts the depth of feeling about the personal issues, such as time and confidence was clear. One of the notable aspects of these personal factors was the degree to which the same factor could act as a motivator or de-motivator. In the following sections, these factors are more closely examined and the range of effects of these influences are explained by the participants.

4.2.1 Time

Finding number 1: Time is seen as a significant factor in the uptake of WBT, but the issue is somewhat paradoxical in that more experienced teachers often see flexibility of time as an advantage.

Time in these cases referred to the time required to create resources and teach online. In the case under examination, time had a mixed and more nuanced status. In many cases time was seen as a barrier, however in several cases, time was seen as an advantage – particularly the flexibility in the allocation of time that WBT allows. Time is a complex concept, loaded as it is with individual and circumstantial influences. As one administrator said “Look – everybody on this earth gets the same 24 hours a day – when you say that you haven’t got time, you mean that this particular thing is not on the top of my priority list.” (Participant B – Lines 351 - 353)

There appears to be a consistent link between WBT experience and concerns about the amount of time required. For instance, one inexperienced participant said, “It’s going to be time consuming. I don’t know how difficult it is yet, because we haven’t actually done it” (Participant K – Lines 524 - 525).
4.2.1.1 Time as a motivator

In this study, time was also mentioned as a motivator by a number of participants. As a motivator, time was often linked to flexibility – both for students and for teachers. One teacher with 20 years of experience in WBT felt strongly about the flexibility of time as a motivator:

Well it's an efficiency isn't it and it's a pleasant way to work. I get up and I have my coffee and I check the [online] conferences and I deal with anything that might be impeding the online work and then if it's a nice day and I want to go for a walk I go for a walk or I go to the office and do something if in the second semester when I'm working full time and consulting part time I can leave it for the day or if want to just sort of check in and see what's going on at lunch time I check in quickly and see that everything's under control and I can be anything from an hour or two to a few seconds online. So it's learning to distribute your effort differently and working in full chunks (Participant N – Lines 159 – 168).

Several teachers mentioned flexibility of time in conjunction with flexibility of place for teaching. As one teacher said “I’m interested in trying to make things smarter and easier. I’m going to do this remotely. I’m actually going to Thailand to live” (Participant K – Lines 945 - 946). Participant N, Participant L and Participant K expressed a great deal of enthusiasm for WBT as it provided them the opportunity to teach more flexibly. They could choose where they wanted to teach from, as well as the time at which they wished to engage in teaching.

The more experienced teachers were more likely to identify time as an enhancer or motivator, and showed a great deal of enthusiasm for the temporal advantages of WBT. Not every teacher experienced in WBT agrees that there is an advantage to WBT which is related to time, but those who are enthusiastic about the temporal aspect of WBT are experienced WBT teachers.

Participants who spoke positively about the temporal aspect of WBT often mentioned the fact that they could attend to WBT duties when it suited them, rather than according to a timetable. This valuing of the freedom which WBT provided also flowed into valuing the flexibility of place.

I think it works better with people who are actually teaching and who actually have a problem that they suddenly realise technology can solve. Anecdotally a teacher I had from RMIT TAFE sector was travelling all over Victoria to meet with different groups of students,
different TAFES and was exhausted doing it, had the most hectic schedule of here there and
everywhere, travelling, arriving, conferencing one by one and there was never enough
interactivity and continuity and they didn’t have enough chance to sort of sit down with him
so when he became comfortable with the Blackboard virtual environment and the discussion
board and particularly how to structure discussions and what I do in discussions and how I
set it all up he was just thrilled. Before the course had finished he’d set up a Blackboard tool
and he had all of his students all over Victoria organised in groups and discussing and he was
able to give a lot more feedback and they were able to get a lot more support than was
physically possible for one person to do rushing from centre to centre, a lot on the road, a
lot of time, a lot of rushed conferences, a lot of lack of continuity. So by redistributing his
time and effort [there] was [a] tremendous gain, and of course, then he has more time to
get on with the content (Participant N –Lines 291 - 309).

Teachers with less than five years of WBT experience, on the other hand, consistently saw “lack of
time” as a problem and a barrier. While inexperienced teachers could not provide evidence that
WBT takes longer than traditional face-to-face teaching, they nonetheless felt strongly that this is
true.

Experienced participants demonstrated that some approaches are more time effective and more
efficient than others, and that setting realistic and achievable expectations for students and teachers
is critical. Participants also felt that setting realistic and achievable expectations increased student
satisfaction. One participant (Participant N) reported that she always makes it clear how frequently
she will check and reply to online forums and always maintains these commitments. This in turn
provides her with comfortable and achievable boundaries within which to work.

Participant N, Participant L and Participant K expressed a great deal of enthusiasm for WBT as it
provided them the opportunity to teach more flexibly. They could choose where they wanted to
teach from, as well as the time at which they wished to engage in teaching.
4.2.1.2 Time as a barrier

While time was seen as a motivator for some, for most of the participants, “time” was seen as a barrier and a problem. Most participants explicitly mentioned “time” as a problem – and this was stated frequently by those who did raise this as an issue.

There were three consistent categories of issues with time:

• Time required for teachers to learn how to do WBT

• Time to create content

• Time for actual teaching involvement, especially on forums such as discussion boards

Few participants were specific about which aspect was more time consuming, or if one aspect was most significant. These three factors will be addressed individually:

4.2.1.2.1 Time required for teachers to learn how to do WBT

The training required for teachers to learn about WBT was seen as a problem for several reasons. The high number of sessional staff was seen as a challenge by several administrators, as sessional staff are paid only for the time they spend in class, and are generally expected to do any professional development in their own, unpaid time. This was seen to act as a disincentive for sessional teachers to participate in training in how to teach using WBT.

Staff with a full time permanent positions, who also feel they are burdened with too much to do, making the time for training was also difficult. It was those teachers with the least experience that felt that the time required for them to do effective WBT was burdensome.

One administrator said “That's part of the problem, a greater issue I think, is what you would have probably been hearing from everyone, and that's their time availability to actually bank on learning about this stuff…”, and later in the same interview :“I think you'd get a lot more staff engaging in the online environment if you give them time to learn about it” (Participant J – Lines 444 - 448)

This lack of time for training also appears to lead to a further time related problem, and that is time to create content and to administer WBT.
4.2.1.2.2 Time to create content

The time required to create WBT resources was frequently mentioned by participants, both inexperienced and experienced, as a barrier. All felt that creating appropriate material was, or would be a time consuming business. Some were very specific, for instance Participant C, a teacher with more than ten years experience with WBT said: “you pay the price, when it’s online, for every mistake that you make, you pay the price one hundred times.” (Participant C – Lines 283 - 284).

Participant C’s implication above was that if something was mis-stated by the teacher, or poorly stated and misunderstood by the students in the traditional face to face environment, the immediacy of feedback meant that it could be corrected at once, and for all students, whereas in the WBT environment, it might be necessary to deal with this mis-direction on an individual basis. This teacher was well experienced and realized the problems in creating quality, robust, reliable resources.

Most WBT depends upon content created by the individual teachers. There are few commercial resources available, or if they are available, they appear underutilized as they were not mentioned by any participant. “Resources” in this case refers to the material that students use in their learning. At one end of a spectrum of complexity this may be sets of slides created with PowerPoint, or Word documents and at the other end of this spectrum, interactive simulations and custom produced videos and animated sequences. The basic material which needs to be created, at the Word / PowerPoint end of the spectrum of complexity is what is actually replacing (in the case of fully online) or supplanting (in the case of blended teaching) the face-to-face lectures and oral transmission of the material in question. At the other end of the spectrum of difficulty are the learning objects which take advantage of the WBT environment, such as interactive simulations. Such a simulation can take many hours of conceptualization, design, filming or animation, editing and final production, as well as a high level of technical skills.

Creation of any of this material was often seen as a very time consuming part of the process – especially for those teachers who saw the need to re-conceptualize their teaching and their curriculum. The concern about the time taken to create resources was shared across both experienced and inexperienced teachers.

The lived experience of teachers around content creation often was expressed vividly – for instance, Participant H said:
So, now I’ve got my classes, I’ve got my prep, I’ve got my counselling, I’ve got my tutors tutoring, I’ve got my research, and hells bells and buckets of blood, now they want me to go online and create gallons of multi-media material. There isn’t enough time (Participant H – Lines 251 - 254).

Lack of an shared understanding about what constitutes “good” WBT material is also a problem. As WBT is new to everyone (even those with a long history of experience in WBT have, at most, used this medium for 20 years, and most teachers for far less time than that), the expected standard of content has not yet been determined. This leaves an open question about “how much is enough?”, and by implication, “what is good enough?”. This can be seen in several comments, such as the following from Participant F, who said “…to do a good simulation - I think you can’t underestimate how much effort goes into it” (Participant F – Line 255)

And

You have to learn how to do it, you have to, it’s not a one off, you do something, and then you polish it, and then you do something more and then you polish it again, so it’s an evolutionary process that takes place, by the time you say this is what I want the students to learn, and you prepare questions and activities for the students to do and to answer the questions, and then some of the questions are ambiguous, some are wrong, some of the students get confused because English is not their first language. For whatever reason, then you go back, you have no questions, because you have fewer questions in their place, it takes a lot of time, and it is only justifiable money wise, and effort wise, if it’s a subject that you deliver, several times or its a big subject, … (Participant C – Lines 218 - 233)

As well as the open ended question around “when is my WBT material good enough?”, there is also a question around actual production time. One active, enthusiastic and knowledgeable teacher said:

The problem I’ve had is the production of the actual file, because it takes time to actually produce the file afterwards, [this teacher had recorded guest lectures and was referring to work which needed to be done in deleting extraneous material, interruptions, conversion to a different file format, etc] and the thing is I’ve got a full teaching load, and I was recording myself, but after awhile I’d have all these files then I have to find time to make these into an MP3, and to put them online. (Participant G – Lines 335 - 340)
He also had a practical solution for the problem:

> If we had an admin person for each teacher, we would be looking very different. There are a lot of people here who have materials, and it is just a matter of having someone putting the material together, it is just a matter of having someone who gets paid to sit down with a teacher and say – “well what can I do? (Participant G – Lines 375 - 381)

Very few participants had a clear idea of exactly how much time was required to produce effective resources and learning objects, but many were sure that it would take more time than they had available.

4.2.1.2.3 Time to monitor, support and teach online

The last category of barriers related to time was in relation to the time taken to actually teach online. Once materials are created and mounted, it is necessary to mark assessment work, monitor discussion boards, wikis or blogs, and to support students through these mechanisms. Teachers had either an untested fear that this would be time consuming, or actual experience that considerable time could be spent on monitoring and supporting students online.

Of those participants who did mention the time taken to support students as an issue, few were very specific, although notably, it was only the experienced teachers who were precise about this aspect of WBT as being more time consuming than face to face teaching.

Some teachers were explicit about the actual time involved. For instance Participant D, who was an experienced online teacher commented on class size and financial viability: “... it’s financial unviable, unless you’ve got you know, unless you’ve got sub 20 students to have interaction between the learning facilitator and the students online” (Participant D – Lines 560 - 561)

Or another teacher had even smaller numbers of students in mind and a more “expensive” (in terms of teaching time) ratio:

> although there were only 5 or 6 students I think in the online presence it took an inordinate amount of time so the amount of time devoted to the online group was in actual fact more than the amount of time devoted to the 25 students in the face to face (Participant E – Lines 68 - 71)

In some cases the requirement for additional time was related to the time required to prepare
materials, the point being that careless preparation was much harder to overcome in the WBT environment than it would be face to face.

4.2.1.3 Addressing the issue of time

What was notable in the interviews was the need for teachers to approach the issue of student support time with a fair degree of deliberation. There appear to be some very specific steps which can be taken to optimize the advantages of WBT while managing the time invested to produce optimal effectiveness. These include:

Setting expectations realistically and early:
This applies to informing students about when they might expect responses to questions, and how often lists, wikis, blogs or discussion boards will be monitored. Participant L mentioned setting realistic expectations early, and making the student responsible for their own administration tasks such as using correct submission forms.

for example I've got...one page that takes care of the whole subject for which I'm the administrator of media. [It] tells them the whole timetable for the year, what they need to do and when, it has links to all the forms that they need to use, it tells them how and what to expect, that no we don't have to find the people for them they have to find them themselves, it tells them how to enrol, what the course codes are, the plus and minuses and here they get to see the time slot, who's booked in for the mid semester presentation and I just get an email ‘book me in for 10 o’clock’ (Participant L – Lines 203 - 210)

Using technology appropriately:
A common feature of experienced and enthusiastic teachers’ practice was the use of a wide variety of technological tools, including blogs, wikis, and Blackboard discussion boards. These teachers were “early adopters” in Rogers (2003) terminology. The common factor with this group of enthusiasts is the use of multiple means of communications.

