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Chapter 1: Introduction

1. Background

The research presented in this thesis is about university teachers’ experiences of teaching in blended learning environments. Blended learning environments - those where face-to-face and online teaching are combined - have become increasingly common in recent years. Most Universities have installed Learning Management Systems (LMS), online learning resources, video-conferencing and other audiovisual technologies to support and improve the quality of the students’ learning experience. eLearning is no longer the preserve of distance education or ‘virtual Universities’: it is becoming part of the normal educational provision of ‘conventional’ universities (Ellis et al, 2006). This rapid uptake of blended teaching has not been based on, or accompanied by the growth of, a significant body of research-based knowledge about teachers’ use of new technology. There is little data about teachers’ experiences of incorporating eLearning into their ‘established’ face-to-face teaching. In this context, research inquiring into what university teachers think eLearning is good for in their teaching, how they approach teaching when eLearning is involved, and how their perception of their teaching situation affects their use of eLearning is both timely and relevant.

This thesis is the outcome of research into teachers’ experiences of blended learning environments, using a relational approach. Relational research into Higher Education has developed over the last 30 years. In that period of time, it has created a well established body of knowledge about learning and teaching. On the learning side, relational research has shown that approaches to studying are associated with conceptions of learning and perceptions of students’ learning situation. Those students who adopt deeper approaches, tend to hold cohesive conceptions and present positive perceptions of their learning situation. Moreover, these are the students who tend to obtain better learning outcomes (see e.g., Biggs, 1978; 1979; 1987; 2003; Crawford, Gordon, Nicholas & Prosser, 1998a; 1998b; Marton, 1975; 1976a, 1976b; Marton, Dall'Alba & Beaty, 1993; Marton & Dahlgren, 1976; Marton & Saljo, 1976a; 1976b; Entwistle, Hanley & Hounsell, 1979; Entwistle & Hounsell, 1979; Entwistle & Ramsden, 1982; Minasian-Batmanian, Lingard, & Prosser, 2006; Prosser &
Trigwell, 1999; Ramsden, 2003). On the teaching side, similar results have been found. Conceptions of teaching, approaches to teaching and perceptions of the teaching situation are associated. Teachers adopting ‘learning focused’ approaches tend to present cohesive conceptions and mostly positive perceptions of their teaching situation. In turn, teachers who adopt ‘learning focused’ approaches to teaching are more likely to have students adopting deeper approaches to studying (see e.g., Trigwell, Prosser, & Taylor, 1994; Trigwell, Prosser, & Waterhouse, 1999; Prosser & Trigwell, 1997a; Prosser, Ramsden, Trigwell, & Martin, 2003; Åkerlind, 2004; Ashwin, 2006a; Martin, Trigwell, Prosser, & Ramsden, 2003).

Only in the last few years has relational research been extended to settings where eLearning is involved. Considering students’ experiences, there have been studies of conceptions of learning, approaches to study and expectations of networked learning experiences (Goodyear, Jones, Asensio, Hodgson, Steeples, 2003; 2005), learning through online and face-to-face discussions (Ellis & Calvo, 2004; Ellis & Calvo, 2006; Ellis, Calvo, Levy & Tan, 2004; Ellis, Goodyear, Calvo & Prosser, 2008; Ellis, Goodyear, O’Hara & Prosser, 2007; Ellis, Goodyear, Prosser & O’Hara, 2006), problem based learning using eLearning (Ellis, Goodyear, Brilliant & Prosser, in press), case-based learning (Ellis, Marcus & Taylor, 2005) and learning through writing (Ellis, 2006). In the area of teaching using eLearning, less research has been conducted, although some studies can be mentioned (Ellis, Steed & Applebee, 2006; Lameras, Paraskakis, & Levy, 2007; McConnell & Zhao, 2006; Roberts, 2003; Gonzalez, in press). With these few studies on teaching using eLearning, research is just at the beginning of understanding the complexity of the phenomena, particularly when eLearning and face-to-face teaching are combined (Ellis et al, 2006). The present research aims to investigate teaching when eLearning is involved and, thus, contribute to extending the knowledge in this area.

2. Methodology

Methodologically, this research had a qualitative and a quantitative stage. In the qualitative stage, a phenomenographic interview-based study was conducted to inquiry into conceptions, approaches and perceptions of the teaching situation, both in face-to-face ‘conventional’ teaching and using eLearning. The data gathering included 18 interviews with teachers coming from two research-intensive Australian Universities. Phenomenographic research is
aimed at revealing the qualitatively different ways in which people experience phenomena in the world around them. It is concerned with developing, from the interview data gathered, a hierarchically structured set of categories of description which represents people’s different ways of experiencing some phenomenon of interest: in this case, the experience of teaching in blended learning environments. As part of the qualitative stage of the research, associations between conceptions, approaches and perceptions were also investigated. In the quantitative stage, associations between approaches and perceptions were further investigated using questionnaires. At the time of conducting this research, there was not a questionnaire on ‘approaches to teaching using eLearning’ readily available. Therefore, it needed to be created. This novel questionnaire, together with existing ‘approaches to teaching’ and ‘perception of the teaching situation’ inventories, was completed by 86 university teachers. The resulting data was analysed using correlation analysis, to explore associations between pairs of variables; factor analysis, to explore associations between groups of variables; and cluster analysis, to explore experiences of teaching in blended learning environments at the level of the individual teacher. This quantitative stage helped to provide further support for the qualitative stage findings.

Regarding the case of conceptions of, and approaches to, blended teaching; I have preferred to consider it as an amalgam of face-to-face and online teaching rather than a unitary construct. While I acknowledge blended teaching may be considered as one single experience, research on students’ learning has shown that students do some work online and some face-to-face. At best, students see a relation between these two, but they do not experience it as a seamless whole (e.g., Ellis, Goodyear, Calvo & Prosser, 2008; Ellis, Goodyear, O'Hara & Prosser, 2007; Ellis, Goodyear, Prosser & O'Hara, 2006). It would be risky to assume that teachers experience blended teaching as a unitary whole. At the same time, investigating blended teaching in the manner proposed in this thesis will provide a better understanding of teachers’ conceptions of, and approaches to, eLearning, when it is incorporated in on-campus university education. Little research has been conducted on university teachers’ experiences of eLearning. Therefore, it is relevant to investigate in detail this side of blended teaching to develop a more accurate description of this phenomenon.
3. Setting

The research was carried out in two Australian Universities. They were both campus-based, research-intensive and comprehensive. In addition, both had enrolments of about 40,000 students and around 3,000 full-time equivalent academic staff. At the time of conducting this research, both Universities had in place initiatives to promote the take-up of eLearning. These initiatives included: specialist units for managing eLearning, teams of learning technology professionals helping with development projects, online and over-the-phone support for solving technical problems, committees at the level of the Faculties monitoring implementation of eLearning, etc. At the same time, these Universities had long standing commitments to teaching. Both had specialised units dedicated to the promotion of high quality learning and teaching. Among their various functions, these units conducted workshops, seminars and training on learning and teaching, conducted research on different facets of university teaching and learning, etc.

However, at the same time as recognising the efforts that both Universities were making with regard to eLearning, it is important to acknowledge that the process had not been easy. Despite the above-mentioned initiatives, evaluation of the incorporation of eLearning into traditional face-to-face on-campus courses showed that there were different levels of appropriation. There was a small but growing number of outstanding developments. But there were also some where teachers used ‘eLearning’ just to upload lecture notes. Nevertheless, in both universities, the promotion of eLearning continues to be a relatively high strategic priority, linked closely to work on improvements in the student learning experience.

4. Structure of the thesis

The rest of this thesis is structured as follows:

Chapter 2 presents the Literature review. This is structured around three areas: research into student learning, research on teaching, and research on eLearning and bLearning (‘blended learning’). The main focus is on concepts and findings from prior relational research. However, studies coming from different research perspectives are also included when needed - particularly in the summary of eLearning/bLearning research.
Methodology (chapter 3) describes the methods of inquiry used as well as practical aspects of the data gathering and analysis process. It presents phenomenography and the development of questionnaires: the qualitative and quantitative branches of relational research. The chapter describes the main features of these branches and how guidelines for such research were applied in this particular study.

Results are presented in chapters 4 to 9. Chapters 4 to 7 present results of the qualitative study. Chapter 4 presents findings on conceptions of teaching, conceptions of teaching using eLearning and conceptions of blended teaching. Chapter 5 presents findings on approaches to teaching, approaches to teaching using eLearning and approaches to blended teaching. Chapter 6 summarises results on the perception of the teaching situation, both in relation to eLearning and in general. Chapter 7 reports associations between the elements of the experience of teaching: conceptions, approaches and perceptions. It also includes some analysis of associations with teacher characteristics. Conceptions of ‘consonance/dissonance’, ‘coherence/incoherence’ and ‘teaching orchestration’ are used to guide the analysis. Chapters 8 and 9 present results of the quantitative study. In chapter 8, results of the evaluation of the novel questionnaire on ‘approaches to teaching using eLearning’ are presented. Chapter 9 presents results of correlation, principal components and cluster analysis exploring associations between the scales of the ‘approaches to teaching’, ‘approaches to teaching using eLearning’ and ‘perception of the teaching situation’ questionnaires. It is important to mention that the discussion of the results has been reserved for chapter 10; chapters 4 to 9 are solely concerned with the presentation of results.

Chapter 10 offers this Discussion of results and also some comments by way of Conclusion. This chapter relates the results of the empirical research to relevant points in the literature. It also summarises the main claims to new knowledge, outlines the limitations of the research study, and makes suggestions about further lines of research.

At the end of the thesis there is a References section, and a number of Appendices. These appendices contain:

- The interview schedule.
- A copy of the web based survey.
- The list of original items of the novel ‘approaches to teaching using eLearning’ questionnaire.
Chapter 2: Literature Review

The literature review presented in this chapter is structured around three areas. The first presents research on students’ experiences of learning. The second presents research on teachers’ experiences of teaching. The third starts by describing and discussing eLearning and bLearning broadly, and then presents a review of research about learning and teaching experiences of eLearning and bLearning from a relational perspective. Although this literature review is focused on relational research into learning and teaching in Higher Education, studies coming from different areas of inquiry or theoretical perspectives are also discussed when relevant to describe research trends. This is particularly significant in the eLearning and bLearning sections and to a lesser degree, the sections on students’ and teachers’ experiences of learning and teaching.