Communications with individual students is most often mentioned as a time consuming aspect of WBT. Several experienced teaching participants mentioned the use of interactive tool such as wiki’s, and in some cases IM (Instant Messaging) is seen to be effective. It was notable that in many cases the less experience a teacher had, the more likely he or she was to raise time as an issue. The
more experienced teachers seemed to recognize that time was a real as well as a potential problem, but seemed less concerned about this as a challenge. These experienced teachers appeared to have a range of strategies (such as setting expectations for forums) around how to avoid time (both creation and teaching time) becoming a problem, and how to create content and manage their teaching so as to minimize problems connected with time.

Participant L, one of the WBT enthusiasts, was explicit and deliberate in his use of technology to deal with students and make efficient use of his own time. He would set up pages or wikis to answer commonly asked questions, and direct students to these pages. If students brought him unfounded, or vague questions, he would request more detail before attempting to answer the questions.

**Temporal advantages for students:**

Other inexperienced teachers (and the experienced teachers as well) often identified flexibility of time as an advantage for students, and hence a positive reason to develop online modes and materials. Often this is related to the fact that students may need to work full time or part time, and that on occasion may need to miss a class. The availability of material on-line, especially through the online recorded lecture system, Lectopia means that students have less need to attend face-to-face classes. Four participants specifically mentioned student flexibility of time as an advantage and an incentive to take up and continue with WBT.

The teaching staff as well as the students, it enables people to do things when they want to, they don’t have to come to a classroom 1:30 to 5:30 to simply do that bit of work – and why should they? Same as me, why should I? If what we’re doing gives the information, reference material, all the avenues for the student to then go out and start doing their own learning, then to me that’s a benefit you know....(Participant K - Lines 455 – 461)

I really believe there’s a great benefit for a lot of areas across the board from both a student perspective, because they can access things anytime, anywhere, and anyhow they want to, and an RMIT perspective, because it reduces the load on facilities and so on, and from a staffing perspective... (Participant K – Lines 558 - 562).

In some cases, teachers were specific about temporal advantages for students. For example, Participant N stated “So between the international students, working part time students, the
teachers who are already short of hours it makes more sense to me to structure teaching round them online.” (Participant N – Lines 700 – 702)

Later in the same interview, she also pointed out:

> When we have so many students who are working as well as studying even presumably full time students are earning their keep and they don’t have very much free time and the slightest hiccup in their job means that they’re away from classes that it seems to me far more logical to structure everything round online teaching (Participant N – Lines 662 – 667).

As with most factors influencing the adoption of WBT, they may act as an enabler, as seen above, or as a barrier. The other side of this ability of students to gain access to the same materials as those attending face to face without actually coming to class is disconcerting to some teachers. Sometimes this concern is not based on experience, but on an untested fear. As Participant N said:

> I remember the first day I was teaching and I had set up all my fora. I knew exactly how I wanted stuff we weren’t using Blackboard but another technology. It was a wonderful program not in existence any more but I was sitting there with everything ready and I thought oh my god they don’t have to come. (Participant N – Lines 402 - 406)

Others were more proactive in ensuring student attendance. Participant M says “I put on [meaning place onto Lectopia] my lecture notes or my assignments or whatever it may be or my notes always after they’ve come to the lectures.” (Participant M – Lines 784 – 786)

There was no clear indication of those teachers who saw WBT as advantageous for students approached this from the perspective of increased student satisfaction scores on the Course Experience Survey, or simply empathized with students who use English as a second language, or who must spend time working. The concept of student satisfaction as a motivator for teachers to use WBT is further outlined in the section following which discusses the role of student satisfaction as an intrinsic motivator.
4.2.2 Teacher self-confidence

Finding number 2:

Teacher self-efficacy and factors which enhance or detract from a teacher’s feeling of efficacy are powerful motivators or demotivators for the uptake of WBT.

The critical role of self-confidence was summed up by a very knowledgable teacher, with over 15 years of WBT experience: “I think online space can be so exciting. It can be anything you want it to be and the sort of creative potential to create learning spaces is just incredibly fascinating.” (Participant N – Lines 477 - 480)

The participants at the case University evinced a wide variety of attitudes to their mastery of information technology. Some enthusiastic teachers spoke passionately about their interactions with information technology. This was often expressed in terms of the use of Web 2.0 and often linked to their low regard for the Blackboard interface and system. What was obvious in the interviews with enthusiasts was their mastery of the information technology environment. These were the same teachers who tended to use the web in several different ways (blogs and wikis, as well as Blackboard), and they spoke passionately about their practice.

There is a range of skill levels required for WBT. At one end of this range are the more mechanistic skills of adding content to Blackboard, often content which has been created with PowerPoint or Word. At the other end is engaging, interactive experiences which are the result of a fresh way of approaching teaching which takes full advantage of the opportunities afforded by the WBT environment.

4.2.2.1 “Button pushing”
The term “button pushing” was used by one of the participants to describe the relatively mechanistic and more technical skills necessary to teach online at a basic level. While there is not a clear definition of what is included in “button pushing”, this might be viewed as that part of the spectrum of WBT skills which includes use of ubiquitous software such as Microsoft Word, Excel or PowerPoint, as well as the ability to load files onto Blackboard, and to use discussion forums.
These skills are necessary for teachers to put together and exploit the most basic of teaching materials. The possession and sophistication of these skills varies across the University. As Participant I described a fellow teacher: "... she was interested in doing some work. She doesn’t know Word, and she doesn’t know Excel,..." (Participant I – Lines 359 - 360)

The range of personal competence at these base level skills has a split in the area of what is commonly called Web 2.0 skills. On one side of this split is skill in using Blackboard as a specific piece of software. This Blackboard specific knowledge is a well-defined set of competencies and is concerned with the skills of uploading and maintaining content on Blackboard, using discussion fora and features such as the Gradebook. On the other side of this split is the concept of Web 2.0.

Web 2.0 is generally accepted to refer to that set of services on the WWW which are interactive and user created. The content is often dynamic, ownership often undefined, and rapidly changing. Some examples of Web 2.0 can be seen in web sites such as Blogger (www.blogspot.com), Flikr (www.flikr.com), Yammer (www.yammer.com) and Wikipedia (www.wikipedia.com). All of these sites are entirely dependant upon user created content, are largely free to access and heavily used, particularly by students.

**Figure 2: A basic hierarchy of technical competency for online teaching**
A few participants had well developed skills in using the web, and Web 2.0 functionality in particular, for teaching purposes. One enthusiastic teacher, Participant L describes his practice in this way:

I use blogs which students have - wikis which we use for design projects for students who will whip up a wiki and say so this is so you can keep in touch in terms of what's happening we just chuck it up, you check it, we update it. I might have something like a Wordpress blog which I’ve got on micro processors and I give the students access and they can upload stuff because I’m asking them to work on a project that’s already on there so we do stuff like that. The students are very quick at doing a Wiki or doing a blog or anything like that. They’ll actually suggest it it's a much easier way than emailing you with details and documents (Participant L - Lines 28 - 36).

Most of the participants did not mention extensive (or any) experience with tools and systems beyond Blackboard such as Web 2.0 sites, but those that did tended to speak with enthusiasm about their teaching practice.

Participant P said:

Blogs, wikis, Skype, you know, audio visual, simple audio visual stuff, you know, putting stuff on Blackboard, technically they’re not difficult, so that doesn’t mean you mightn’t need instruction, but they’re technically not difficult things to do, they don’t take a lot of space or time or effort once you get used to the idea. They’re not in general use by a lot of people (Participant P – Lines 774 – 779).

Participant G also stated that:

... as soon as I saw that Wiki, and then I realised that you can – it ... goes the other way – I just say, I’m going to implement that. So, that’s why it came about .... . ” (Participant G – Lines 149 - 150).

Yes it works very well, because that works for them, and they make it their own, so they’re just more engaged. They find it more fun (Participant G – Lines 159 - 160).
Those who were enthusiastic WBT teachers tended to be dismissive of others who used the technology in more simple ways. For instance Participant C said:

I would say 90% of people think that if they have an online presence that’s teaching online—... That's it, that’s, according to them that’s teaching online, but [I] remember when my friend, A.. F...[personal name removed to protect identity] says, you know, text is the lowest form of life on the web [laughing] so I reckon that, only 10% of people really understand what work you have to do, the effort that you have to put in to really, really teach online.

(Participant C – Lines 478 -488)

This continuum of ability was especially obvious in the area of spreadsheet manipulation and interaction with the LMS, Blackboard. A perceived weakness in the section of Blackboard at that time called “Gradebook” meant that teachers often kept track of student progress on an Excel spreadsheet, which was then uploaded to Blackboard. This provided flexibility, and allowed the teacher to create or alter the marking system as necessary, but to have this interaction with Blackboard also required a level of technical skill which eluded, or was not of interest to most participants. As one participant spoke of one of the problems of Gradebook as:

Well for example in Gradebook you’re asking students to submit electronically, ... that system doesn’t match exactly the class lists that you get, so students when they enrol, they enrol into a class (and) a staff member is allocated to that class. When you go to Gradebook you can’t organise it like that, so – you either have to have everybody in one list or alternatively you can actually ask them to submit to David, submit to Craig, submit to Susie but if they inadvertently submit to the wrong one you can’t actually just move it to another one, you actually have to get the student to unsubmit [sic] it and then resubmit it

(Participant E – Lines 610 - 619).

While there was no formal assessment of WBT competencies, it appeared that there was a wide range of skill levels in the area of the more mechanistic technical skills amongst teachers. It was noticeable that those teachers who self-reported a low level of use of WBT also spent little time talking about their own use of technology beyond Blackboard and evinced none of the enthusiasm for WBT, or technology more generally which was shown by those teachers who did teach online extensively.
4.2.2.2 Pedagogical competence

The other end of the range of ability is in the area of pedagogical competence. This competency describes those skills which are needed to successfully assist students learn at a deep level. They are normally developed over time, and often in conjunction with formal training in education. Several participants spoke of the lack of training on how to teach online.

The most experienced online teacher, Participant N, spoke about the relative ease with which she can teach others the “button pushing” aspects of online teaching. As a generalization, Participant N claimed that those who were more technically competent, and often younger learned the “button pushing” fairly easily, but a lack of teaching experience meant that it was more difficult for this less experienced group of teachers to understand the potential of WBT and apply this in a creative way. In Participant N’s words: “I think the ones who have enjoyed and got the most out of the course that I do [Participant N teaches a course on how to teach online] are people that have been teaching a long time and have got to the point that there's problems with the teaching,” At another point in the interview she points out that:

...you would say ‘okay well the digital natives the young generation they’ve grown up with technologies they won’t have any problem’, they actually do have problems. They have a different problem which is that they are so used to it for social networking that they can’t think about it as a formal tool and they don’t think about using it in teaching and learning so they don’t really think about the technology. They just use it to connect and they haven’t done a deeper study of the technology and they’ve got no sense of the connection of the technology and sort of pedagogical issues so if they’re inexperienced in relation to the relationship because it’s a two sided thing. You need to know both the technology and understand its usage and you have to understand how that connects with teaching and learning issues (Participant – Lines 36 - 48).

On an organizational level, there is little obvious support for training in pedagogical issues. While new academic staff (at Associate Lecturer and Lecturer level) are expected to attain the Graduate Certificate in Teaching and Learning at the University being studied, this is something of a “generalist” program in learning and teaching. The component on WBT is optional, and forms no more than 50% of the courses undertaken. This qualification calls for teachers to complete a total of four units, over a two year period. Out of the eight available units, only two had a technology emphasis (Course Guide, GC020 - Graduate Certificate in Tertiary Teaching and Learning as at 6
September 2010) at the time of the study. This intersection of the personal factors and institutional factors illustrates the interplay between the two sets of influences.

4.2.3. Self-confidence and intrinsic motivators

As discussed in the Literature Review section of this document personal competence is seen as a powerful intrinsic motivator. Personal competence also plays a powerful part in the uptake of WBT. The two main areas of personal competence in WBT which drive intrinsic motivation are the teacher’s desire to increase student satisfaction and a feeling of personal accomplishment.

4.2.3.1 Student satisfaction

Student satisfaction acts as a motivator for teaching staff to the degree which they find their ability to increase student satisfaction personally rewarding. The topic of student satisfaction as a motivator for participating in WBT featured in the statements of a number of participants. The participant’s comments can be clustered in three distinct areas:

- Improved student satisfaction
- Repetition of material is useful for students
- Students speaking more freely in WBT environment due to anonymity

Six of the sixteen participants mentioned improved student satisfaction as a powerful motivator for taking up WBT. Some of the comments included: “It’s what the students expect” (Participant H – Line 970), and “Online helps, because students are more engaged” (Participant G - Line 160).