Relational research in Higher Education has been growing steadily over the last thirty years. It started with the work of Marton and Saljo (1976a, 1976b) in Sweden and has become quite widespread in Europe and Australasia. This line of research is built around a theoretical perspective which insists on a non-dualistic understanding of the relationship between the individual and the world. From this perspective, the individual and the world are not independent but are internally related through the individual’s awareness. For analytical purposes, different aspects of the learning and teaching experience (presented as a model in Figure 1) are discussed separately. While they are simultaneously present, in some contexts they may come to the foreground of awareness, while other aspects remain in the background. In this way, the model presented in Figure 1 does not represent causal relationships between aspects of the experience, but an analysis of the individual’s awareness of learning and teaching acts they are experiencing (Marton & Booth, 1997; Prosser & Trigwell, 1999).
Relational research has provided a rich body of knowledge about learning and teaching in Higher Education. It has established that students conceive of, and approach, learning in different ways and that those who present more sophisticated conceptions of learning and deep approaches to studying tend to obtain higher quality learning outcomes. More recently, research has also started to show that deep approaches tend to be associated with better marks. Additionally, it has been demonstrated that the perception of the learning situation affects how students approach learning. Those who have positive perceptions tend to approach studying in a deeper way. In relation to teaching, it has shown that teachers conceive of, and approach, teaching differently. Conceptions range from being centred on teaching and content, to being centred on learning and the student. In the case of teachers, perceptions of the teaching situation also play a fundamental role in their adopted approach. Moreover, research has found some specific links between approaches to learning and approaches to teaching. When teachers adopt more ‘student centred’ approaches to teaching, students tend to adopt deeper approaches to learning. This area of research has only recently extended to settings where eLearning is employed for teaching and learning. Results of these newer investigations suggest that outcomes from relational research in ‘conventional’ settings, those where face-to-face teaching is the norm, would also apply when eLearning is
involved. In the following sections, these ideas and findings are presented and discussed in more detail.

### 2.1 Research into Students’ learning in Higher Education

Research on learning in Higher Education, from a relational perspective, originates in the mid-seventies with the work of teams from Sweden (Marton, 1975; 1976a, 1976b; Marton & Dahlgren, 1976; Marton & Saljo, 1976a; 1976b), the United Kingdom (Entwistle, Hanley & Hounsell, 1979; Entwistle & Hounsell, 1979; Entwistle & Ramsden, 1982) and Australia (Biggs, 1978; 1979; 1987).

A seminal study by Marton & Saljo (1976b) investigated the outcomes of reading a text and related them with how students went about that particular task. They showed students who approached reading in a deep manner, focusing on the meaning of the text, presented a higher level of understanding; while those who adopted a surface approach, focusing on the text itself, obtained lower quality outcomes. Table 1 presents the results of this study. Outcomes A and B represent better quality outcomes (conclusion oriented) and outcomes C and D lesser quality ones (description oriented). Although some of the approaches could not be classified, the associations between approaches and outcomes of learning were clear.

<table>
<thead>
<tr>
<th>Outcome of Learning</th>
<th>Approach to Learning</th>
<th>Surface</th>
<th>Not Clear</th>
<th>Deep</th>
<th>Subtotals</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>—</td>
<td>—</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>8</td>
<td>—</td>
<td>—</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>5</td>
<td>1</td>
<td>—</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Subtotals</td>
<td>14</td>
<td>7</td>
<td>9</td>
<td>30</td>
<td></td>
</tr>
</tbody>
</table>

From Marton & Both, 1997, p. 22.

At the same time, Entwistle and Ramsden (1982) investigated students’ learning using interviews and questionnaires in a range of disciplines. They found three orientations to learning: meaning, reproducing and achieving. In parallel, the work of Biggs (1978; 1979)
was focused on students’ study processes. He identified three ways of going about studying: reproducing, internalising and organising; each of them composed of motive and strategy.

Prosser and Trigwell (1999) highlight similarities and differences between the work of these researchers. The three groups found similar results in their studies about students’ learning and, actually, they all applied Marton and Saljo’s concepts of ‘deep’ and ‘surface’ to refer to the qualitatively different ways in which students went about learning. However, the original perspectives of these researchers varied somewhat. The work of Marton and Saljo was the most firmly rooted in the student learning perspective. They researched learning in real world settings and from the students’ point of view. Originally, Biggs came from a cognitive psychology perspective; although more recently he has agreed with the idea that approaches are contextually situated as students’ learning research states (Biggs, 2003). Entwistle studied students’ learning from a perspective similar to Marton and Saljo, although incorporating concepts and ideas from additional paradigms.

The original work of these researchers has been extended, by themselves and other scholars, yielding a very large number of studies. Key concepts such as conceptions of, and approaches to, learning and perception of the learning situation have emerged. Research has also established relationships between these concepts and learning outcomes. It has been demonstrated that students tend to adopt an approach to learning which is associated with their conceptions of learning and their perception of the teaching situation. In turn, different approaches lead to different learning outcomes. This is why it is important to promote the deep approach to learning. Additionally, the phenomenon of dissonance has been identified, as a way of describing student study orchestrations that contradict what would be predicted by theory. In the next section, these key concepts from students’ learning research and their interrelationships are presented and discussed.

### 2.1.1 Approaches to studying

In a series of interview-based studies, three main approaches to studying were identified: surface, deep and strategic/achieving (Laurillard, 1979; Marton & Saljo, 1976b; Ramsden, 1979). Deep approaches to learning are those in which students:
1. Focus on the meaning of the task.
2. Relate previous knowledge to new knowledge.
3. Relate content from different courses.
4. Relate theoretical experiences to everyday experience.
5. Relate and distinguish evidence and argument.
6. Organise and structure content into a coherent whole.
7. Give emphasis to internal aspects of learning.

In contrast, students engage in surface approaches to learning when:

1. They focus on the ‘signs’ (for example, the words and sentences of a text or the formulae needed for solving a mathematical problem).
2. Focus on unrelated parts of the task.
3. Memorise information for assessments.
4. Associate facts and concepts unreflectively.
5. Fail to distinguish principles from examples.
6. Treat the task as an external imposition.
7. Give emphasis to external aspects of learning, such as exams (Entwistle & Marton, 1984; Marton & Saljo, 1984; Prosser & Trigwell, 1999).

The third approach, known as strategic, is associated with the intention of achieving best possible marks through efficient management of time, organised study methods and alertness to assessment procedures (Entwistle, Hanley & Hounsell, 1979).

From a relational perspective, approaches to learning are conceptualised as having a structural aspect (the act of experiencing, organising or structuring) and a meaning aspect (that which is experienced, the significance of the task). Approaches to learning are not considered a ‘psychological’ characteristic of the learner; they are constituted in the relationship between the learner and what is being learned. Students may adopt different approaches in different learning situations (Ramsden, 2003).

Since the early work reported above, there have been many studies identifying these approaches in different learning contexts. For example, particular disciplinary areas, such as engineering (Case & Marshall, 2004), geography (Maguire, Evans, & Dyas, 2001) or
biochemistry (Minasian-Batmanian, Lingard, & Prosser, 2006b); particular academic tasks, such as problem solving (Laurillard, 1984) or writing (Ellis, Taylor & Drury, 2007); or particular academic settings, such as distance education (Richardson, 2005; Richardson, Morgan & Woodley, 1999). Despite the differences between these disciplines, academic tasks and academic settings, all the studies have been able to find approaches to studying of the kind described in the initial research in this area.

New perspectives on approaches to studying have emerged in recent years, bringing new insights into this area of research. Entwistle and Peterson (2004) have stated that, although students adopting deep approaches to learning are focused on comprehension, they may realise that to achieve comprehension some memorisation is needed. This would imply that they introduce some aspects of what is being categorised as the surface approach when adopting the deep one. Moreover, new dimensions for understanding approaches to learning have been proposed. Entwistle and McCune (2004) have stated that emotion has not been considered as part of research into students’ approaches to learning. Lonka et al (2004) stated that the traditional conceptualisation of approaches to learning has been too individualistic and has not taken into account aspects of collaborative learning. Fyrenius et al (2007) claimed that students approach achieving an understanding of knowledge in different ways: sifting (received and condensing for understanding) where understanding is acquired from books and teachers, and is verified by tuning the demands of the system and building (relating to previous knowledge and making the understanding your own). This last approach had two variations: holding (structuring and reorganising to reach a final goal) and moving (continuously striving for a change in perspectives).

In summary, three approaches to learning have been identified consistently in different contexts: deep, surface and strategic. It has also been shown that approaches are not a characteristic of the learner; they are constituted in the relationship between the learner and what is being learned. New insights into approaches to learning have emerged, revealing aspects not considered previously and deepening our understanding of other elements.
2.1.2 Outcomes of learning

Many studies have demonstrated a relationship between approaches to studying and quality of learning outcomes. The SOLO taxonomy has been used to investigate this association. SOLO stands for ‘Structure of the Observed Learning Outcome’ and is a hierarchy of five levels of outcome used to classify the structural complexity of students’ responses to particular tasks (Biggs, 2003). The main features of each taxonomy level are presented in Table 2.