The claim for improved student satisfaction was both an impressionistic one, where teachers just seemed to feel that students expected and wanted WBT, and a more empirically based claim where teachers explicitly stated that WBT improved CES scores, and that the improvement was noticeable and significant. “CES” is the Course Experience Survey which is administered by the University. It provides a series of numerical scores on the satisfaction students have with their teachers. These scores are monitored by more senior staff and used in promotion decisions.

The CES is modelled on the national CEQ (Course Experience Survey), and in particular the “Good Teaching Scale” elements of this instrument. The Good Teaching Scale is a score calculated from student responses to the following questions:
The teaching staff are extremely good at explaining things

The teaching staff in this course motivate me to do my best work

I enjoy doing the work for this course

I feel I can actively participate in my classes

The teaching staff work hard to make this course interesting

The student assigns a score of 1 to 5 to each question with 5 indicating strong agreement, and 1 strong disagreement. These scores are then aggregated to form a “Good Teaching Score”, which forms a core element of the CES.

Participant B claims that:

...you have to get good CES data. Now, if people realized that they might be able to improve their student satisfaction by providing more information online, that they might get greater rewards in that direction with minimum time input (Participant B – Lines 465 - 467).

Later in the same interview she said that:

We’ve got evidence that the students don’t necessarily want great, fancy multimedia. They do want information easily accessible, they do want stuff there in case they’ve missed a class – and they want it all to be there where they can find it (Participant B – Lines 508 - 510).

4.2.3.2 Personal accomplishment

A feeling of personal accomplishment proved a very powerful motivator for a select group of teachers. Four of the participants talked about the personal satisfaction they got from teaching online. From those who found WBT intrinsically satisfying, the comments were heartfelt and enthusiastic.

Participant K stated that “I quite enjoy it. It’s far more interesting, I think, for a start. It’s more interesting for me, and its good fun. Yeah, I guess that’s the fact of it, I do enjoy it, and I can make – if I can arrange it so that I enjoy what I’m doing, I do it” (Participant K – Lines 436 - 438).
Participant N expressed her enthusiasm in glowing terms: “Yes I love the [experience] – well I think it’s the ultimate teaching challenge after [you have] been teaching for a while I think [its] just a far more exciting space to teach in” (Participant N – Lines 466 - 469).

Later she also said “E-learning tools are so many and varied and so powerful it’s a pity to see them sitting on a shelf.” (Participant N – Lines 516 - 517)

4.2.4 Self-confidence and de-motivators

Just as a feeling of self-efficacy was a significant factor in motivation, a feeling of a lack of competence was significantly mentioned as a demotivating factor. These demotivating factors were often related to skills and experience, and included:

- Fear of failure
- Lack of confidence
- Fear of the technology

4.2.6.1 Fear of failure

The fear of failure pervaded a number of the discussions. The fear might relate to an inability to teach effectively, or more often a vague fear that some unforeseen factor will intervene and the teacher will not be able to control the online interactions. An experienced online teacher put it this way:

... if you don't take a risk, then you don't progress in your teaching and learning skills, and it's not about leaving – losing, really, the face to face behind, it's not about leaving all that cultural heritage behind, it's about saying, ‘well there is a new technology, you know, there is a technology in town, and it has been around for some time, so how, if at all, can it be used to support the teaching and learning interaction in a positive and constructive way’, and in order to work that out for yourself, apart from reading, which many teachers don't do, you have to try and you have to be prepared to fail, now for some teachers that, ... it's a really big deal ... (Participant P - Lines 801 - 811)
4.2.6.2 Lack of confidence
Associated with the fear of failure is a lack of confidence. In the case being studied, the lack of confidence played a role in a number of areas. Three participants mentioned issues around lack of confidence - in most cases several times.

Participant E said “I was feeling apprehensive about it because I'd only ever worked in the face to face”, (Participant E - Lines 109 – 110). An administrator provided an example – in this case talking about a well-established teacher who was hesitant about going online:

[she had an] absolute fear that the students will show her up. She’s shown up by her .... own children. So, as a professional, to keep that old fashioned, almost Confucian respect in the class, if she started using computers it would be moments into the lecture where she would be cut down by the students going, ‘oh why don’t you push this button?’ (Participant H – Lines 353 - 358)

Another administrator put it this way: “People are not yet comfortable with the technology in those kinds of circumstances. And people do not want to be there” (Participant J – Lines 168 - 169).

4.2.6.3 Fear of technology
“Fear of technology” is an ill-defined, but commonly stated reason given by researchers, administrators and some teachers for why teachers do not take up online work. Participant N described it in terms of “older teachers haven't the ease and confidence with new technologies” (Participant N – Line 35). Participant H provided an example:

I did the Grad Cert in TTL,[Tertiary Teaching and Learning] and we did do our PowerPoint slide shows, and the lecturer said, 'look I’ll have the projector and a computer for you to do your presentation on your item, come out next Thursday afternoon and we’ll do it’. And someone put up their hand and said, do you have to use PowerPoint? And the lecturer just went, "well, no – without PowerPoint?" And she came up with a poster with cut-outs and Clag, [a common brand of craft glue]and big markers and crayons, and she doesn’t know how to use PowerPoint. She doesn’t like PowerPoint and she doesn’t like computers.... . (Participant H – Lines 335 - 342).
While “fear of technology” was not often explicitly stated by participants, there were several who seemed reluctant to even discuss alternatives to Blackboard such as web 2.0 tools.

4.2.6.4 Summary – Confidence can act as a motivator or de-motivator

According to the participants, feelings of self-efficacy can act as a barrier or as a motivator to WBT. The sources of these perceptions of self-efficacy are rooted in self-perception and previous experience, and often-untested assumptions about WBT.

4.3 Cluster 2 – Technical Infrastructure:

Finding number 3: That a number of aspects of the technical infrastructure have a significant influence on the uptake of WBT.

There are a number of infrastructure elements which are necessary to deliver WBT. These include hardware, software, and a reliable network. Participants frequently raised infrastructure related issues as a barrier – never as an enhancer.

Robust and reliable infrastructure was not remarked upon in interviews. The infrastructure problems mentioned by participants can generally be categorized as:

- Lack of reliability
- Lack of classroom PCs and software
- Better IT support
- Blackboard user interface and operation

These realities are explored in the following section.

4.3.1 Lack of reliability

All of the components of infrastructure came in for critical commentary from participants, but by far the most commonly mentioned, and deeply felt problem was a perceived lack of reliability. Much of this stems from a period in February 2008 when Blackboard appeared not to be working for varying periods.

The problems in February 2008 were elusive, and varied in impact, with some geographic areas of the campus affected more than others, but nonetheless, sometime after the event this period of approximately 10 days was seen as significant. As one participant put it: “…when Blackboard went
down at the start of this year, that did more damage in one hit, overnight, literally, than anything, really, and that only went down for a week or so in a bad way.” (Participant D – Lines 171 - 173)

Another, while speaking of attempts by teachers to use Blackboard said “some lecturers are willing to give it a try but have been burnt with unreliability.” (Participant H – Lines 314 - 315).

The fact that it is particularly important to have the system working reliably when used as a face-to-face teaching support was emphasized by one participant “If Blackboard is not up when class starts, you’ve lost students. Teachers build up negative attitudes to Blackboard – it takes one year or more to get them back” (Informal discussion at Edutag meeting – transcribed, but not recorded)

This single major incident of unreliability negatively affected perceptions for at least two years after it occurred. The effect on teachers, some of whom were already sceptical about WBT, was to undermine confidence in any WBT, and a vindication of their concerns.

As Participant J put it:

... then they use that as a good excuse why we shouldn’t be going down this track. So if you don’t have the foundations, and by that I’m talking both support and technology, robustness of technology and infrastructure, you know, you’re asking for trouble, because something will go wrong, and then people will use that as an excuse not to engage (Participant J – Lines 961 - 966).

In addition, several others agreed – Participant B said: “It makes it much easier for them to give up – it’s their excuse of giving up – because it’s all too hard. “ She also said: “those who are looking for an excuse not to do it – they can easily find one” (Participant B – Lines 628 - 629).

There is a range of opinions on the impact of a perceived low rate of system availability. This continuum ranged from a lack of any comment to those which were highly critical, as listed above. There were no positive comments on system reliability.

4.3.2 Lack of classroom PCs and software

Infrastructure problems also presented in other ways which were more tangible. These included a lack of equipment, especially PCs, and in particular too few PCs in classrooms, where a class of 40 students might only have 30 PCs to use. This focus on the number of classroom computers seems to indicate an assumption by teachers of face-to-face delivery and to exemplify an inability by some teachers to move to a greater reliance on asynchronous, unmediated online use.
Participant M says “We don’t have sufficient computers. ...I’ll have classes of 40, when I have a computer room I only have 30 computers for 40 students.” (Participant M – Lines 460 - 461).

Another participant, Participant K pointed out that “I’ve got 45 students in a room that houses 30.” (Participant K – Line 252)

4.3.3 Better IT support

A common comment from participants was a “lack of IT [Information technology] support” as a critical element in their adoption of WBT. The actual description of what was meant by “IT support” varied from desktop hardware support to pedagogical issues, including an expectation that the Information Technology department of the University would set the scene for upcoming opportunities to use technology in education. There was a clear dichotomy in calls for “more IT support” between those who needed more training to those who felt the IT section should be guiding new developments.

One of the more critical teachers had run an IT support business for a number of years before coming to the University, and was the most outspoken about support:

“[Information Technology Services – the campus wide unit responsible for IT delivery say it is] “too much trouble”. Hey, that’s what you’re being paid for. Yes, there are limitations on disk space, bandwidth – but simple things – ... but it’s – I think it’s IT – them and us – they don’t know what they’re talking about”(Participant I - Lines 284 - 287).

More specifically, the same participant states:

The packages – there are specialised packages – and, you know, for [specific packages mentioned - deleted to maintain anonymity], and also for [specific package mentioned - deleted to maintain anonymity]. So, loading those packages on takes [time] – they exaggerate the time that it takes to load these (Participant I – Lines 480 - 485).

There was also a feeling amongst some of the participants that learning and teaching was taking a lower priority with the information technology department than it should have: “[We need to have] ITS prioritising educational technologies, instead of just administrative and telecommunication systems” (Participant J – Lines 952 - 953).
Beyond the call for more technical support, some participants appeared to prefer that the information technology department take more of a leadership role in guiding the University’s use of technology for learning and teaching. Participant I says:

...with IT, it should be, they are the boffins, they should say, right this is in the pipeline – we never hear of what’s in the pipeline. We never hear – these are the things that’s happening in industry, have a look at them, could they be included in the curriculum.... (Participant I – Lines 563 - 566)

And later in the same interview: “I think there should be somebody higher up that should be looking at how we could effectively use IT” (Participant I – Lines 602 - 603).

This second category of comments in particular (those that refer to a leadership role) seem to indicate a lack of clarity within the University in regard to learning and teaching leadership, and a belief that the information technology department should be setting the direction for educational innovation.

4.3.4 Blackboard user interface and operation

A persistently identified barrier is the presentation of the user interface, and appearance of complexity in comparison with many of the newer Internet based platforms, such as Twitter, LinkedIn, Facebook and Yammer. While the University has since upgraded to a newer version of Blackboard, the participants were discussing version 6 which was in use until early 2011. The language participants used around the interface was markedly emotive and critical. The range of comments did not vary from positive comments to negative comments, but varied from “I’ve actually tried to use the Blackboard system of quizzing a bit, and it’s abysmal, it’s terrible.” (Participant L - Lines 168 - 169) to “the user management system within Blackboard is still atrocious,” (Participant D – Line 886)

This perceived awkwardness of the interface resulted in rejection by most teachers interviewed. Neither those who had considerable WBT experience, and a well-rounded, contemporary approach to web interaction nor those who were generally resistant to any form of online teaching were pleased with the interface. As a generality, those with wide web experience expressed dislike of the interface with comments such as: “Blackboard is about 2 generations or 3 generations behind, its user interface is horrible -it's klutzy, it's badly designed ergonomically” (Participant L - Lines 123 - 124).
In summary, technical infrastructure problems were perceived as a considerable barrier to the uptake of WBT. These problems and were generally about reliability and the user interface.

4.4 Cluster 3 – Institutional and cultural factors

Finding 4:

*That institutional and cultural factors have a significant impact on the uptake of WBT by teachers*

A number of aspects of University administration touch upon WBT. These range from policy and its’ implementation through programs such as MOP (Minimum Online Presence), to the manner in which teacher support and professional development is organized. The following section details these factors, which include aspects of policy and support structures.

4.4.1 Policy aspects

University policy was mentioned by several participants in relation to a number of aspects of WBT. The University adopted a relatively clear definition in 2008 of what a “policy” is, and how policies are instituted. This definition is: “A policy is a formal statement of the University’s position which enables decision-making and has ongoing application across RMIT” (RMIT University: Policy on policies 2011). Under the process introduced at that time, it was necessary for all University policies to be considered and adopted by University Council. This clarification was intended to reduce the number of University policies and provide more rigour to the policy creation, enforcement and renewal processes than had been applied in the past.

4.4.1.1 Lack of explicit policy

There is no formal University policy on WBT. However a number of high level procedures and decisions have had an impact on the uptake of WBT. The most important of these was a directive arising out of the Organisation Review of Education Technology which was completed in 2005. The first of the recommendations of this Review was that “Every course is to have an online presence” (Review report : support systems and processes for effective use of educational technology, 2005). The organisation review process is well established at the University and involves a thorough examination of operations within the University by a panel including experts from outside the University as well as at that time a University Council member.
The outcome of this recommendation was the establishment of the “Minimum online presence” (MOP) project, which was created to ensure that the intention of Review was carried out. In spite of this directive a number of participants were either unaware of it or did not regard it as significant. Participants seemed to ignore the directive if they had heard of it, and several participants appeared completely unaware of it. For instance, when speaking about another University he teaches at, Participant M said: “I do it [establish the online presence at the other university] because they asked me too, they’re quite insistent, here they’re not insistent, I haven’t been told I have to.” (Participant M – Lines 271 - 272)

Later in the same interview, he also said:

I would like somebody to say ‘can you please do 20% online in your lectures?’ Right, 20%, or give me a specific target and …say … I’m also going to give you some time allowance to do research on online in this particular subject or subjects. (Participant M – Lines 420 - 422)

And the same teacher also said “My recommendation would be [to] set clear goals, goals and objectives ” (Participant M – Lines711 - 712).

An administrator had a stronger viewpoint:

I think you need to take a position as a university to say, okay we’re Australia’s largest university for technology, so technology is part of what we are, it’s what we do, and it’s technology across the board, not just, you know, in certain areas, and we as a university want to be known for this, or that, or whatever, so therefore, when you work here, when you come and work here, there are things you’ve got to do, and I think that’s a fair enough thing (Participant J – Lines 353 - 360).

Generally participants were either in favour of a more explicit and public policy from University, or at the least had no negative comments to make about such a policy. There appeared a lack of awareness of the MOP policy.

4.4.1.2 MOP policy unhelpful

The intention of the Review (Review report : support systems and processes for effective use of educational technology, 2005) was to increase the number of courses with an online presence. This was mandated through the goal that every course should have an online presence, which was
operationalized through the “Minimum Online Presence project. This project generated an automatic “course shell” for each course with minimal course related information, and was to be followed up by the teacher adding more detailed and course-specific information. One participant felt that the MOP policy was actually counterproductive:

We know online is a good thing in itself therefore we’ve got to punish schools that don’t do this and, I don’t think that’s going to create a good environment, … They completely plugged the whole online presence as they rolled it out to schools, because what they said was, we are going to create a shell for every course, but then we’ll only allow courses to go from development to, from dead mode to live if the academics involved have done the minimum online presence training … ” (Participant D – Lines 1013 - 1017) ….you might think to yourself, okay well that makes sense, because you’ve got the course, you’ve got the academic, and therefore you can’t let them take it online, you know, but what it showed was complete ignorance about how courses are taught at RMIT, 95% of courses I’m sure are team taught (Participant D – Lines 1029 - 1033).

While one participant mentioned that the MOP policy was unhelpful, most other participants knew little or nothing about it. During the interview, typically, the interviewer would wait for the participant to mention MOP, and if it was not mentioned, the researcher than prompted in terms of “Are you aware of any University policy around online teaching?”, and in some cases, “Are you aware of the MOP program?” The responses were generally lukewarm or negative.

4.4.2 Support structures

According to one of the administrators interviewed, the University practice which appeared to have the most impact on the adoption of WBT is that of having educational media expertise dispersed into a number of different units. Each of the three Colleges (the College is the highest level academic group – there are three across the University each with around 20,000 enrolled students) has its own academic development group, as well as the University level Educational Technology Group.

While a number of participants did not mention a problem with the de-centralized nature of teaching support, but did mention lack of expertise and available assistance, others did mention a lack of central co-ordination. This diffusion of resources and skills was discussed
extensively by one of the administrators:

They haven’t been necessarily put in place in a logical way that’s well planned and thought out, before we had Colleges we had faculties, and there were 7 faculties, and basically they bundled the 7 faculties into 3 portfolios at the time, I don’t believe they gave any thought to the supports around it. (Participant J – Lines 268 – 272)

The case for having a larger centralized unit was summed up as:

Say you’ve got that assessment person in the Business College, and you have a real issue in SET [College of Science, Engineering and Technology], around assessment in a School, why can’t we just say, okay, well can you spend whatever time it takes, 3 months, 6 months, whatever, working with that school, get them up to speed on their assessment practice, when that’s finished, well we’ll put you up somewhere else, where your capability and skills can be used, without that barrier of having a College barrier, you know, a bubble. So if that flexibility, that I think can allow for greater impact and support to the programmes of schools (Participant J – Lines 201 – 310).

4.5 Summary

This chapter, which summarizes the findings of the research undertaken describes the issues identified by participants and responds to the research questions:

“What are the barriers and enhancing influences in the adoption of web based teaching by teachers?”

And

“How might these barriers be overcome?”
Some of the issues identified were explicit, while other factors only came to light as a result of the qualitative approach taken. These factors include the role of self-confidence in encouraging the adoption of WBT, and the participant observation that “time” can be a factor which encourages teachers to take up WBT as it provides for greater flexibility in their teaching.

The next chapter, “Discussion” explores the themes identified in this chapter, compares these themes to what has been found in previous studies and makes some recommendations.
Chapter 5 – Discussion

5.1 Introduction

The previous chapter outlines the findings of this research. This chapter discusses these findings, places the findings in the context of the literature and suggests the relationships between different influences on the adoption of WBT.

The findings of this research indicated that four themes arose as important factors in teachers’ adoption decisions. These are:

- Self-confidence
- Time
- Training
- Institutional policy

These findings were congruent with previous research which consistently claimed that time, training and institutional support were all significant factors in teachers’ decisions to adopt WBT. The qualitative approach undertaken for this study revealed another theme which is related to those three broad categories. This research revealed self-confidence to be the most pervasive and common factor in teachers’ adoption decisions, and specifically self-confidence in their ability to teach online.

The data collected through the interview process indicate that the factors of time, support and institutional policy are important as they support teacher self-confidence and provide the resources required for teachers to undertake WBT but that attention to these three factors alone does not result in wide-spread adoption of WBT. It appears that sufficient time and support, as well as institutional policies assist in developing the necessary self-confidence which in turn results in greater adoption of WBT.

Another approach to these issues of barriers to adoption is afforded by the TAM (Technology Acceptance Model) proposed by Davis (1989). This model examined the use of the concepts of “perceived ease of use” and “perceived usefulness” as likely predictors to the uptake of technology.
TAM is generally accepted as a relatively reliable predictor of technology uptake, yet a meta-analysis by Ma and Liu (2004) illustrated some inconsistencies in the evidence for the predictive effect of TAM. Surprisingly, TAM has been little used in predicting the adoption of WBT. In this study self-confidence and self-efficacy were demonstrated to be important factors in the adoption decisions of teachers. While this study is qualitative in nature, and the Davis approach was quantitative, a clear parallel can be seen between the factors of “Perceived ease of use” and self-confidence in adopting WBT.

5.2 Theme 1: Self-confidence

The issue of self-confidence builds upon and has a synergistic relationship with the other major factors. The teachers who were interviewed spoke of teaching as a personal activity, and described their experiences in the first person. Many spoke with some passion on their teaching practice, and several emphasized that they taught because they found it personally rewarding.

One teacher, Participant M says:

I am inspired, I am motivated, I am excited to see young people ...– to see our young people who will be our future generation - I know we are in good hands. Now I know there’s drugs and I know there’s all these not nice things we read about in the newspapers and I’m more aware than most people because of my community involvement in difficult situations ... but you know, people now, people have to run this country and we’ve got them here or at [identifying detail of another University the participant teaches at removed] and it’s just inspirational and I’d love you to come in the class and just see for yourself, not that you
don’t see that, but you would see it in a different context than I do being in a classroom is – that’s what I’m talking about (Participant M – Lines 123 - 133).

Of the personal factors mentioned two aspects were raised by almost all of the participants, either explicitly or implicitly. The first, and most common of these was “time” as a factor. This was almost always raised without a prompt, and generally in relation to the time taken to create WBT content, as well as time taken to teach online. Time presents something of a paradox, as participants discussed this as both a barrier and as a motivator.

The other personal factor which was alluded to by participants was self-confidence. However, deeper analysis and careful listening to the recordings revealed that many of the issues which seemed to be general in nature, such as lack of time, policy or training, were actually related to self-confidence. The theme of “self-confidence” is complex and arises out of a mix of training, skills, prior experience and support and is also related to time, as well as other factors such as self-efficacy.

A critical consideration and synthesis of all of the factors arising from this investigation points to the strength and importance of self-confidence as a key factor in teachers’ adoption decisions. This study found the theme of self-confidence to be the common thread which runs through both the literature and this investigation. The following section will explain how the available evidence gives primacy to self-confidence as an influence over teachers’ adoption decisions in relation to WBT.

### 5.2.1 Factors contributing to self-confidence

The issue of self-confidence builds upon and has a synergistic relationship with many of the other factors discussed in the previous chapter. The issue of “lack of time” is a constant theme in the existing literature describing barriers to the adoption of online teaching. This may be an artefact of the quantitative approach taken, and the prompted nature of the questionnaire format used in most studies, which was often couched in language such as “On a scale of 1 to 7, rate how strong a barrier time is” (Berge & Mrozowski, 1999, Betts, 1998). In this study, the less experienced teachers all mentioned time as a constraint, but several of the experienced teachers did not see this as an issue, and actually saw the flexibility of working hours which WBT provided them as an important factor in encouraging them to teach online. When reviewing both the transcripts and the audio recordings of both enthusiastic teachers and uncommitted teachers there was a striking difference in the language they used as well as their tone and demeanor when speaking about time. The enthusiasts
were positive, emphatic and specific about the time benefits they saw as implicit to WBT, and were also obviously confident about their own abilities.

The self-confidence of teachers who enjoyed their online teaching appeared self-perpetuating. This confidence in turn led to more positive experiences for these teachers, boosting self-confidence and encouraging more active and ultimately more effective use of WBT.

A number of participants (Participants E, P, H, N, and A) spoke of a lack of self-confidence, particularly a lack of self-confidence about teaching online as being a barrier to the uptake of WBT. Conversely, several teachers who were enthusiastic about WBT appeared confident with their technical expertise.

Participants who spoke of their WBT practice with warmth and enthusiasm were confident of their ability to exploit this mode in order to teach effectively. A key concept to teaching effectively is the confidence of the teacher that their teaching “makes a difference” to students, and that their actions influence student learning. This concept is known as “self-efficacy”, and has been consistently shown to be a driver of teacher persistence over a long period of time, and many studies, starting with Bandura (1977). The question of how to increase self-efficacy of teachers about WBT remains a difficult one, and an issue which the more general literature has not yet successfully approached. The following section discusses self-confidence and self-efficacy.

5.2.1.1 Role of self-efficacy

There is little in the literature about the role of confidence, self-efficacy and WBT. There is a prolific theoretical literature covering the role of self-efficacy in teaching more generally. Self-efficacy is defined as “A judgement of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated.” (Tschannen-Moran & Hoy 2001).

It would appear from the interviews which were undertaken that self-efficacy has a strong role to play in WBT as well. The issue of self-efficacy explicitly arose in one interview, (Participant E) and to a lesser extent is raised in the literature as many teachers had concerns about how to manage online courses.

A number of participants mentioned lack of confidence (Participants E, N, H, and A) – either their own, or others - in managing their online classes. Schunk (1991, p. 212) claims that self-efficacy and
self-confidence are similar, and that self-confidence “is akin to self-efficacy”. If this is the case it would appear that increasing teacher confidence by providing skills training for online work would increase the feelings of self-efficacy, and may encourage more teachers to teach. There appear to be some difficulties in training delivery which are discussed in a later section of this chapter.