<table>
<thead>
<tr>
<th>Levels</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prestructural</td>
</tr>
<tr>
<td>2.</td>
<td>Unistructural</td>
</tr>
<tr>
<td>3.</td>
<td>Multistructural</td>
</tr>
<tr>
<td>4.</td>
<td>Relational</td>
</tr>
<tr>
<td>5.</td>
<td>Extended abstract</td>
</tr>
</tbody>
</table>


Using this taxonomy, studies have consistently found that high quality responses are associated with a deep approach to studying (Biggs, 1979; Trigwell & Prosser, 1991b; Van Rossum & Schenk, 1984; Watkins, 1983). An example of this type of study was conducted by Van Rossum & Schenk (1984). They gave students the task of reading a text and found that approaches to studying were strongly associated with SOLO outcomes. Most of the students who adopted deep approaches achieved relational or extended abstract outcomes (27 out of 34); while none of the 35 adopting surface approaches achieved outcomes higher than multistructural. These researchers also classified students’ conceptions of learning following Saljo (1979) and found that most students using deep approaches conceived learning as understanding the reality and seeking meaning; while surface approaches were associated with conceptions of learning focused on increasing knowledge or memorisation. In a different study, Prosser and Millar (1989) looked at changes in conceptions of phenomena related to
Newtonian mechanics. Understanding of related concepts was tested at the beginning and at the end of the course. They found that students who approached studying in a deep manner were more likely to change their understanding in the way teachers wanted (8 out of 9). Students using surface approaches did not present the desired change in understanding (21 out of 23).

In relation to grades, the relationship with approaches to studying is not as straightforward as quality of learning. Ramsden (2003) offers a number of research examples which positively associate deep approaches to studying with academic performance (e.g., Biggs, 1987; 2003; Trigwell, Martin, Benjamin, & Prosser, 2000; Wilson, Lizzio, & Ramsden, 1997). However, he states that none of the associations reported are as strong as the ones found between deep approaches and high quality learning. Similarly, Minbasian et al (2004) report the same situation. These authors state that the relationship between the deep approach and academic grades has tended to be non-significant, or positive but weak. Besides, research has failed to report a negative correlation between the surface approach and academic grades (e.g., Beckwith, 1991; Elliot, McGregor, & Gable, 1999; Hall, Bolen, & Gupton, 1995; Newstead, 1992; Rose, Hall, Bolen, & Webster, 1996). Minbasian et al (2004) investigated this puzzling problem in a group of 49 students enrolled in a third year psychology subject. Academic performance was measured using students’ written responses to questions in the final exam as the basis of their overall grades, as well as to measure quality and quantity of learning. Approaches were captured using the ‘revised approaches to learning inventory’ (Entwistle & Tait, 1994). Scales related to motivation and intelligence were also included. Results confirmed findings from previous studies. Students’ overall exam grades were unrelated to the extent to which they used deep or surface approaches to studying. However, quality of responses was positively related to the use of the deep approach and unrelated to the use of surface approach. These authors claim that constraints in time may hinder the effectiveness of the deep approach in getting better marks. Given the time constraints in an exam, a trade off exists between displaying understanding and reproducing information, which may be the focus of an exam question.

Therefore, research has demonstrated that there is a clear link between approaches to studying and quality of learning outcomes and a less strong one between approaches and marks, although some research is suggesting a more complex relationship. Overall, study findings have led researchers to think that Universities should encourage students to adopt
deep approaches and prevent them from adopting surface approaches. Consistently, it is important to understand why students adopt different approaches. Literature on students’ learning has shown that approaches may be related to conceptions of learning and perceptions of the teaching situation. Research on these aspects is presented in the next two sections.

2.1.3 Conceptions of learning

Saljo (1979) interviewed 90 people aged between 15 and 73 from Swedish Further and Higher Education institutions. He found that students tended to have five conceptions of learning:

1. Increase in the quantity of knowledge.
2. Memorising.
3. Acquisition of facts or principles that can be used in practice.
4. Abstraction of meaning.
5. An interpretive process for understanding reality.

These conceptions are hierarchical in nature; the higher ones suppose the lower ones. Besides, there is a qualitative shift between the third (acquisition of facts or principles that can be used in practice) and the fourth conception (abstraction of meaning). The first three conceptions are external to the learner and quantitative in nature, while the last two represent conceptions in which the learner is focused on meaning and are qualitative in nature. In further work, different studies found similar results (Marton, Dall'Alba & Beaty, 1993; Van Rossum, Deijkers & Hamer, 1985; Van Rossum & Schenk, 1984). Marton et al (1993) added an additional conception: changing as a person. Van Rossum and Taylor (1987) added their own additional conception as well: a conscious process fuelled by personal interest and directed at obtaining harmony and happiness or changing society. They also found that conceptions of learning were similarly distributed in men and women, but older students tended to have more sophisticated conceptions of learning. In another study on conceptions of learning, Wood (2006) found that half of a sample of students enrolled in a doctoral programme in education reported that learning had changed them as a person, the highest conception in Marton’s (1993) hierarchy. This may suggest that the level of education, postgraduate research in this case, affects how students conceive their learning. Recently,
Trigwell and Ashwin (2006) have proposed the idea of situated conceptions of learning. These are conceptions evoked and adopted by students in response to their perceptions of learning tasks in particular contexts. They believe that situated conceptions may have a stronger influence on approaches to learning than the more generic conceptions that students are usually asked about in conceptions of learning research.

It is important to mention studies which have investigated conceptions of learning in different cultural contexts. For example, Marton et al (2005) suggest that Chinese students may understand learning both as memorising and understanding. In the case of Nepalese students, the highest conception of learning (changing as a person) would be associated with the local culture and religious beliefs rather than representing the most sophisticated level of understanding about learning (Dahlin & Regmi, 1997). While these studies show some cultural specificity, two other studies did not show major changes in the original hierarchy found by Saljo (1979). Duarte (2007) identified small differences in conceptions of learning held by Portuguese students, and a new possible conception; and Boulton-Lewis et al (2000) found the same conceptions of learning as reported by Saljo in Aboriginal Australian students. It is important to acknowledge, however, that students participating in the last two studies had been exposed to Western educational systems.

In relation to the association between conceptions and approaches to learning, it has been found that Saljo’s (1979) first three conceptions are associated with surface approaches; those in which a reproductive orientation to the content is present. Deep approaches to learning, those in which attention is given to the underlying meaning of the task, are associated with the two or three later conceptions (Marton & Saljo, 1976b). Similar findings were reported by Van Rossum & Schenk (1984). They investigated how students approached the task of reading a text, and their studies in general. They then classified students’ approaches into Saljo’s conceptions of learning. They found that students who presented conceptions one through three used a surface approach when reading the text and most of the students presenting conceptions four and five adopted a deep approach when reading it. This association has also been found when relating prior conceptions of particular subjects and approaches to study. For example, cohesive prior conceptions of physics have been reported to be associated with deep approaches to learning (Prosser, Walker, & Millar, 1996); similar results have been reported in mathematics (Crawford, Gordon, Nicholas & Prosser, 1998a; 1998b) and biochemistry (Minasian-Batmanian, Lingard, & Prosser, 2006a).
In summary, research on conceptions of learning has found that students conceive learning in different ways ranging from merely reproductive to more meaning focused. A common feature of research on conceptions of learning is that they are presented in a hierarchy where lower level conceptions are called incomplete or fragmented and higher level conceptions are called complete or cohesive. Higher level conceptions include lower level ones, but not the other way around. Also, research often claims there is a qualitative shift between incomplete-fragmented conceptions and complete-cohesive ones. Moving towards complete-cohesive conceptions implies an expanding awareness which is claimed to be a desirable outcome of learning programs. Some research conducted in non-Western cultures has shown particularities in conceptions of learning, although radically different accounts have not been found. This line of research has also suggested that there is an association between conceptions of learning and approaches to studying. Further research on specific subjects has also suggested that prior conceptions are associated with approaches to studying. In the next section, the other element associated with students’ approaches to learning, their perceptions of the learning situation, is presented.

2.1.4 Perception of the learning situation

The perception of the learning situation has been shown to be associated with students’ approach learning. An early study in this area was conducted by Ramsden (1979). He established that students had certain kinds of perceptions of their learning situation and that these perceptions influenced how they approached learning. A ‘course perception questionnaire’ (CPQ) was devised, based upon interview data gathered in previous research (Ramsden & Entwistle, 1981). In further work, Ramsden (1991b) devised the ‘course experience questionnaire’ (CEQ). It includes five scales representing elements that had been shown to be of importance for students’ perception of their learning situation:

1. Clear goals.
2. Good teaching.
3. Appropriate workload.
5. Freedom for learning.
This questionnaire was used by Trigwell & Prosser (1991a) together with a simplified version of the ‘approaches to studying’ inventory with a sample of 55 nursing students. It was found that surface approaches to studying were associated with perceptions of inappropriate workload and inappropriate assessment, but other relationships were small and non-significant. In another study, the ‘course experience questionnaire’ was used together with a special version of Biggs’ ‘study process’ questionnaire (1987). However, this time a massive sample involving 8829 students from 51 subjects was employed (Ramsden, Prosser, Trigwell, & Martin, 1997). Factor analysis results showed that the deep approach to learning was associated with a perception of good teaching, clear goals and freedom for learning. On the other hand, the surface approach was associated with perceptions of inappropriate workload (too high) and inappropriate assessment (focused on measuring rote learning). A cluster analysis was also conducted with a random sample from the same dataset (n=893). It was found that students who perceived the situation as affording surface approaches to studying did adopt surface approaches; while those perceiving the learning situation as affording deep approaches adopted a consistent approach. They repeated the analyses, but this time focusing at the subject level. In this case, it was found that results were very similar to those found at the level of the individual. In further research, Kreber (2003) reported findings from a study conducted with 1080 undergraduate science students from Canada. In her results the strongest associations were found between heavy workload-inappropriate assessment and the surface approach and generic skills and the deep approach. Richardson (2005) adapted the extended version of the ‘course experience’ questionnaire (Wilson et al., 1997) and the ‘revised approaches to study inventory’ (Entwistle, Tait, & McCune, 2000) to distance education settings. A postal survey was used and 2100 usable responses were obtained. Canonical correlation analysis demonstrated that perceptions of academic quality were positively related to the deep and strategic approaches to studying and negatively to the surface approach.

In summary, research shows that the perception of the learning situation is associated with approaches to learning. Where students perceived their learning situation afforded deep approaches they were more likely to adopt this type of approach and when they perceived it as affording surface approaches they tended to approach learning congruently. These results have been found in both traditional face-to-face settings and distance education. Some of these studies have also shown an association between the perception of the learning environment, the adopted approach and the learning outcome. A perception of the learning
situation affording deep approaches to studying was demonstrated to be associated with higher quality learning outcomes, as was stated in the previous section. Thus, it has been established that students approach studying in different ways and this may affect their learning outcomes. It has also been established that approaches are influenced by conceptions of learning and the perception of the learning situation. In the next section, studies which incorporate these elements, examining their interrelationships, will be presented.