5.2.1.2 Role of intrinsic motivation
Motivation and human behaviour have long been a rich ground for theorists. Deci and Ryan’s “Self determination theory” (Deci & Ryan, 1985) has been selected as providing the most robust, useful and respected lens for examining teacher motivation for taking up WBT. Deci and Ryan (1985) are heavily cited in the literature of teacher motivation as well as taking a leading role in motivational theory more broadly. According to Deci and Ryan, “The need for competence and self-determination motivate the ongoing process of elaborating the internal, unified structure of self through the continual integration of internal and external stimuli.” (1985, p. 9)

In the case being studied the teachers who were enthusiastic about teaching online spoke with some passion about their WBT work and often linked this to a broader passion for teaching more generally. For instance, one pointed out that: “I like what I do, and I like the kids, and I enjoy the subjects that I teach, and I get a buzz out of it, and I like to do something different...” . Later in the same interview Participant E said “...its good fun. Yeah, I guess that’s the fact of it, I do enjoy it, ... if I can arrange it so that I enjoy what I’m doing, I do it.” (Participant E - Lines 982 - 984)

Participant L asserted that “For me it’s easy I think I enjoy the challenge of being able to devise a social system using online tools and getting the response.” (Participant L - Lines 220 - 201)

Participant G declared:

I’d be making a hell of a lot more money being a <identifying detail removed>... rather than being a teacher. But you know, as far as I’m concerned, I’ve got a lot to learn here, and that’s where I want to be (Participant G - Lines 429 - 432).

Not a single participant mentioned extra payment, promotion or any other extrinsic reward when asked their opinion about what the University might do to encourage more WBT. In fact, one of the participants was adamant that there should be no extra payment, saying:

My answer would be absolutely not, absolutely not because you are setting a precedent, if you do online and you’re paid more then why shouldn’t we do research and get paid more,
why shouldn’t we do that and get paid more, nope, ... again, personal opinion, but no
(Participant M – Lines 513 - 517).

There is a mixed view in the literature on barriers and enhancers on the matter of financial rewards. Research by Schifter (2002) and Rockwell (1999) demonstrated that administrators were of the opinion that financial rewards were important, while teachers generally saw these rewards as less important. On the other hand Berge (2003), Maguire (2005) and Newton (2003) reported that teachers thought that lack of financial rewards was a significant barrier to the adoption of WBT.

There were also a few teachers who saw the MOP initiative as a positive encouragement. Participant D said:

The idea of automatically generating an empty Blackboard shell, which, by definition has nothing in it, for a course, is pointless, however, the first order effect is, once it's there, the students say, ..., so therefore that is going to engender a driver for people to put something there, and, thereby, if it's properly supported, you should see an improvement in what people put in there, ... their first attempt is terrible, the second attempt is better...
(Participant D - Lines 792 - 798)

It would appear that teachers were not informed about the necessity of an online presence, as they seldom mentioned it. In some cases, participants would refer to the policy dismissively, or the policy appeared to be inconsequential to the participant.

Deci and Ryan are clear about the role of compulsion as a motivator. They maintain that the most powerful motivators are internal, and intrinsic to the action which is taken. An external force such as a policy which specifies that WBT must be undertaken is an extrinsic motivator (Bess, 1997, p. 63), and following Deci and Ryan’s principles is likely to act as a disincentive rather than an incentive.

However in the light of Deci and Ryan’s Self Determination Theory it appears more likely that the compulsion to conform with the policy at the case University was minimised by administrators as well as teachers, thereby allowing teachers the “space” to be self-motivated. The teachers’ lack of engagement with the policy was demonstrated by their lack of interest in discussing the policy, or outright dismissal if they were aware of it, or in some cases lack of awareness of the policy. At the same time, the creation of the Minimum Online Presence shell for each course provided a student
driven motivator as well as a starting point for those who may have been more reticent about creating a beginning shell themselves.

5.2.1.3 Training and self-confidence
There is a consistent call from participants in this study and the literature more generally for more training. According to Young and Bippus (2008) increased training increases self-efficacy and confidence. In spite of this, the teachers who were enthusiastic about WBT generally received no more formal training than those who expressed less positive approaches to teaching online. It does not appear possible to demonstrate that more training results in a higher level of adoption. A thorough literature search did not reveal any research which made such a link, or attempted to make this association.

5.2.1.4 Technical infrastructure and self-confidence
The reliability, ease of use and accessibility of the necessary technical infrastructure, such as software, hardware and a robust network have a direct effect on the level of self-confidence of a teacher. The relationship between these factors and self-confidence is outlined below.

5.2.1.4.1 Reliability
Several participants reported the difficulties they had when the Learning Management System (LMS) was not available for two weeks several years before the study. They spoke with some passion and vigor of the embarrassment of standing in front of a class of 30 or more students and not being able to carry out the planned lesson due to the system problems. This embarrassment undermined their self-confidence and willingness to invest further time and effort into WBT.

5.2.1.5 Institutional policy and self-confidence
Although there is no direct link between institutional policy and self-confidence, there are several ways that institutional policy might indirectly support enhanced self-confidence. The first of these is a relationship of institutional policy with the support and provision of training which is described under the training section below. There is also an indirect link of institutional policy through the provision of a robust information technology system.
5.2.2 Possible alternatives to a linkage between self-confidence and adoption

There are some possible alternative explanations for the apparent key role of self-confidence in the adoption decisions of teachers in relation to WBT. Several of these are listed below.

5.2.2.1 Teachers are confident about WBT, but choose not to exploit WBT for other reasons
It is feasible that teachers do feel confident about WBT but choose not to adopt WBT for other reasons. While this may be possible in some cases, in the group of teachers interviewed, particularly those who were unenthusiastic about WBT there was no indication that they did feel confident with WBT. Nor do other studies indicate that those who are confident concerning their ability with WBT choose not to do so. In contrast all of the enthusiastic WBT teachers did demonstrate a great deal of confidence in their abilities in WBT.

5.2.2.2 Self-Confidence is an artefact of success
It is possible that the self-confidence demonstrated is an artefact of the WBT success that teachers experience and that the confidence is a by-product of their success and not a driver of WBT adoption. It is rational that a teacher’s self-confidence would be increased after a period of successful WBT experience, but that does not explain why none of the participants who were uncommitted spoke about their self-confidence in using WBT.

5.2.3 Summary – The role of self-confidence in teachers’ adoption decisions
It appears that self-confidence in relation to WBT is a critical factor in the adoption of WBT by a teacher. This self-confidence is self-perpetuating in that it builds on successful experience. It appears to encourage not just a greater quantum of use but perhaps more adventurous and innovative use of WBT which in turn encourages more time-effective, efficient and engaging use of WBT by the teacher.
5.3 Theme 2: Time as an enabler

5.3.1 Time and its role


This focus on “lack of time” in prior research may be a result of the quantitative approach taken, and the prompted nature of the questionnaire format used in most studies, which often was couched in language such as “On a scale of 1 to 7, rate how strong a barrier time is” (Betts, 1998, p. 241). Perhaps the survey based research done in the past has masked the advantages of flexibility of time which was revealed by this research. In this study, the less experienced teachers all regarded time as a constraint, but several of the experienced teachers did not see time as a problem. Instead they saw the flexibility of working hours which WBT provided them as an important factor in encouraging them to teach online.

The self-confidence of teachers who managed to teach in a time-effective manner appeared self-perpetuating. The more experience they had in teaching effectively with WBT, the greater the apparent frequency of use of alternative delivery instruments such as blogs, wikis and online quizzes.

In addition these “enthusiasts” appeared to use them more effectively as a result of this experience. This in turn led to more positive experiences for these teachers, boosting self-confidence and encouraging more active and ultimately more effective use of WBT.

Both the literature and participants confirmed that training is desired by teachers, and recommended by experts. Training prior to, or early in the teaching online experience produces more effective and efficient online teaching. The case being studied does not provide a coherent cross-university program of training for online teaching. In many cases time away from teaching duties to undertake the training is not available, especially for “sessional” (or part-time) staff.
5.3.2 The temporal advantage of WBT

A striking finding of this study was the discovery that several participants found the flexibility of working times a distinct advantage of WBT. This might be expressed as a “temporal advantage" of WBT. These were enthusiastic, experienced teachers who had been using WBT for a considerable amount of time, and had highly developed techniques to deal with the issues that less experienced teachers reported as a problem, such as time to reply to student questions. When reviewing both the transcripts and the audio recordings of both enthusiastic teachers and uncommitted teachers there was a striking difference in the language they used as well as tone and demeanor when speaking about “time”. The enthusiasts were positive, emphatic and specific about the time benefits they saw as inherent to WBT, and were confident about their own abilities with WBT.

The less enthusiastic teachers who self-reported a low level of WBT often saw time as a problem. One inexperienced participant said : “It’s going to be time consuming. I don’t know how difficult it is yet, because we haven’t actually done it (Participant K – Lines 524 - 525).

This identification of time as an enabler is in contrast to other studies, and especially the quantitative, survey based studies which often placed more emphasis on time as an inhibitor rather than an enabler. This provides an example of the manner in which quantitative research can investigate deeper meanings in a way which a survey cannot. An illustration of this can be seen in the Betts survey, ( Betts, 1998, Appendix A), which was subsequently used by others (Schifter 2000, Hislop 2004). In this case, Betts had a single question which covered two aspects of WBT (“Working conditions (Hours, location)”) (p. 4) in the section to do with motivators, but two questions (“1. Lack of release time:” and “5. Concern about faculty workload”) in the section to do with inhibitors (p. 5).

In another example of how time is cast as a problem is in the Maguire meta-analysis (2005). In this collection of studies, time is raised as an a issue in four categories within the “Barriers “(p. 4) section of the study (“Concerns about faculty workload”, “Lack of release time”, “Time taken away from research”, “Lack of time to develop and maintain course material”), but only mentioned once (“Optimal working conditions”) in the “Enablers” (p. 5) section of the literature analysis.
5.3.6 Alternative explanations to lack of knowledge and the time advantages

There are a number of possible alternate explanations regarding why teachers do not take advantage of the potential temporal advantages of WBT.

5.3.6.1 Time advantage is illusory

It is possible that the advantages of flexibility of working time are not great enough to warrant teachers taking up WBT, or that such advantages are non-existent and that other factors have meant that the “enthusiastic” teachers have been optimistic about the temporal advantages which are possible. Previous studies on time and WBT generally investigate the total time taken, and do not explore the distribution of the teaching time. Those studies that measure total teaching time indicate that more time is required to deliver teaching via WBT however there are a few studies which indicate that less time is required particularly second iterations (and beyond) of the same course. No studies were sighted which discussed or considered the issue of flexibility of time as opposed to the total quantum of time

5.3.6.2 May know of time advantage but still choose not to undertake WBT

It could be the case that teachers are aware of the temporal advantages but choose not to practice WBT for other reasons. This would appear to be an unlikely explanation as the “uncommitted” teachers seemed unaware of the possible time advantages. Temporal advantage was not raised by any of the uncommitted teachers

5.3.7 Summary – lack of knowledge and the time advantage

It appears that it would be worthwhile for the case University to tackle the issue of “time” as an inhibitor if it wishes to encourage more online teaching. The fact that time can also acts as an enabler provides an opportunity to convert a negative factor into a positive influence. There are a number of actions which could be taken if the University wishes to encourage more WBT. These are outlined in the following chapter.
5.4 Theme 3: Role of training

It might be assumed that training would overcome or at least alleviate some of the issues raised in the sections to do with “Time” and “Self-confidence” above. Specifically, it might be assumed that quality training would support a more time efficient approached to WBT and that quality training would improve self-confidence and self-efficacy.


At the case being studied training (often expressed as “support”) was raised as an issue. This need was often expressed as a need for “support” but further questioning revealed that participants often regarded support and training as being interchangeable. There appear to be institutional problems around identifying which unit in the organization has responsibility for training.

5.4.1 Training delivery

At the case being studied training is somewhat dispersed. The University handles in-house training and support for WBT in a decentralized manner, with a number of different groups across the University responsible for various aspects of support (including training) for teachers creating online materials, or learning about how to teach online. There are support groups at the College level, there is a central educational technology support group (Edutag), the School of Education teaches aspects of WBT to new teaching staff within a Graduate Diploma of Tertiary Teaching and Learning and the University’s Information Technology section also provides some training.

5.4.1.1 Role of the Academic Development Group

The case University is organized into three Colleges, each of which is responsible for about 20,000 students. The three Colleges each has an Academic Development Group (ADG) which has some responsibility for professional development within their College. This responsibility is not clearly delineated in any formal University policy or procedures document. The College groups, while varying in the type of work they perform are generally responsible for curriculum development (in
conjunction with teaching staff), educational design, creating educational media objects and assisting with matters such as supporting program approval documentation, as well as training.

The websites of the Academic Development Groups within each College provide an indication of the lack of clarity around responsibility for training. In the Design and Social Context College, the ADG group is responsible for: “The development of a culture of teaching and learning that supports and ensures programs are high quality, relevant and viable through building staff capability, expertise and knowledge” (http://www.rmit.edu.au/dsc/learningteachingacademicservices). In the College of Business, the group with the same title: “advises and provides support to the Business College on all aspects of learning and teaching. We provide informal advice and facilitate information/training sessions in a wide range of areas” (http://www.rmit.edu.au/bus/adg), and in the College of Science, Engineering and Health, the group “is responsible for the implementation of the University's vision for learning and teaching” (http://www.rmit.edu.au/seh/learningteaching).

A careful reading of the above website extracts reveals something of the different approaches. The first (the College of Design and Social Context, the College group is responsible to “develop a culture...”), while in the College of Business, the group “advises and provides support”, and in the third College, Science, Engineering and Health the group “is responsible for implementation”. The use of the verbs and verb phrases “develop”, “advise” and “responsible for the implementation” appear to place responsibility for outcomes on different parties.

5.4.1.2 Central training groups
Beyond the College based groups, there are also central units which have a stated responsibility for training. For instance, the Information Technology Services training group states “The mission of the ITS Training team is to improve the effectiveness of all RMIT staff through software training” (http://www.rmit.edu.au/its/training). This section provides some hands-on training in specific and well defined areas, such as a three hour course in using assessment tools in Blackboard, the University’s Learning Management System. The Information Technology training team cover the more basic end of the training spectrum. An example can be seen on the course outline for a course on using at Blackboard assessment features at: http://www.rmit.edu.au/browse;ID=4ntclxwyid3n.
The learning outcomes include:

- Create a content area
- Create a pool of assessment questions
- Create a test based on a pool of questions
- Use the Blackboard Gradebook to view and modify assessment results
- Create surveys to obtain student opinion
- Create Assignments for students
- Grade Assignments for students.

While fulfilling an obvious need, they do not go into the more pedagogical, or “techno-pedagogical” issues. The term “techno-pedagogical” is used to cover those aspects of online teaching which are at a more complex level than basic IT skills, but still not at a theoretical level. This might include skills such as monitoring and participating in forums, creating formative, interactive quizzing tools, reusing content and maintaining engagement with students at a distance.

5.4.1.3 Graduate Diploma of Tertiary Teaching and Learning
The University offers a Graduate Diploma of Tertiary Teaching and Learning, which is a qualification in tertiary teaching (Tertiary Teaching and Learning – Graduate Certificate, 2011), dealing with a wide range of topics such as learning styles and assessment principles. All new Associate Lecturers and Lecturers (these are the entry level gradings for academic staff) are required to undertake this course. The course is described in the Course Guide as:

The program provides opportunities for you to explore issues in tertiary learning and teaching, course design, assessment and creative problem solving in the context of current and emerging professional practice. Building on professional practice and providing opportunities for you to shape the program around your needs and experiences of teaching in a tertiary environment, is a key feature of the graduate certificate (TTL) (Tertiary Teaching and Learning – Graduate Certificate, 2011).

Nowhere in the course guide is WBT explicitly mentioned, although at least one participant (Participant J) mentioned that there is some teaching of WBT in this course.
In spite of this considerable resources devoted to training in the area of online teaching, due to the highly devolved support and training effort, there is no single centrally located or co-ordinated group with the responsibility to insure that training is appropriate and targeted.

### 5.4.2 Possible alternatives to current training delivery

There are a number of actions which the University could undertake to improve training provision for online teaching. These include:

#### 5.4.2.1 Centralise responsibility for learning about online teaching across the University

Establishing agreement on what constitutes adequate preparation and knowledge to do WBT would enable the various training units to support each other, and provide a clear pathway for teachers, with no unnecessary overlap or gaps, or duplication of effort. Assumption of this responsibility may also encourage a single unit to maintain an overview of training programs and establish standards and consistent practice the teacher training. This establishment of standards for training of teachers could also have an added benefit of becoming the basis for a set of WBT standards for teaching students.

It would appear that the University will find it more effective if it co-ordinates training for WBT at all levels (from technical, through techno-pedagogy to pedagogical), with a progression which recognizes each teacher’s skill level and knowledge at the School and Program levels.

The lack of co-ordinated training results in fewer teachers undertaking training, leading to less efficient on-line teaching, which in turn takes more time, allowing less time for training. Conversely, allowing sufficient time for initial training, mentoring and support may increase not just the effectiveness of the WBT which takes place for students and teachers, but also ultimately result in cost savings as the hoped for efficiency of WBT might be at least partially realized.

Comments by a number of teachers indicated problems with training. One experienced “teacher of teachers” (for a number of years, this participant had taught a course in how to teach online) mentioned two particular aspects that training could remediate:

Lack of confidence and lack of knowledge of the skills. ... I think older teachers haven’t the ease and confidence with new technologies so that explains that. Then you would say okay well the digital natives the young generation they’ve grown up with technologies they won’t have any problem, they actually do have problems they have different problems which is
that they are so used to it for social networking that they can't think about it as a formal tool and they don’t think about using it in teaching and learning so they don’t really think about the technology they just use it to connect and they haven’t done a deeper study of the technology and they’ve got no sense of the connection of the technology and sort of pedagogical issues so if they're inexperienced in relation to the relationship because it's a two sided thing you need to know both the technology and understand its usage and you have to understand how that connects with teaching and learning issues (Participant N – Lines 35 - 49).

Other teachers were more specific about the type of training needed - one suggested:

If you had short, sharp, quick stuff – maybe a couple of hours – you know, here’s four people available, come back and look – run those four people through and see what our quick session – give them the basics, not the whole nuts and bolts, then they can go away and play… (Participant K – Lines 906 - 910).

5.4.2.2 Mentoring
A form of training and support which was mentioned by a number of participants was mentoring, or some other form of local, appropriately contextualized support, offered by peers. During the original introduction of the LMS, a mentoring system was established. This system depended upon nominated academic staff in a number of areas who were provided with in-depth training, and then limited time release to support other academic staff in their area in implementing WBT. A majority of participants spoke about the previous mentoring effort – almost all spoke of the experience positively and usually without any prompting.

One interview, Participant L, explained his experience in this way:

I would really agree with that as a technology mentor because I actually have one. W[full name deleted] ... ‘W’ was the default mentor. I sort of hit it off with him and he was really friendly - he was keen to push that in terms of people taking it up and using it and the electronics and the whole thing so despite the fact that I vented all sorts of frustrations having to fill out 8 pages of your credit crap ... just to get a Blackboard shell. Whenever I had a problem ... “W” how do I do this?” I didn’t bother looking to the manual ... anyway it wasn’t useful and it was referring you to 50 other places so I’d just say ““W” how do you do this?” and ‘W’ was great he would come over sometimes and actually show me how to do it.
If there was some obscure Blackboard function, “how do I reset the columns?”, “how do I do this?”, ‘W’ would know …I would say that a Blackboard IT mentor who was actually approachable in person on that locale that people could talk to would be good but they’d have to be a friendly person (Participant L – Lines 780 - 795).

In some cases those acting as mentors explained the role:

One of the things that I do is work with the tutors so that I’m monitoring the sort of dynamic of the online ...the virtual campus and talking to them about maybe problems that they’re having if the dynamics of the groups drop or what else we can do or whether they want me to set something up for them to take it to a next step or jumping in sometimes... (Participant N – Lines 557 - 562).

One participant who also had experience in supporting WBT at another institution explained how the mentoring role was not always set up formally, or provided an explicit basis:

Yeah, come and have a look and see what’s going on or actually the course Chair might ask me to have a look at it and say that looks like a bit of a slump what do you think we can do there or the students might come and say our group’s not having a good discussion and so I’ll set up a discussion somewhere else and others will come in....What’s fascinating with that is it’s a sort of mentoring role that I’m playing because I’m drawing on years of experience both as student and tutor and facilitator and consultant to pick up the clues in the online environment and I have a bag of strategies - what I’ll do or how I read this or that but because I’m also actively involved in some aspects of teaching of the course and extra activities and for the sort of more higher end students I’m really part of the dynamic so I can follow it. I think one of the very hard things with online courses is for somebody outside the course to see what’s happening (Participant N – Lines 573 - 586).

The informality of the mentoring arrangements were often commented upon – some of the key features were physical proximity, and an understanding of the teaching context, personal trust, and an ability to engage with the mentor briefly and quickly:

I mean I actually went along to this Wiki thing that he did, there’s been a few sessions like that, that we know he is always available so that when you need to, when you feel that’s it’s
appropriate you can go along and sort of get that reasonably quick training (Participant F – Lines 664 - 668).

Another version of mentoring is peer support – this is “a system whereby older or more experienced members of an organisation, school, group, etc., are assigned to provide support” (Macquarie Dictionary 2005, n.p.). A number of participants used or offered peer support in their WBT work:

- There’s also a lot of peer support can happen – if the people around you are saying “hey look – this is what I’ve done – this has worked really well” – you are more inclined to have a go yourself (Participant B – Lines 21 - 424).
- Yes- they need to talk to each other – just little corridor conversations - saying ‘This is what I’ve done, and this worked- and probably more importantly ‘this is what I’ve just done and it didn’t work’ (Participant B – Lines 436 - 438).
- [I] know straight away that if I was sitting with them for two hours in their office, and asked them to show me their material, in another four hours I’d be able to just create an online program ..., and I wouldn’t take long, but just only somebody with expertise and I can say, oh that’s your material, what do you want to get out of that material – do they want to know how to do this and this, (Participant G – Lines 436 - 452).

There were some dissenting voices to the concept of mentoring, usually to do with how the particular local mentor handled their responsibilities during the past mentoring arrangement:

- They were sent away, and their time was back-filled, and then they’d come back, and it didn’t sort of – I assumed that RMIT thought that they would then encourage everybody to do what they’d done in their time they spent away with the teachers, but it didn’t happen (Participant I – Lines 180 - 183).
- This was tried 2 years ago, but they “passed on their own attitudes”… [They] didn’t set themselves up as support service within School (e-tag discussion).

In summary, peer support, or mentoring have been seen to be an effective mechanism for improving skill levels in teachers. This is true both for other institutions and for the University being studied.
5.5 Theme 4: Institutional support

Institutional support is a term which is used extensively in the literature concerned with the adoption of WBT. In many cases it refers to policy support (Berge 2003) but in common usage the term support could indicate many types of support. These might include policy support, support for training, the provision of time release for teachers to learn about, prepare for or deliver WBT or paying teachers a supplementary amount for delivering WBT.

Careful and critical analysis of the data produced from this investigation indicates that institutional support expressed through the means listed above is a consistent thread in the factors which motivate teachers to take up WBT. A frank view of institutional support for WBT at the University being studied reveals a somewhat uneven expression of support for WBT. Some of the positive elements of this support include:

- A stated aim that there should be more WBT: The Organisational Review (Review report : support systems and processes for effective use of educational technology 2005) explicitly called for each course to have an online presence. This was an unequivocal statement that there should be more WBT.

- Extensive provision of the necessary infrastructure for WBT: While the cost of individual components within the case University information technology system is not made openly available, an indication of the effort put into information technology can be seen from the staff complement of 267 staff, the largest service unit in the university, which is also larger than any academic School (RMIT University, Monthly management report- February 2012 p. 24).

- Extensive provision of support at many levels: As well as the support groups described above in Section3.4 each School (or which there are 20) has an academic staff member who has responsibility for quality teaching, including the provision of WBT.

Against these positive elements are some factors which appear to be less supportive of WBT. These factors include:
• A lack of any agreed benchmark of WBT activity: There is no benchmark for what is “enough” WBT, or when WBT is of sufficient quality.

• Lack of central co-ordination of WBT support: As outlined above in Section 3.4 there is no central co-ordination of support, especially for creating WBT resources. Central co-ordination of resources may encourage sharing of learning objects and minimize duplication. The central co-ordination of learning resource creation and support may allow for a focus on staff specialization in certain areas. This could take encourage the development of staff expertise in specific areas such as assessment design or curriculum which takes advantage of WBT.

• Lack of central co-ordination of WBT training: Centralised support for WBT training could result in more efficient use of training resources and a co-ordinated and coherent pathway for teachers to develop WBT skills.

5.5.1 How institutional support influences adoption decisions

Many authors (Berge 2003d, McLendon 1999, Maguire 2005, Zhen, Garthwaite & Pratt 2008) as well as this study have found that institutional support is an important element in teachers’ adoption decisions. This support is expressed through policy, financial investment in systems and the provision of training and support personnel.