2.1.5 Studies relating conceptions, approaches, perceptions of the learning situation and outcomes of learning

Student learning research has moved on to inquiry into associations among the key concepts: conceptions, approaches and perceptions. Additionally, these concepts have been associated with learning outcomes. In this section, some of these studies are presented.

In a study investigating associations between approaches to studying, perceptions of the learning situation and learning outcomes, Lizzio et al (2002) surveyed students from one university involving all faculties and years of study. They used the ‘course experience questionnaire’, the ‘approaches to studying inventory’ and also obtained measurements of prior academic ability, academic achievement, course satisfaction and generic skills. They received back 2130 usable questionnaires. Using regression and path analysis they found that the perception of the learning situation affects approaches to studying and learning outcomes both in terms of academic achievement and development of key skills.

Diseth (2007) investigated similar elements. Two inventories were used: the ‘approaches and study skills inventory for students’ (ASSIST. Entwistle, 1997), and a modified version of the ‘course experience’ questionnaire (CEQ. Ramsden, 1991a). Measurements of academic achievement, effort and ability were employed as well. The sample considered 206 first year students enrolled in an introductory psychology unit. Using structural equation modelling, it was found that the surface approach mediated the relationship between teaching quality and appropriate workload on one hand, and grade examination on the other. Thus, students experiencing poor quality teaching and excessive workload were likely to adopt a surface approach and to show poor academic achievement. However, deep and strategic approaches were not found to have that mediator feature. The author states that this may be because the
effects of deep and strategic approaches disappeared when controlling for the effect of surface approach. Having said that, this study provides evidence to support the claim that surface approaches should not be encouraged, and that when planning and executing teaching, attention needs to be given to quality teaching and appropriate workload.

Trigwell and Ashwin (2006) set out to investigate situated conceptions of learning and associations with approaches to learning, perception of the situation and expected learning outcome. For the purposes of this study, they used the concept ‘aligned conceptions’, to refer to conceptions consistent with what the university described as the purposes of elements of students’ courses. In the case of University of Oxford, aligned conceptions were associated to learning focused on reflection, understanding and thinking development. They sent a questionnaire, containing items related to these elements, to all students from one college at the University of Oxford and received back 154. Using cluster analysis, they found two groups with clear associations between the elements included. The first group presented less aligned situated conceptions of learning, perceived the learning environment as non-supportive, adopted surface approaches and expected to receive a lower degree classification. In contrast, the second group showed aligned situated conceptions, perceived the learning environment as supportive, adopted deep approaches and expected a higher level degree classification. Results presented by this study demonstrate a clear association between the main elements of the students’ learning experience. Another study established relationships between the aforementioned elements, but in a different context and in a more specific manner; Ellis et al (2007) investigated conceptions of learning science through writing, approaches to writing, perceptions of a writing programme and learning outcomes among a group of first year undergraduate biology students who had the task of writing a scientific report. They used an adapted version of the ‘approaches to studying’ questionnaire (Biggs, Kember & Leung, 2001) and the ‘course experience’ questionnaire (Ramsden, 1991b). For the ‘conceptions of writing’ items they drew on a previously elaborated questionnaire for investigating conceptions of mathematics (Crawford, Gordon, Nicholas & Prosser, 1998a; 1998b) and refined for studies into writing (Ellis, Taylor & Drury, 2005, 2006). Factor analysis demonstrated that prior cohesive conceptions, those that students held at the beginning of the semester, were positively associated with deep approaches, clear goals and standards, an emphasis on independence, good teaching, the post cohesive conceptions, those that students held at the end of the semester, and generic skills. On the other hand, the prior fragmented conception was positively associated with surface approaches and negatively
associated with the reported mark. Cluster analysis yielded two clusters. In the first cluster, students who had a large positive score on the prior cohesive conception, also had large positive scores on the deep approach, the post cohesive conception and the generic skills variable. Further, students had medium positive scores on ‘emphasis on independence’ variable, the ‘clear goals and standards’ variable and the ‘good teaching’ variable; and had a medium positive association with the mark obtained in the report they had to write. In the second cluster, students with large negative scores on the ‘prior cohesive conception’ variable, the ‘deep approach’ variable, the ‘post cohesive conception’ variable and the ‘generic skills’ variable; had a medium negative score on the ‘clear goals and standards’ variable, the’ emphasis on independence’ variable, and had a medium negative score with the marks obtained in their reports. The first cluster reflects an experience of learning science through writing focused on understanding, while the second one reflects an experience focused on reproducing.

In summary, the studies described in this section have shown associations between what student learning research has established as the key elements of the learning experience. Moreover, these associations have been found in different settings, in different faculties in the same university, with students coming from different years of their degrees, in a first year psychology unit, in a biology unit where students were involved in a writing programme, and in a collegiate environment, among others.

2.1.6 Dissonance in learning

Research presented thus far has established clear associations between the elements composing the learning experience. However, the picture of students’ learning research has become more complicated with the phenomenon of dissonance. This phenomenon is associated with the concept of orchestration, elaborated by Meyer (1991). Orchestration is defined as the contextualised study approach adopted by students. It recognises three elements in the experience of learning: the approach, the influence of the context and conceptions of learning. Students’ study orchestration is expected to have some level of conceptual consonance in relation to the understanding of the learning experience described previously. However, some of them may present some degree of conceptual dissonance in how they orchestrate their learning. Dissonance has been defined as the phenomenon in
which combinations of aspects of the learning experience do not fit with what would be predicted by theory (Lindblom-Ylänne, 2003). An example would be where we find cohesive conceptions of learning associated with surface approaches to studying. Some research has demonstrated that dissonant students’ orchestrations are related to problems in adapting to their learning environments (Vermunt & Verloop, 1999). Lindlom-Ylänne (1999) and Lindlom-Ylänne and Lonka (1999, 2000) added to this idea stating that dissonance can emerge due to students’ attempts to adapt to the perceived requirements of their learning environments.

Dissonance has been reported in different disciplinary contexts, for example in Medical studies (Lindblom-Ylänne, 1999), Physics (Prosser, Trigwell, Hazel, & Waterhouse, 2000) and Law (Lindblom-Ylänne, 2003). It has also been reported in a study with a broader sample (Long, 2003), with a sample of aboriginal Australian students (Boulton-Lewis, Wilss & Lewis, 2003) and in postgraduate research students (Wisker, Robinson, Trafford, Creighton, & Warnes, 2003). Prosser et al (2000) have been able to demonstrate that students presenting disintegrated and incoherent associations between approaches to learning and perceptions of their learning situation tend to be lower academic achievers. Therefore, dissonant orchestrations seem to be related to poor academic outcomes.

In summary, dissonance has emerged as an interesting phenomenon which reflects students orchestrating their learning in ways which do not fit with theoretical expectations. It means learning orchestrations in which, for example, approaches adopted are not coherent with the perceived learning situation. This phenomenon seems to be related to students attempts to adapt to their learning environments. Also, it has been associated with lower academic achievement.

2.1.7 Summary and relation to my study

In this section of the literature review, research on students’ learning has been presented. This research has found that there is variation in how students approach studying, how they perceived the learning situation and how they conceptualise learning. The main approaches to studying have been described as deep, (focused on the meaning of the task), surface, (focusing on the signs and unrelated parts of the learning tasks and contents), and achieving,
(focusing on obtaining the best grades through efficient management of time and learning resources). Conceptions of learning have been found to range from quantitative (increasing in knowledge) to qualitative (understanding reality – changing as a person). With some local peculiarities, similar conceptions have been found across different contexts. Elements found to have an influence on how students perceive their learning situation are: clear goals, good teaching, appropriate workload, appropriate assessment and freedom for learning. Research on students learning has also provided evidence which relates the elements of the learning experience –approaches, perceptions and conceptions- among themselves and with the quality of learning outcomes. It has been found that deep approaches to studying are associated with higher level conceptions of learning and a positive perception of teaching, goals, workload, assessment and freedom for learning; which, in turn, leads to higher quality learning outcomes. The concept of dissonance has also emerged as a very important element in student learning research. This phenomenon has been found in different contexts and seems to be related to students trying to adapt to the perceived demands of their learning environment. It has also been stated that dissonance negatively affects students’ learning outcomes.

Research on teaching has, in many ways, mirrored student learning research, incorporating the same elements of the learning experience to understand the teaching experience. An understanding of the origin and development of the main concepts of student learning research (conceptions, approaches, perceptions, dissonance, and orchestration) is helpful for a better grasp of topics and issues involved in research into the teachers’ experiences of teaching.

### 2.2 Research on teaching in Higher Education

In this section, research on the experience of teaching in Higher Education is presented. The main roots of this area of research go back to the early nineties and, in many ways, its development mirrors research into students’ learning. Different teams of researchers (Gow & Kember, 1993; Kember & Gow, 1994; Prosser, Trigwell, & Taylor, 1994; Samuelowicz & Bain, 1992; Trigwell, Prosser, & Taylor, 1994) have investigated how teachers conceive teaching, how they approach teaching and how perceptions of the teaching situation influence their approaches to teaching.
This line of research has shown that, similar to the situation with student learning research, approaches to teaching are relational. Teachers are more likely to adopt student centred approaches to teaching when they conceive of teaching in a student centred/learning focused manner and perceive the teaching situation as affording this type of approach. This has, in turn, proved to be highly important because, as we shall see, teachers’ approaches to teaching are associated with students’ approaches to studying. As described in the previous section of the literature review, deep approaches to learning lead to better quality learning outcomes. Therefore, it is beneficial if teachers can adopt student centred approaches to teaching (Ramsden, 2003). The phenomenon of dissonance has also been identified in teaching. Dissonance in teaching represents combinations of elements of the teaching experience in ways which do not fit with theoretical expectations. In the next section, the main elements of this area of research on teaching in Higher Education are presented.