5.5.1.1 How institutional support impacts on self-confidence

Institutional support influences self-confidence indirectly through several other factors. These factors are grouped into policy support, training support and technical infrastructure.

5.5.1.1.1 How institutional support influences self-confidence through policy

The support of the institution for WBT expresses itself through policy in several ways. These include:

• Formal promulgation of the policy on online teaching: Although the University has a policy that all courses must have an online presence, there were few participants who either were aware of this policy or chose to mention the policy unprompted. Several researchers, such as Berge (2003) and Gellman-Danley and Fetzner (1998) investigated the place of policy in encouraging WBT and both studies concluded that policy changes could be the most effective way to institute change toward WBT in higher education. The participants of this study appeared demonstrate that in spite of policy support for WBT there was little
recognition of this policy support, and participants did not indicate that this policy was a significant factor in their decision to adopt WBT.

- **Formal recognition of WBT**: The tenor of the discussion with a number of participants was that WBT was something of a hidden or private activity. Formal recognition of WBT through specific teaching awards, token reward payments (remaining at a relatively low monetary level to avoid the problems of extrinsic motivation) or other institutional recognition may encourage more WBT.

- **Time release for learning about, creating resources and teaching online**: Lack of time was a frequent reason provided for not adopting WBT. Formal time release support where a teacher can be taken away from classroom duties for a set period would have several effects. It would send a clear message about institutional direction and support and it would make time in the teacher’s schedule to fulfil their WBT duties.

5.5.1.1.2 How institutional support impacts on self-confidence through training support

Institutional support can be clearly expressed through training support. This support could take the form of a clear pathway for teachers to gain a comprehensive knowledge about WBT. It could also be expressed through an analysis of training needs and the resources currently devoted to training, including comparison with others. If it was seen that additional resources were needed, or that current resources needed to be realigned this could then be done.

5.5.1.1.3 How institutional support influences self-confidence through technical infrastructure

A number of participants referred to technical problems including lack of classroom workstation, LMS unreliability and LMS interfaces which are difficult to use. Many of these same participants were amongst the “uncommitted” group. It would appear that improved technical infrastructure might assist teachers to have more confidence in the systems, and more confidence in their ability if the institution devoted more support to technical infrastructure. As a preliminary step it may be worthwhile for the institution to establish benchmarks for system availability and compare expenditure and results to other similar institutions.
5.5.2 An alternative to the argument that more institutional support is required

It could be claimed that policy support for WBT does not in itself encourage adoption, as the case University already has a mandatory policy that WBT takes place for each course and there was still a perception that adoption was lower than was desirable. However, it could be argued that the policy is not well known or understood, or that there is an ineffective implementation of the policy due to more communication, or lack of resources, such as training to support the policy implementation.

5.5.3 Summary – institutional support

While the institution being studied does have both policy and training support for WBT, it appears that this may not be having the desired impact. This may be because the policy regarding each course having a WBT presence is not widely known, or because the policy neither rewards nor punishes teachers for conformance or non-conformance with the policy. It is also possible that policy is not fully supported financially, and that additional investment is required.

5.6 Conclusion

This chapter discussed the implications of the findings provided in the previous chapter, and places these into a number of themes. These themes reveal issues such as self-confidence, time and institutional support are all important factors in teachers’ adoption decisions. These themes are inter-related and when working in concert can support teachers to adopt WBT, or conversely when they are not all present to some degree work against the adoption of WBT. The next and final chapter briefly provides a summary of the research undertaken.

There are many variations to the way in which teachers work online and some appear more time efficient than others. If teachers do adopt an online mode which allows them to work effectively they are more likely to further develop their online teaching skills and find this mode more effective, more rewarding and less time consuming. This can only happen if they receive adequate support, especially in the form of training and time to undertake training. It would appear that ensuring teachers understand the importance of online teaching to the institution is an important element in the successful implementation of this mode of delivery. When teachers can see commitment and practical support for online teaching there will be a greater rate of WBT adoption.
Chapter 6 - Conclusion and recommendations

6.1 Introduction
This chapter summarises the study which precedes. Limitations to the research undertaken are outlined, and recommendations made for further research. Recommendations are listed and grouped into several broad thematic categories.

6.2 Limitations
There are a number of limitations to this research. This study investigated one large Australian University at a single point of time. The method used in this study was qualitative in nature.

These results are not generalizable due to these factors, in particular due to the qualitative nature of the study. In spite of this, the study provides an insight to the adoption process and factors which can be tested elsewhere, following the same methods outlined in the Chapter 3, Research Design.

The technology used in WBT has matured since the beginning of the study with the institution being studied making major changes to the hardware infrastructure by moving to a “hosted” environment. There have been no further significant outages of the system and this greater degree of reliability may have ameliorated some of the concerns around technical issues. As a result of this increased reliability it may be the case that the issues of “time” and “self-confidence” have an increased importance relative to the technical issues which were raised by some participants.

6.3 Further research

6.3.1 Geographic and institutional differences
Further research might explore whether the same influences, especially that of self-confidence apply to teachers’ adoption decisions in other institutions or other countries.

6.3.2 Gender and age
There appears to be little or no research into the effect of variables such as gender, age or teaching experience on teachers’ adoption decisions. There has been some research into gender (Gefen & Staub 1997, Brown, Benson & Uhde 2004) and technology adoption models such as TAM, but there appears to have been little done on gender and WBT. In regard to age of teacher, investigations into
the adoption rate of younger teachers who have had a much earlier exposure to technology may prove fruitful.

6.3.3 Replication of a qualitative approach at other sites

It would be worthwhile to replicate this research at other sites, within and beyond Australia. In particular, the use of a qualitative approach would be fruitful, as there are few studies which have used this methodology, and some of the more significant findings arose out of the qualitative approach. The qualitative approach raised adoption barriers which have not arisen in other studies, particularly around self-confidence. It would be useful to test the role of self-confidence in other settings, particularly at other universities.

6.3.4 Testing the effect of technological change

Over the past ten years the technology used for creating and managing WBT has become easier to use, and bandwidth and hardware are less expensive than they were in the past. During interviews, several participants asked whether this reduction in cost, coupled with a perceived increase in familiarity with technology has resulted in fewer barriers to adoption of WBT. Further research into the effects of changing technology may be of value.

6.3.6 Testing the effectiveness of training

While this study and many others suggest that increased training is required, there has been limited investigation into the effectiveness of training which has been provided at this, or other institutions in the past. There has also been little investigation of teachers’ actual, as opposed to perceived training needs. There are a number of areas which would be useful to test, such as:

- Further research could investigate the perceived effectiveness of training which has been offered at this, another institution or a series of institutions.

- An examination into whether training can raise self-confidence and teacher self-efficacy would be valuable.

- An investigation into the congruence of teachers’ stated training needs, and their training needs as defined by an independent, knowledgeable observer.

- Research could also be undertaken into whether a greater quantity of WBT was offered or whether the WBT undertaken was more effective after training of teachers.
Training is expensive and time consuming – a critical analysis of the effects of training may prove of great value to the sector in general.

6.3.7 Importance of self-confidence

This study identified self-confidence as a significant factor in the adoption of WBT. Alternative approaches to exploring the role of self-confidence in the adoption of WBT would provide useful triangulation, and may establish the need or otherwise to examine ways in which teacher confidence in their own ability to carry out WBT can be enhanced.

6.4 Recommendations

Following are a number of recommendations for action which may encourage greater adoption of WBT at the institution being studied. These are placed into general themes which are summarized in the following section. All of these major themes have the common factor of “support”. One of the findings of the investigation was that self-confidence is a major factor in teachers’ WBT adoption decisions. While seldom expressed directly, there is clear evidence that self-confidence lay at the heart of many teachers’ adoption decisions.

Boosting self-confidence in a teacher’s ability to participate in WBT is neither quick, nor straightforward. The key to boosting self-confidence will be a greater manifestation of institutional support, expressed in a number of practical ways which are listed in the following section.

6.4.1 Time

Recommendation 1:

That sufficient time be allowed for teachers to learn about, create resources and carry out WBT.

Throughout this study the concept of “time” was frequently raised and discussed. There are a number of ways in which the University could encourage teacher adoption of WBT by allocating more time for teachers to learn about, create resources and actually teach online.

This would start with allowing time-release (that is, having teaching duties handled by another teacher) while learning about WBT. Time could also be allocated for course conceptualization and creation, and once web-based teaching commenced, the workload allocation model could allow sufficient time for this mode of teaching.
This provision of time for teachers to carry out the duties associated with WBT would allow teachers the opportunity to build self-confidence, in addition to making a clear statement that the institution values and encourages WBT.

### 6.4.2 Providing training

**Recommendation 2:**

*That the provision of training for WBT be reviewed and if necessary amended.*

In this study, as in many others, “lack of training” was frequently raised by participants. In many cases the participant was not clear about what sort of training was required. Experienced teachers did emphasize the need for different types of training. It was clear from discussion that a full spectrum of training should be provided, from the mechanistic aspects of how to use the LMS to the pedagogical and conceptual dimensions of WBT.

It is recommended that the existing training program be extended and consolidated, so it presents a consistent program which covers the full spectrum of training. In addition training needs to be updated as new tools, such as different types of editing software become available, or existing software and systems are updated. Consideration could be given to providing as much training online as possible. This would provide teachers a chance to explore the online environment, as well as making it more likely that casual teachers who are normally off-campus when not teaching would participate. The training would provide an opportunity to boost self-confidence and point out the intrinsic benefits enjoyed by others who employ WBT.

Participants had a wide range of viewpoints toward time and WBT. Some experienced teachers found that WBT provided temporal flexibility and preferred working online because of this flexibility. Conversely some inexperienced teachers felt that WBT was too time consuming. It is recommended that any training which is provided addresses the most time effective ways to teach online and ensures that teachers are of the possible flexibility allowed by WBT.

### 6.4.3 Providing technical support

**Recommendation 3:**

*That additional technical support be provided for the creation of course material.*
The University would benefit from providing more technical support to teachers using WBT. A number of comments were arrayed around the provision of technical support. Additional technical support, especially around course material creation would streamline production of learning resources, and may improve the quality of these materials. Providing additional support for production would have the added benefit of making teachers available for the actual teaching, rather than learning skills which others may already possess.

6.4.4 Providing local mentors

_Recommendation 4:_

_That a local WBT mentor program be established._

Another type of support which was highly valued by participants was that of local mentors. It would appear that coaching or mentoring has the potential to boost self-efficacy and self-confidence. These mentors would have an ongoing and contextualized relationship with the teacher who is learning about WBT. They can provide quick advice or guidance at the point of need, and often understand the discipline in which the WBT is taking place. In the past it appears there were occasions when the mentor did not pass information back to colleagues, or provide the required support. In order to avoid a repetition of these problems it is suggested that mentors be competitively selected, be given either time release or pay stipends and be provided with training in both WBT as well as mentorship.

6.5 Conclusion

This study used a qualitative approach to examine the factors which influenced teachers in their adoption decision for WBT, at one Australian university. The research confirmed a number of issues which previous quantitative studies identified. Amongst these issues was the importance of training and the need for teachers to be provided with the time required to learn about, develop resources and deliver WBT. As well as confirming the importance of these barriers, this work found that teacher self-confidence plays an important role in teachers’ adoption decisions.
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Appendices

Appendix 1: Ethics approval

Appendix 2: “Plain English “statement for participants

Appendix 3: Consent form

Appendix 4: Interview schedule

Appendix 5: Final coding schema

Appendix 6: Glossary of terms
Appendix 1:

Ethics approval

[Image]

HRESC
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23 April 2007

Mr Craig Anderson

Re: Human Research Ethics Application – Register Number HREC A-005-01/07

The Design and Social Context Human Research Ethics Sub-Committee, at its meeting on 20th April 2007 considered your ethics application entitled “Barriers and enablers to teachers’ adoption of online teaching at RMIT University”.

I am pleased to advise that your application has been approved as Human Level 2 classification by the committee. This approval will now be reported to the University Human Research Ethics Committee for noting. Your ethics approval expires in June 2009

All data should be stored on University Network systems. These systems provide high levels of manageable security and data integrity, can provide secure remote access, are backed on a regular basis and can provide Disaster Recover processes should a large scale incident occur. The use of portable devices such as CD’s and memory sticks is valid for archiving, data transport where necessary and some works in progress. The authoritative copy of all current data should reside on appropriate network systems; and the Principal Investigator is responsible for the retention and storage of the original data pertaining to the project for a minimum period of five years.

You are reminded that an Annual/Final report is mandatory and should be forwarded to the Portfolio Ethics Subcommittee Secretary by mid-December 2007. This report is available from: URL: http://www.rmit.edu.au/rd/hrec_apply

Should you have any queries regarding your application please seek advice from the Chair of the sub-committee Professor Joseph Siracusa on (03) 9925 9921, joseph.siracusa@rmit.edu.au or contact Cheryl de Leon on (03) 9925 2974 or email cheryl.deleon@rmit.edu.au

I wish you well in your research.

Yours sincerely,

CHERYL C. DE LEON
Secretary
Human Research Ethics Sub-Committee
Design and Social Context

cc: Louise Prestice, Program Administrator (H/D by Research), School of Education
Appendix 2:

“Plain English” Statement for participants

University
Design and Social Context Portfolio
School of Education
Plain Language Statement to be used in a research project involving human participation

Dear <first name inserted>

My name is Craig Anderson. I am currently the Library Director, and work in the Deputy Vice Chancellor- Academic’s portfolio.

I am undertaking a PhD at RMIT University. The title of my research is “Barriers and enabling factors in online teaching at RMIT University”

Why this research is being done.

As you may be aware, online teaching has held great promise for our sector. It has shown that it can be more effective, and in some cases reduce costs. However, it appears that there is less uptake of online teaching than might be desirable. This research is being undertaken to establish whether there are any particular barriers to the uptake of online teaching, and what factors encourage or enable the uptake of this mode of teaching.

It is hoped that this investigation might be used to reduce or remove any barriers that might be present, and promote and encourage those practices, policies and condition which enhance online teaching.

By assisting with the research, you are helping to improve the provision of teaching at RMIT – and online teaching beyond RMIT.

Aims and brief background

This project is being conducted within the confines of RMIT University. Approximately 15 people will be interviewed, and documentary evidence collected. You have been approached because you have had, or may have some involvement with online teaching here at RMIT. Your views can help identify those factors which influence the uptake of online teaching.

I’d like to spend approximately one hour discussing your thoughts about online teaching at RMIT in a semi-structured interview. I’ll send you a brief list of the sorts of things which we will be discussing a few days beforehand. If you have no objection, I will audiotape our discussion simply to assist me in writing up notes of our discussion. These notes will be sent to you to insure they are accurate.
The audio tape will be stored securely for five years after the date of publication, and will be destroyed after that time. No one else will have access to this tape, and the notes of our discussion will be kept under lock and key in my office here at RMIT. Once the accuracy of my notes is confirmed, your name will be removed and replaced with a pseudonym, and all connection between yourself and the notes will be removed. If there are any identifying matters which arise during the interview, these will be altered in such a way that you cannot be identified.

I will constructing my material from the notes I make, however, I may share some details with either of my supervisors, Prof. Joyce Kirk, or Associate Professor Jim McGovern, both of RMIT. This would only be done after the notes have been made anonymous.

I may also be quoting from selected sections of my notes in the thesis itself – once again, all identifying details will be removed.

In some cases, for instance if you are just starting to teach on line, or are actively considering that you might, there may be a series of brief (approximately 30 minute) interviews over a period of a number of months, on a fortnightly basis. Naturally these would be done at the University, at your convenience.

Participation is entirely voluntary – you may decline to participate, or if you do choose to participate, you may withdraw at any time. At no stage will your participation, or decision not to participate, or decision to withdraw be discussed with anyone else at RMIT University.

Naturally, I’ll be glad to share my completed thesis with you – please let me know if you would like me to contact you when it is finished.

For further information please contact me on 9925 2543, or via e-mail at craig.anderson@rmit.edu.au, or in my office at Swanston Library – building 8, level 5. After hours I can be contacted on 9315 1090. I am employed at RMIT, and work in the Library, under the Deputy Vice Chancellor (Academic). Should you wish to contact my supervisor, Prof. Kirk can be contacted at 9925 1094, or via e-mail (joyce.kirk@rmit.edu.au), or via post at RMIT University, GPO Box 2476V, Melbourne 3001.

Craig Anderson

B. Science (Education), Grad. Dip Librarianship, Grad. Dip Management, Masters (Business Information Technology).

Any complaints about your participation in this project may be directed to the Secretary, RMIT Human Research Ethics Committee, University Secretariat, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 1745.

Details of the complaints procedure are available from: www.rmit.edu.au/council/hrec
Appendix 3:

Consent form

RMIT HUMAN RESEARCH ETHICS COMMITTEE

Prescribed Consent Form for Persons Participating in Research Projects Involving Interviews, Questionnaires, Focus Groups or Disclosure of Personal Information

PORTFOLIO OF Design and Social Context

SCHOOL/OF Education

Name of participant:

Project Title: Barriers and enabling factors in online teaching at RMIT University

Name(s) of investigator: Craig Anderson

Phone: 9925 2543

1. I have received a statement explaining the interview/questionnaire involved in this project.
2. I consent to participate in the above project, the particulars of which - including details of the interviews or questionnaires - have been explained to me.
3. I authorise the investigator or his or her assistant to interview me or administer a questionnaire.
4. I give my permission to be audio taped ☐ Yes ☐ No
5. I give my permission for my name or identity to be used ☐ Yes ☐ No
6. I acknowledge that:
   (a) Having read the Plain Language Statement, I agree to the general purpose, methods and demands of the study.
   (b) I have been informed that I am free to withdraw from the project at any time and to withdraw any unprocessed data previously supplied.
   (c) The project is for the purpose of research and/or teaching. It may not be of direct benefit to me.
   (d) The privacy of the information I provide will be safeguarded. However should information of a private nature need to be disclosed for moral, clinical or legal reasons, I will be given an opportunity to negotiate the terms of this disclosure.
   (e) The security of the research data is assured during and after completion of the study. The data collected during the study may be published, and a report of the project outcomes may be provided to professional journals, and as part of the written thesis document. Any information which may be used to identify me will not be used unless I have given my permission (see point 5).
Participant’s Consent

Name: ___________________________ Date: ___________________________

(Participant)

Name: ___________________________ Date: ___________________________

(Witness to signature)

Participants should be given a photocopy of this consent form after it has been signed.

Any complaints about your participation in this project may be directed to the Secretary, RMIT Human Research Ethics Committee, University Secretariat, RMIT, GPO Box 2476V, Melbourne, 3001. The telephone number is (03) 9925 1745.

details of the complaints procedure are available from: www.rmit.edu.au/council/hrec
Appendix 4:

Interview schedule

Guide to questions

Barriers and enabling factors in the uptake of online teaching at RMIT

October 2008

   How long have you been at RMIT?
   Have you taught online, and if so, for how long?
   (“Online” in this context includes having a basic online presence, or a totally online course, or anything in between)
   How do you think most teachers who are new to online teaching find it?

I’d like to talk about any difficulties you find in on-line teaching

   Have you encountered any barriers to teaching online?
   One commonly reported problem is lack of technical support –
      Have you found this a problem?
      If so, what sorts of issues need more support?
   Another commonly reported problem is lack of time for preparation or delivery
      Do you find that this is a problem?
      If so what could be done to overcome this?

Some teaching staff say that they have concerns that there may be subtle barriers to online teaching – for instance that they may not be supported by their School, that this teaching may not help them when they go for promotion, or that students may not like it – are these issues for you?

Are there other problems which we haven’t discussed, which might prevent teachers from teaching online?

Some commentators have noted that while many teachers may be teaching online, it is often in a minimal way – just as a distribution area for PowerPoint’s or articles - Do you think this is happening? If so, why?
I’d like to talk about things that encourage teachers to teach on-line

What are few examples of factors that have encouraged you (or others) to go into online delivery?

Have you gone into online mode for the intellectual stimulation?

Do you think the minimum online presence project acts as a strong incentive?

Are there any other factors that are currently acting as incentives?

Is there anything the University could do which would act as an incentive?

For those who already teach online, what would encourage them to be more active online?

More general questions:

If someone new was going to start in online delivery at RMIT, what would you advise them to do to get started? Or watch out for?

If there were just 3 things RMIT could do to encourage online delivery, what would those 3 things be?
Appendix 5:

Final coding schema

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<th>Broad category</th>
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<th>References</th>
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<td>Technical issues</td>
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Fear of.....
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Barriers and enablers to teachers’ adoption of online teaching at an Australian University

Appendices

Page 163
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Appendix 6:

Glossary of Terms

Blackboard:
Also known as Blackboard Learn. Learning management system provided by Blackboard Inc. of Washington D.C. (www.blackboard.com). During the investigation period of this study the institution being studied used version 7 and version 91. Of Blackboard Learn.

Blended Learning:
A combination of face to face and online or web-based learning.

CES:
Course experience survey – instrument used to measure student satisfaction at a course, or study unit level in the institution in which this investigation is set. A course in this context is normally a single unit of study conducted for one or two semesters with a single instructor, or team or instructors.

College:
The highest level academic unit at the case University being studied. There are three Colleges – Business, Design and Social Context and Science, Engineering and Health. Each College has approximately 20,000 students.

Continuing staff:
University staff with an ongoing employment arrangement. Continuing staff are employed for 37 hours per week, 52 weeks per year and are entitled to sick leave, paid holiday (vacation) leave and normally eligible for redundancy pay if dismissed due to changed business circumstances. This arrangement is in contrast to Sessional Staff (below).

Course:
At the case being studied a “course” is the most granular unit of study. A course might be “Database concepts”. To place this in context, a course is part of a program, which is delivered by a School, which is part of a College.
**Enterprise wide system:**

Information technology systems which are used in all, or most areas of an institution. Enterprise-wide systems stand in contrast to systems used on a more limited basis within a single business unit.

**Fully online:**

Learning and teaching which takes place without any face-to-face classroom contact. This mode of education is often employed by Open University in the U.K., Open Universities Australia, or University of Phoenix which is based in the U.S.

**Hosted environment:**

Arrangement for running a computer system at location other than the premises at which it used, with another party taking responsibility for all aspects of operating the system.

**ITS:**

Information Technology Facilities – the organisational unit responsible for delivery of all information technology facilities at the University in which the investigation is set.

**LMS:**

Learning management system – computer system dedicated to managing the interaction between teachers and learner. These systems often manage learning objects, assessment tools and track assessment as part of their core capabilities. Some widely used Learning Management Systems are Blackboard, First Class and Moodle.

**Lectopia:**

System used to record and manage face-to-face teaching. The Lectopia product was purchased in 2007 by Anystream Apreso and is being replaced by EchoSystem. During the period of study the institution being studied used Lectopia.

**MOP – Minimum online presence:**

Project undertaken by the institution being studied to ensure that each unit of study had material available on the learning management system.

**Online teaching:**
Also referred to as web-based teaching, e-learning, technology enhanced learning and distance learning. In this study online teaching refers to the use of any electronic means which enables students to work study independently of the teacher.

**Program:**

A collection of courses which form the necessary work for a specific qualification. An example of a program might be “Master of Professional Accounting” or “Bachelor of Computer Science”.

**School:**

In the case being studied a School is the academic unit covering one broad discipline. Typically consisting of 2,000 – 3,000 students, a School might be responsible for “Computer Science and Information Technology” or “Management”.

**Self-efficacy:**

In this study the phrase refers to “teacher self-efficacy”, as explained by Bandura (1977) and refers to an individual’s beliefs about their ability to succeed in a task. Teacher self-efficacy specifically relates to a teacher’s belief that they can affect learning outcomes in students even in difficult circumstance.

**Sessional staff:**

In the institution being studied the term “sessional staff” is used to describe staff hired on a fixed term contractual basis for teaching. Normally sessional staff are employed for only the actual times they spend doing instructional delivery.

**Student experience survey:**

Survey of student satisfaction administered on a regular basis by the institution being studied. This survey used to assess overall student satisfaction with the University, as opposed to the Course Experience Survey (described above) which measures satisfaction with a particular unit of study or course.

**Teacher:**
In this study the term teacher is used to indicate any person who provides formal learning guidance, or instruction to others. The term includes professors, associate professors, lecturers, academics, teachers and tutors.

**Time-out:**

Most computer systems are built to expect a response from a user or another system in a specific period of time. When a response is not forthcoming in that time period, the system may exclude further interaction. A time out event may be caused by network congestion or other problems beyond the control of the user. Once a system has “timed-out” work which has been done recently may be lost and it may be difficult or time consuming to establish another session. At the institution being studied there was a period of approximately two weeks several years prior to the study when LMS users were being “timed-out” leading to frustration and a perception that the LMS was unreliable.

**WBT:**

Used as an acronym for Web-Based Teaching. Refers to any learning and teaching interaction which takes place over the World-Wide Web. In this study “WBT” is employed to cover all varieties of e-learning.