2.2.1 Conceptions of teaching

Research on conceptions of teaching started to emerge in the eighties and early nineties. The first well-known study of this type is Fox (1983), which discovered four personal theories of teaching. The first two were called simple ones: transfer and shaping, in which importance is given to transfer of knowledge or modelling students’ minds, respectively. The second two were called developed theories: travelling and growing, in which importance is given to students as partners contributing to their own learning. A fifth theory was established as well: the building – hybrid theory.

Phenomenographic studies of teaching gained serious momentum in the first half of the nineties. Naturally enough, these showed similarities in their methods. They used interviews for data gathering, had relatively small samples (typically from 13 to 24 teachers) and presented their outcomes as a set of categories organised hierarchically, from less to more complete conceptions. These hierarchies ranged from transmissive conceptions towards conceptions focused on facilitating understanding (Dall’alba, 1991; Martin & Balla, 1991; Martin & Ramsden, 1992; Prosser, Trigwell & Taylor, 1994). Also, Prosser et al (1994) investigated conceptions of teaching together with conceptions of learning.
In contrast with these phenomenographic studies, Pratt (1992) developed a model of conceptions of teaching that was not hierarchical. His model of conceptions included five perspectives on teaching: transmission, developmental, apprenticeship, nurturing and social reform. He stated each perspective represents a legitimate view of teaching. Each of them would vary in relation to the quality of implementation, but all being equally valid.

Other studies using different research approaches and aims produced similar results (Dunkin, 1990, 1991; Dunkin & Precians, 1992; Gow & Kember, 1993; Kember & Gow, 1994; Samuelowicz & Bain, 1992). It is possible to see that these early studies on conceptions of teaching presented different methodological approaches (phenomenography, content analysis, grounded theory); although, they have in common a basis in naturalistic approaches to research. Another difference is that some studies make claims in favour of hierarchical relations among conceptions - particularly strong from the phenomenographic perspective while others favoured seeing conceptions of teaching not in a hierarchical manner, but as equally valid perspectives on teaching, as in Pratt’s (1992) case. It can be said that the most significant outcome from this group of studies is the high level of correspondence among their findings. Although they were conducted in different settings and used different methods, results all tended to discern teaching that varied from a content focused or transmission-based set of conceptions, towards a more student focused or facilitation-oriented set of conceptions.

A systematisation of this early research on conceptions of teaching was carried out by Kember (1997). He reviewed most of the studies described previously, stressing and synthetising similarities. Two broad orientations were identified: ‘teacher-centred/content-oriented’ and ‘student-centred/learning-oriented’. Each of these orientations has two conceptions. Imparting information and transmitting structured knowledge are conceptions associated with the former orientation. Facilitating understanding and conceptual change/intellectual development are associated with the latter orientation. A fifth conception, student teacher interaction/apprenticeship, representing a transition between the two broad orientations was included as well. This is presented in figure 2.
Two conceptions are related to the ‘teacher-centred/content oriented’ position:

1. Teaching as imparting information: where teaching is conceived as pure information presentation and students are seen as passive. Lectures and provision of notes are the prime medium of learning. Teachers are understood to be owners of knowledge which is delivered to students.

2. Teaching as transmitting structured knowledge: a conception which is different from the above only in the fact that the provision of information is structured with the aim of making the learning process easier. Students are considered passive recipients of knowledge possessed by the lecturer.

The intermediate conception is as follows:

1. Teaching as student-teacher interaction: the value of interaction between teacher and students becomes salient. Students have more freedom to explore and discover, within the context defined by the lecturer. Teachers start to realise the importance of students in the learning process. This conception is found in situations where a role is taught and the lecturer is an expert in that role.

Turning to the ‘student-centred/learning-oriented’ position, two conceptions are included:

1. Teaching as facilitating understanding: the focus is on the student. Teachers become facilitators who help students learn. Students are expected to ‘understand’ the topic
they are learning rather than just ‘repeat’ or reproduce information. Students are expected to apply what is learnt.

2. Teaching as promoting intellectual development/conceptual change: which implies challenging and confronting students, encouraging them to argue, but at the same time generating a sympathetic environment in which students feel comfortable developing their arguing and critiquing skills. This concept is often found at the postgraduate level.

Table 3 presents dimensions used to delimit conceptions of teaching.

<table>
<thead>
<tr>
<th>Table 3: Dimensions used to delimit conceptions of teaching</th>
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<tr>
<td>Dimension</td>
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<td>Teacher</td>
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<tr>
<td>Teaching</td>
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<tr>
<td>Student</td>
</tr>
<tr>
<td>Content</td>
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<tr>
<td>Knowledge</td>
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</table>

From Kember, 1997, p. 262.

Since the synthesis carried out by Kember (1997) there have been more studies addressing conceptions of teaching. They can be grouped into those which provided further evidence to support Kember’s model, studies in which authors have further developed or confirmed previous work; and studies providing new insights into conceptions of teaching. The last group includes studies extending previous findings but also investigating conceptions of teaching in particular contexts or different cultures.
A study by Van Driel et al (1997) gives further evidence to support orientations to teaching proposed by Kember. They interviewed sixty teachers from technical and engineering backgrounds and found three conceptions of teaching:

1. Teacher – centred conception.
2. Student – directing conception.
3. Student – centred conception.

Conceptions in the extremes are described similarly to orientations to teaching in Kember’s work. Kember’s intermediate conception took the form of a ‘student – directing’ conception in this study. Teachers holding it believe in strict teacher control, but also provide opportunities for active learning. Therefore, these authors situated it in the middle as it shares elements of the other two conceptions.

Two groups of authors further developed or confirmed what they had done before in this area of research. Samuelowicz & Bain (2001) revisited their previous work and found that orientations reported in 1992 reappeared in their new study, although some adjustments from the new data led to renaming or developing some of the categories. Conceptions ‘facilitating learning’ and ‘changing students’ conceptions’ were each divided into new ones. ‘Changing students’ conceptions’ was divided into ‘preventing misunderstandings’ and ‘negotiating meaning’. Another important outcome in their 2001 paper is that the transitional category reported in 1992, facilitating learning, split into two: ‘providing and facilitating understanding’ and ‘helping students develop expertise’. One appeared to be located within the ‘teaching centred’ orientations while the other was within ‘learning centred’ orientations.

In the same line of confirming or further probing previous research, Pratt (2001; 1998) re-asserted his five perspectives on teaching (transmission, developmental, apprenticeship, nurturing and social reform). He claimed that orientations were interrelated sets of beliefs and intentions, giving sense and direction to actions. Importantly, he conceived that these orientations were not in a hierarchical relationship. For him, no orientation was better than any other. What made one orientation better or worse was its implementation.

The third group of studies provided new insights into conceptions of teaching. For example, Åkerlind (2004) challenged Kember’s (1997) claim that no further exploratory research was needed in this area. She found four experiences of teaching:
1. A teacher transmission focused experience.
2. A teacher – student relations focused experience.
3. A student engagement focused experience.
4. A student learning focused experience.

Table 4 provides more detail about these experiences.

Table 4: Key aspects of the variation in ways of experiencing being a university teacher

<table>
<thead>
<tr>
<th>Role of student</th>
<th>Benefits for students</th>
<th>Benefits for teacher</th>
<th>Breadth of benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passive recipients</td>
<td>Knowledge as facts</td>
<td>Nothing or new content knowledge</td>
<td>Student only or student and teacher</td>
</tr>
<tr>
<td>Responsive recipients</td>
<td>Knowledge and Skills</td>
<td>New content and teaching enjoyment</td>
<td>Student and teacher</td>
</tr>
<tr>
<td>Active recipients</td>
<td>Knowledge, skills and enjoyment</td>
<td>New content and teaching enjoyment</td>
<td>Student and teacher</td>
</tr>
<tr>
<td>Active creator</td>
<td>Knowledge, skills, enjoyment and development</td>
<td>New content, enjoyment and understanding</td>
<td>Student, teacher and field, etc.</td>
</tr>
</tbody>
</table>


These findings were in line with previous research which found the understanding of teaching ranged from ‘teacher centred’ to ‘student centred’ conceptions. However, what was novel in Åkerlind’s study were the new dimensions of teaching. She presented variation in the experience of teaching along four key dimensions: role of students, benefit for students, benefit for the teacher, and breadth of benefit. Only the first one had been reported in Kember’s dimensions of teaching. For Åkerlind, it indicated that there may still be much to learn about different facets of teaching. Therefore, exploratory studies of conceptions of teaching should not be discouraged.

Newer studies can be interpreted as further exploring dimensions of teaching and providing new insights as well. For example, Carnell (2007) conducted a small study of eight teachers. In her sample, all the interviewees considered students’ learning as the aim of effective teaching. She recognised similarities between what her teachers told her and conceptions of
teaching as supporting students’ learning described in earlier studies. Furthermore, she found that key features of effective teaching, for her interviewees, were:

1. Learning should be made transparent.
3. A community of learners generates knowledge.

In Carnell’s view, effective teaching, would involve co-constructing knowledge among teachers and students, in a process where boundaries between the roles become blurred. She stated that elements hindering this sort of teaching related to a ‘performative’ culture which gives too much importance to external demands, such as lack of time or excessive importance given to research and publication rather than teaching.

Parpala and Lindblom-Ylänne (2007) conducted an interview-based study with 20 teachers from ‘units of high-quality education’ in one Finnish university. This concept is used in Finland for departments or faculties which are recognised for the high quality of their teaching. Six dimension of good teaching emerged:

1. Teaching practice, which is related to three features. First, it emphasises that knowledge is better constructed through dialogue between teachers and students. A proper class size help with this. Second, importance is given to relating what they are teaching to a larger context, both to what other teachers are teaching and to real world situations. Third, good teaching practice implies using a wide variety of methods, such as lecturing, group work and exercises.
2. Teaching context. This dimension was developed from the teachers’ statement that the aim of teaching should be students’ learning.
3. Teachers’ role, which for this group of teachers was motivating and inspiring students and being an expert in their fields.
4. Students’ role was seen as to be motivated for learning and actively processing knowledge.
5. Atmosphere, which emerged as an important element for having good discussions. A cosy and functional atmosphere was sought.
6. Physical environment should be appropriate, not hindering engaging in good teaching.
This study contributed to examining different facets of teaching, as proposed by Åkerlind (2004). However, it included one dimension, ‘physical environment’, which may be seen as a factor influencing teaching, rather than part of a conception of teaching. Besides, the description of the dimension ‘teaching context’ did not provide enough information for grasping a clear understanding of its role in characterising what good teaching is. Therefore, while this is a valuable study further exploring different facts of teaching, it should provide a better elaboration of the dimension ‘teaching context’ and clarify whether the dimension ‘physical environment’ is part of the context of good teaching or part of its definition.

In relation to a particular type of teaching - tutoring - Ashwin (2006a) investigated, from a phenomenographic perspective, tutors ‘accounts’ of tutorials. He preferred to use ‘accounts’ instead of ‘conceptions’. Twenty tutors from the University of Oxford participated as interviewees, and eighteen completed the approaches to teaching inventory as well. Four accounts of tutorials were found:

1. Tutorials as a place where tutors help students to develop an understanding of concepts.
2. Tutorials as a place where students see how to approach their discipline.
3. Tutorials as a place where evidence is critically discussed.
4. Tutorials as a place where new positions on the topic are developed and defined.

These accounts provide evidence that even when considering a single method of teaching there can be significant variation in the way that teachers conceive teaching.

The final study included in this section is by Law et al (2007). The study stresses cultural specificities in conceptions of teaching. Authors interviewed nineteen teacher educators from an education faculty in Hong Kong. They used a grounded approach to analyse the data and found five key themes:

1. Eclectic teaching and learning strategies: most interviewees described the intention of being versatile and selecting a wide range of teaching strategies in different teaching situations.
2. Sensitivity towards students needs: all interviewees showed a high level of commitment to students’ needs and willingness to adjust their practice to those needs.
3. Theory-based instruction: all teachers had sophisticated ideas about theories of learning and intended to use them in their teaching. This was not surprising; the interviewees were from an education faculty.

4. Using feedback as a pedagogical instrument: all the teachers in the sample used feedback from students to improve their teaching.

5. Showing professional commitment and passion: most of the interviewed teachers had a strong commitment to their profession.

Law et al (2007) highlighted that the themes emerging from their interviews were in line with ideas about good teaching developed in western conceptualisations, but included factors not often presented in previous studies, such as theory-based instruction, professional commitment and passion.

In summary, conceptions of teaching have been described in a number of studies ranging from less complete or fragmented, focusing on content; towards more complete or cohesive, focusing on students’ learning. Recent studies have provided new developments in the area: replicating and providing more evidence to support previous research; developing new dimensions to understanding conceptions of teaching; applying this area of research to very specific teaching domains; or, exploring conceptions of teaching in different cultural settings. A feature of studies conducted more recently has been their emphasis on giving an account of ‘student-learning centred’ conceptions of teaching. The next section focuses on approaches to teaching.

2.2.2 Approaches to teaching

Research on approaches to teaching emerged in parallel with research on conceptions of teaching in the early nineties. Trigwell et al (1994) investigated, from a phenomenographic perspective, approaches to teaching in an interview based study of 24 science university teachers. When conducting their research, the authors found that many of the studies on teaching had only focused on strategies. Drawing on research on students’ approaches to learning, they stated that intentions associated with teaching strategies should also be addressed. Research on students had demonstrated that the teaching of learning strategies on its own - to help students to achieve better outcomes - was not enough. Therefore, intentions
needed to be addressed, as they guide what students and teachers actually do in learning and teaching. From the Trigwell et al (1994) study, three teaching strategies and four intentions were found. Logical combinations of intentions and strategies yielded five approaches to teaching. This is presented in Table 5.

Table 5: Approaches to teaching

<table>
<thead>
<tr>
<th>Intention</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher-focused</td>
</tr>
<tr>
<td>Information transmission</td>
<td>A</td>
</tr>
<tr>
<td>Concept acquisition</td>
<td>B</td>
</tr>
<tr>
<td>Conceptual development</td>
<td></td>
</tr>
<tr>
<td>Conceptual change</td>
<td></td>
</tr>
</tbody>
</table>

From Trigwell et al, 1994, p. 78.

The Trigwell et al (1994) approaches can be briefly described as follows:

1. A teacher – focused approach with the intention of transmitting information to students: in which the focus is on transmitting facts and skills. Prior students’ knowledge is not considered; neither is active learning.
2. A teacher – focused approach with the intention that students acquire concepts of the discipline: in which the focus is on telling students concepts of the discipline and their relationships. No active learning is sought.
3. A teacher/student interaction strategy with the intention that students acquire the concepts of the discipline: in which importance is given to active engagement in the teaching – learning process.
4. A student – focused strategy aimed at students developing their conceptions: in which the focus of teaching is promote students’ own knowledge construction in order to develop their conceptions.
5. A student – focused strategy aimed at students changing their conceptions: in which the focus of teaching is on changing students’ conceptions or world views.

An ‘approaches to teaching inventory’ (ATI) was devised based on the qualitative findings. Five subscales were developed representing two intentions, information transfer and conceptual change and three strategies: teacher focused, student/teacher interaction and student focused. A correlation matrix showed statistically significant correlations between
information transfer intention and teacher focused strategy subscales. It also showed a substantial positive correlation between the student teacher interaction strategy and the student focused strategy subscales. Finally, it showed significant correlations between the conceptual change intention sub-scale and student teacher interaction strategy and student focused strategy subscales. Also, a principal components analysis showed a clear relationship between intention and strategy. Conceptual change intention, student teacher interaction intention and student focused strategy subscales loaded heavily on the first principal component. Information transfer intention and teacher focused subscales loaded heavily on the second one. These results established congruence between intention and strategy in approaches to teaching. It made the qualitative and quantitative studies results coherent. The strategy used matched the intention teachers had in their teaching (Trigwell & Prosser, 1996).

The ‘approaches to teaching inventory’ has since been used in many studies. For example, Trigwell (2002) used it to explore approaches to teaching in design, finding that teachers in the subject are more likely to adopt student centred approaches. Also, it has been used for researching teaching professionalization (Lueddeke, 2003), leadership (Martin, Trigwell, Prosser, & Ramsden, 2003), dissonance in teaching (Prosser, Ramsden, Trigwell, & Martin, 2003) and conceptual change (Arvidson & Roxa, 2004), just to mention a few. Further development of the ‘approaches to teaching inventory’ has yielded an improved version currently being used in studies (Prosser & Trigwell, 2006; Trigwell & Prosser, 2004; Trigwell, Prosser, & Ginns, 2005). The ‘approaches to teaching inventory’ has been criticised by Meyer and Eley (2006). The authors claim that the development and application of this inventory has been methodologically flawed and conceptually limited. However, Trigwell and Prosser (2006) have provided convincing evidence that the inventory is a useful two dimensional instrument for researching approaches to teaching.

Lindblom-Ylänne et al (2006) applied the ‘approaches to teaching inventory’ to investigate how discipline and context affect approaches to teaching. Their research sample included 201 lecturers from the University of Helsinki, 3 from Helsinki School of Economics and Business Administration, 72 from the University of Oxford and 64 from Oxford Brookes University. Altogether, there were 340 lecturers from different disciplines and from two countries (United Kingdom and Finland). The researchers found that both discipline and context had an influence on approach to teaching. Regarding disciplines, it was found that lecturers in ‘hard’ disciplines were more likely to have a teacher focused approach, while lecturers from ‘soft’
disciplines were more likely to have a student focused approach. Considering contexts, lecturers were asked to complete the ‘approaches to teaching inventory’ thinking first about their most usual context of teaching and then, answering it a second time, thinking about a less usual context of teaching. Results showed that both student focused and teacher focused approaches varied from one context to another, but the first approach seemed to be more sensitive to the context.

Studying the same phenomenon, Kember & Kwan (2000) established a characterisation of teaching approaches held by university lecturers, in an attempt to relate them to their conceptions of teaching classification. 17 teachers from three different departments in a university were interviewed. The interview analysis showed two main approaches: content centred, in which the content to be taught is emphasised and learning centred, where the emphasis is on the learning process. One motivation and five strategy dimensions emerged from the interviews. These dimensions are presented in Figure 3.

Figure 3: Approaches to teaching motivation and strategy dimensions

From Kember & Kwan, 2000, p. 476
It is important to notice key differences in the way these two groups of authors understand approaches to teaching. Trigwell et al (1994; 1996) gave importance to intention as a key element in determining the approach teachers adopt. Also, they describe their approaches in terms of logical relations between intentions and strategies and they discern a hierarchical relationship among them. In contrast, Kember & Kwan (2000) understand approaches as a continuum of dimensions related to motivation and strategies, not including intentions as part of their description of approaches. They situate teachers in approximate points in the continuum and then assign them as content centred or learning centred in their approaches.

Postareff and Lindblom-Ylänne (2008) have recently extended the understanding of approaches to teaching by researching different aspects of this phenomenon. They interviewed 69 teachers from two Finnish Universities, drawn from a wide range of disciplines. Interview transcripts were content analysed. Four broad aspects of approaches to teaching emerged: teaching process, learning environment, conception of learning and pedagogical development. Each of these aspects has its own dimensions. They are presented in Table 6.

It is important to note that the characterisation of approaches to teaching in this study included ‘conceptions of learning’, which had been considered a separate element of the experience of teaching (Prosser, Trigwell & Taylor, 1994), rather than an approaches’ dimension. Besides, this characterisation of approaches to teaching included dimensions not reported before, such as ‘teaching process’, ‘teaching practices’, ‘assessment practice’, ‘pedagogical development’ and ‘pedagogical awareness’. Having noted these differences, this perspective confirms the existence of two main approaches to teaching reported by other researchers (Kember & Kwan, 2000; Trigwell & Prosser, 1994) and provides new insights to thinking about approaches to teaching.
Table 6: Variation in descriptions of teaching

<table>
<thead>
<tr>
<th>Learning-focused approach to teaching</th>
<th>Content-focused approach to teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teaching process</td>
<td></td>
</tr>
<tr>
<td>1.1. Planning of teaching</td>
<td></td>
</tr>
<tr>
<td>Students’ needs, prior knowledge and expectations are the</td>
<td>Teachers’ own interests are the starting point when designing teaching</td>
</tr>
<tr>
<td>starting point when designing teaching</td>
<td>Teacher makes an exact schedule and designs the content of the course by him/herself</td>
</tr>
<tr>
<td>Teacher brings students into the planning process if possible</td>
<td>There is little space for flexibility or changes</td>
</tr>
<tr>
<td>The plan is not too precise; there is space for changes according to the situation</td>
<td></td>
</tr>
<tr>
<td>1.2. Teaching practices</td>
<td></td>
</tr>
<tr>
<td>Improvising is a way to construct teaching uniquely to suit different audiences</td>
<td>Teaching proceeds according to the exact plan the teacher has made</td>
</tr>
<tr>
<td>Knowledge is constructed together with the students</td>
<td>Teacher transmits the knowledge to the students</td>
</tr>
<tr>
<td>Teaching concentrates on large entities</td>
<td>Teaching concentrates more on facts and details which are pointed out by the teacher</td>
</tr>
<tr>
<td>Teacher is aware of students’ different ways of learning and uses varying, activating teaching methods in order to enhance students’ learning</td>
<td>Teaching method is selected on the basis of what is most comfortable for the teacher</td>
</tr>
<tr>
<td>1.3. Assessment practices</td>
<td></td>
</tr>
<tr>
<td>Assessment is directed to measure students’ deep understanding of the phenomena</td>
<td>More traditional forms of assessment are used which are comfortable for the teacher</td>
</tr>
<tr>
<td>Teacher uses varying forms of evaluation (e.g., oral or written)</td>
<td>Teacher cannot or is afraid to use a variety of forms</td>
</tr>
<tr>
<td>2. Learning environment</td>
<td></td>
</tr>
<tr>
<td>2.1. Teachers’ role</td>
<td></td>
</tr>
<tr>
<td>Teacher encourages students to be critical and active</td>
<td>Teacher points out the important contents</td>
</tr>
<tr>
<td>Teacher is a facilitator and has an equal and casual relationship with the students</td>
<td>Teacher has a more distant relationship with the students</td>
</tr>
<tr>
<td>Students learn from the teacher and vice versa</td>
<td>Teacher sees teaching as an obligatory part of being an academic</td>
</tr>
<tr>
<td>Teacher has a positive attitude towards teaching</td>
<td></td>
</tr>
<tr>
<td>2.2. Students’ role</td>
<td></td>
</tr>
<tr>
<td>Teacher sees students as active participants</td>
<td>Teacher sees students as less active recipients and listeners</td>
</tr>
<tr>
<td>Students are capable of finding answers by themselves and process the knowledge</td>
<td>Little can be expected from students</td>
</tr>
<tr>
<td>Students are individuals with individual needs</td>
<td>Teacher sees students as a large crowd of people</td>
</tr>
<tr>
<td>Students are responsible for their own learning in that they have to find the answers by themselves</td>
<td>Teacher is responsible for students’ learning</td>
</tr>
<tr>
<td>2.3. Interaction</td>
<td></td>
</tr>
<tr>
<td>Interaction between teacher and students and among students improves students’ learning outcomes</td>
<td>Interaction does not enhance students learning</td>
</tr>
<tr>
<td>Knowledge is constructed through interaction</td>
<td>Teachers cannot or are afraid of using activating methods</td>
</tr>
<tr>
<td>Interactive elements are used with all group sizes in order to enhance students’ learning</td>
<td>Interactive elements are not used with large groups</td>
</tr>
<tr>
<td>2.4. Atmosphere</td>
<td></td>
</tr>
<tr>
<td>Good atmosphere supports learning; ‘Easy to ask’ and a safe atmosphere encourages students to present their views</td>
<td>A more dominant atmosphere</td>
</tr>
<tr>
<td>Atmosphere is constructed together with the students</td>
<td>Teacher tries to create a good atmosphere through good performance or through being humorous</td>
</tr>
<tr>
<td>3. Conception of learning</td>
<td></td>
</tr>
<tr>
<td>Learning is about insights, application of knowledge, developing views, critical thinking, deep understanding</td>
<td>Learning is more about memorizing facts or remembering the course content</td>
</tr>
<tr>
<td>Learning is a process in which the students construct their own views of the phenomena</td>
<td>Learning is about remembering the right answers or solutions</td>
</tr>
<tr>
<td></td>
<td>Right answers can be found through reading the course literature</td>
</tr>
</tbody>
</table>

(Continued on next page)
Approaches and conceptions of teaching appear to be associated. Trigwell & Prosser (1996) showed significant associations between conceptions of, approaches to, teaching from the analysis of their 24 science university teachers. Teachers who conceived teaching as transmission tended to adopt approaches focused on teaching and content; while those holding conceptions about facilitating understanding tended to present approaches focused on students’ learning. Also, they found significant relationships between conceptions of learning and conceptions of teaching. The teachers who conceived teaching in a transmissive manner, conceived learning mainly as accumulation and acquisition. Those conceiving teaching as helping students to acquire knowledge or concepts, or developing their conceptions were more likely to conceive learning as conceptual development or change. Kember & Kwan (2000) criticized these findings because they did not see a clear distinction between conceptions and intentions. They state that the associations reported by Trigwell & Prosser would be almost tautological (p.472). They developed their own study which showed eight out of nine lecturers who held one of the two ‘transmissions of knowledge’ conceptions of teaching, adopted a ‘content centred’ approach to teaching. Seven of eight teachers who were allocated to be in one of the two ‘learning facilitation’ conceptions were found to adopt ‘learning centred’ approaches. For Kember & Kwan these results showed sufficient evidence to state that there was a strong relationship between conceptions of, and approaches to, teaching. It is important to note that, although from different perspectives, both groups of researchers arrived at similar findings.

In summary, although researchers have used different conceptualisations to investigate how university teachers teach, two main broad approaches to teaching have been reported. The first approach, named content or teaching focused, is one in which teachers are focused on their teaching and transferring information to students. The second one, named student or learning focused, is one in which they are focused on students’ learning and how students develop conceptual understanding. Furthermore, conceptions of teaching were associated
with approaches to teaching, as revealed in the two different studies. In the next section, research on how these approaches are associated to approaches to studying and eventually to learning outcomes, is presented.

2.2.3 Relationships between teaching and learning (outcomes of teaching)

In a qualitative study relating approaches to teaching, and approaches to learning, in creative writing, Martin & Ramsden (1998) reported three case studies in which a link was made between teachers’ approaches to teaching and students’ approaches learning. In the first, the teacher approach was focused on the established literature, and their students approached learning based on the literary and analytical nature of the subject. The second case study reported a teacher focused on the skills and craft of writing, and wanting their students to learn this. Students reported approaches focused on skills and craft as well. The third teacher was focused on what the writer had to say, and conducted her teaching encouraging students to reflect on what they had to say. Students approached the subject trying to learn to think as well as write. The analysis of these case studies suggested that there was a high level of correspondence between teacher and student approaches.

Similarly, Trigwell et al (1999) wanted to know if there were relationships between approaches to teaching and approaches to learning in particular classes rather than at a departmental level. In order to answer their question, they applied the ‘approaches to teaching inventory’ in conjunction with a modified version of the ‘approaches to studying inventory’ (Biggs, 1987) to 48 first year university chemistry and physic classes. The study included 46 teachers and 3956 students. They conducted factor and cluster analyses. Results from principal component factor analysis showed that an information transmission/teacher-focused approach to teaching was strongly associated with surface approaches to studying and that a conceptual ‘change/student-focused approach’ to teaching was associated with a non-surface approach to studying, although less strongly. Cluster analysis suggested that in classes where teachers reported more of an ‘information transmission/teacher-focused’ approach to teaching, students reported using a more surface approach to studying. In contrast, where teachers reported adopting a more ‘conceptual change/student-focused’ approach to teaching, students adopted deep approaches to studying. Therefore, the authors claimed that approaches
to teaching and approaches to learning were associated. When teachers adopt more ‘conceptual change/student-focused’ approaches to teaching, students are more likely to adopt deeper approaches to learning.

In summary, there have not been as many studies, as in learning research, relating approaches and outcomes in teaching. However, there is limited, but significant evidence that there is an association between teachers’ approaches to teaching and students’ approaches to learning. Deep approaches to learning are highly likely to lead to high quality learning outcomes. Therefore, it is desirable that teachers adopt an approach to teaching which promotes a deep approach to learning. The next section focuses on teachers’ perceptions of their teaching situation.

2.2.4 Perception of the teaching situation

Prosser & Trigwell (1997a) investigated perceptions of the teaching situation interviewing 13 university teachers. They developed an inventory based on interviews to inquire if perceptions of the teaching situation were related to approaches to teaching. Seventeen areas were identified in relation to what teachers thought had an influence on their approaches to teaching. The areas, which are not all explicitly presented in the paper, were reduced to five: composing the inventory sub-scales. They are:

1. Control of teaching, which focuses on the amount of material included in the curriculum and amount of variation and diversity in what is taught and how.
2. Appropriate class size, which focuses on how much interaction class size affords between the teacher and students.
3. Enabling student characteristics, which focuses on the variation in ability of students, language background and gender.
4. Departmental support for teaching, which focuses on pressure to be a researcher rather than a teacher.
5. Appropriate academic workload, which focuses on time allowed for teaching duties compare to time allocated for research.
The ‘approaches to teaching’ inventory was answered with the ‘perceptions of teaching situation’ variables by 46 teachers from different Australian universities. Data were analysed using correlational, factor and cluster analysis. Correlational analysis showed significant and positive correlations between the ‘conceptual change/student focused’ subscale and ‘appropriate class size’ and ‘department support for teaching’ subscales. Also, a negative and significant correlation was found between the ‘information transfer/teacher focused’ subscale and the ‘appropriate class size’ subscale. Principal components analysis confirmed and expanded the correlational analysis. Factor 1 showed substantial loadings on each of the perception variables, suggesting staff perceptions were coherently related. Factor 2 showed substantial loadings on ‘conceptual change/student focused’ approach and ‘control of teaching’, ‘appropriate class size’ and ‘departmental support for teaching’. Factor three showed substantial loadings on the ‘information transfer/teacher-focused’ approach and ‘departmental support for teaching’. Cluster analysis yielded three groups. The first one tended to adopt a ‘conceptual change/student-focused approach’ and perceived they had control over their teaching, their class sizes were not too large, their students had enabling characteristics, they had appropriate academic workload and their department valued teaching. The second group tended not to adopt a ‘conceptual change/student-focused approach’ and perceived little control over teaching, their classes were too large and their departments did not support teaching. The third group tended to adopt a ‘conceptual change/student focused approach’; they perceived that they had little control over their teaching and that their class sizes were not too large. However, they did not perceive their students as having enabling characteristics.

Ramsden et al (1997) replicated this study with a larger sample of over 400 university teachers. Factor analysis demonstrated that the ‘conceptual change/student-focused’ approach to teaching was associated with perceptions that the workload was not too high, class size was not too big, that teachers had control over teaching, and that there was not too much variation in students’ characteristics. On the other hand, information transmission/teacher focused approaches to teaching appeared to be associated with a perception of lack of control over teaching and lack of departmental support for teaching.

Kember and Kwan (2000) also suggested that teaching situation elements had an influence on approaches to teaching. They stated that the approach would be largely determined by conceptions of teaching if they perceived that the situation afforded their preferred approach.
However, if the situation changed they were likely to move away from their preferred approach. Elements likely to influence approaches to teaching are:

1. An extensive and intensive procedure for course development; particularly if external bodies are involved.
2. Intensive procedures for monitoring and reviewing teaching.
3. Team teaching.
4. Large classes.
5. Teaching rooms not suitable for the type of teaching preferred.
6. Heavy teaching loads.

In summary, research has shown that the perception of the teaching situation is associated with approaches to teaching. As with findings on students’ perceptions of their learning situations, teachers adopted an ‘information transfer/teacher focused’ approach when they perceived the situation affording this approach; for example, lack of departmental support or lack of control over their teaching. Besides, when they perceived a situation affording a ‘conceptual change/student focused’ approach they would act congruently; for example, when they perceived an appropriate workload and class size, control over what they teach and students with enabling characteristics. Research presented so far has established associations between elements composing the teaching experience: conceptions, approaches and perceptions. However, studies have also reported associations which do not fit in the theory. This dissonance in teaching is the subject of the next section.

### 2.2.5 Dissonance in teaching

Research associating students’ approaches to learning, teachers’ approaches to teaching and their perception of the learning and teaching situation has been extended through studies providing insights into the phenomenon of dissonance in teaching. Prosser et al (2003) investigated ‘dissonant’ forms of teaching and their relation to student learning. They included students and teachers in their study. 8829 students answered a subject-specific version of the ‘study process questionnaire’, called subject ‘study process questionnaire’, about their approaches to studying (Biggs, 1987) and the ‘course experience questionnaire’, called the ‘subject experience questionnaire’, about their perception of the learning
environment (Ramsden, 1991b). Teachers teaching in the subjects (51), where the surveyed students were enrolled, answered questionnaires as well. There were 408 teachers. The teachers answered a short version of the ‘approaches to teaching inventory’ and the ‘perception of the teaching environment inventory’ (Prosser & Trigwell, 1997a). In this particular study, they used the concept dissonance to describe relations between approaches. For example, dissonance is found where deep approaches are related to surface approaches. The concept coherent/incoherent was used to describe relations between approaches and perceptions of the environment. For example, an incoherent pattern was one in which a surface approach was used with perceptions supporting a deep approach. Findings demonstrated that there was variation in the structural relationships between university teachers’ approaches to teaching, their perceptions of the teaching situation and students’ reports of higher or lower quality learning experiences. For units where lower quality learning experiences were reported (poor teaching, high workloads, less clear goals), teachers reported dissonant approaches to teaching and perceptions of the teaching environment which were unrelated or incoherent. For units were higher quality learning experiences were reported, teachers did not reported dissonant approaches to teaching and, their perceptions of the teaching environment were coherent. The first situation was dominant in less experienced teachers (tutors and demonstrators); while the second one tended to be present in experienced teachers. The authors suggested that better teaching outcomes, meaning higher quality students’ learning outcomes, were likely to be found in courses where teachers approached teaching consonantly. Moreover, dissonant and incoherent approaches to, and perceptions of, teaching would be associated to lower learning outcomes. Therefore, these findings and claims imply the phenomenon of dissonance is very relevant to understanding and promoting better teaching and learning.

Postareff et al (2008) extended the work of Prosser et al on dissonance in teaching. They conducted a qualitative study, based on interviews, with 97 teachers from the University of Helsinki and Helsinki School of Economics and Businesses Administration. 80 of the 97 university teachers completed the ‘approaches to teaching inventory’. Interview transcripts were analysed with the aim of building teachers’ profiles based on ten aspects of teaching:

1. Planning of teaching.
2. Teaching practices.
3. Assessment practices.
4. Teachers’ role.
5. Students’ role.
6. Interaction.
7. Atmosphere.

They found four profiles of university teachers, two of them containing two sub-profiles. Table 7 summarises the Postareff et al findings.

<table>
<thead>
<tr>
<th>Table 7: Teaching profiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consonant content-focused profiles (n = 6)</td>
</tr>
<tr>
<td>Systematically content-focused profiles (n = 29)</td>
</tr>
</tbody>
</table>

From Postareff et al, 2008, p. 54

Next, a brief description of the profiles is presented:

   a. Systematically content-focused profiles: teachers in this profile were extremely content-focused, both in terms of teaching strategies and conceptions of teaching. They were completely focused on research and saw teaching as an obligatory duty.

2. Dissonant profiles.
   a. Systematically dissonant profiles: in this profile learning-focused and content-focused descriptions of teaching conceptions and strategies were combined. This group of teachers emphasized their role as academic authorities who were expert in their fields. They were more oriented to research than teaching.

3. Towards learning-focused profiles.
   a. Contextually varying profiles: teachers in this profile were categorised as having learning-focused conceptions of teaching and learning; but describing
their teaching strategies as both learning and content focused. Different approaches were applied in different contexts.

b. Developing profiles: in this case profiles were similar to those who were ‘contextually varying’. Teachers had clear learning-focused conceptions, and described their teaching strategies as combining learning and content focused approaches. The difference was, the teachers were in a development phase, wanting to advance to more consonant profiles.

   a. Systematically learning-focused profiles: teachers having this profile reflected logical combinations of learning-focused aspects of teaching; even when they presented content-focused aspects, they did it in a reflective manner.
   b. Reflectively learning-focused profiles: this final profile is the most advanced. Teachers holding it were extremely learning-focused, even in situations where more content-centred strategies may re-emerge (large classes, for example). They reflected deeply on their teaching and were aware of what they did and why they did it.

The authors stated that among possible causes of dissonance would be the inability of teachers to reflect upon their own teaching, and in this way challenging teaching approaches in use in their departments. Besides, there would be some disciplinary variation: teachers from ‘hard’ sciences tended to present more dissonant profiles than those from ‘soft’ sciences. Postareff and her colleagues stated that more research was needed in relation to dissonance in teaching and proposed using qualitative methods as being more likely to detect this phenomenon. They also proposed the concept of ‘teaching orchestration’, mirroring ‘studying orchestration’, and referring to research exploring ways in which teachers direct their resources in a specific teaching context. Therefore, this sort of research should include inquiry into the relationship between approaches to teaching, conceptions of teaching and the influence of the teaching situation-context (Postareff et al., 2008).

In summary, the phenomenon of dissonance has also been found in teaching. There have been some differences in the conceptualisation of this phenomenon but, overall, it implies a relationship between approaches, conceptions and perception of the situation which does not fit clearly in the previous theory of teaching in Higher Education. Finally, this phenomenon
has been found to be important; because dissonant teaching would lead to lower quality learning outcomes.

### 2.2.6 Summary and relation to my study

This section of the literature review has presented research into teaching in Higher Education. This research has revealed three main elements relevant to the experience of teaching: conceptions, approaches and perceptions. It has been found that there is variation in how teachers approach teaching, how they conceive teaching and how they perceive their teaching situation. Approaches to teaching have been described as ‘teacher-content centred’ and ‘student-learning centred’. Conceptions of teaching have also been found to range from ‘content-focused’ to ‘students’ learning-focused’ conceptions. Perceptions of the teaching situation turned out to be influenced by sense of control over teaching, appropriate class size, students’ characteristics, departmental support for teaching, and appropriate academic workload. This line of research has demonstrated that these elements are associated. Teachers are more likely to adopt ‘student-learning focused’ approaches to teaching when they conceive teaching in a cohesive manner, and perceive that the situation affords teaching that focuses on learning. Moreover, the phenomenon of dissonance, originally found in students’ learning research, has also been found in teaching. This phenomenon shows that some teachers approach teaching in ways which are not expected; for example, when they combine elements of contrasting approaches or unrelated conceptions. The concept of ‘teaching orchestration’ has also been proposed as useful for research on teaching.

This line of research on teaching is of central importance to my own study. From it, I will adopt the following elements:

1. A general model to analyse teaching. This includes approaches, conceptions and perception of the teaching situation; as well as their interrelationships. This model, developed from face-to-face teaching settings, will be expanded through my research to see whether and how it works in blended learning environments.

2. The ideas of ‘consonance/dissonance’, ‘coherence/incoherence’ and ‘teaching orchestration’ to analyse how the elements mentioned above are integrated in particular teaching situations. These concepts have originated in face-to-face teaching
situations and will be expanded through my research to see whether and how they apply in blended learning environments.

In the next section, a review of literature on eLearning and blended learning is presented.

2.3 eLearning and bLearning in Higher Education

In this section, perspectives and research on eLearning and bLearning in Higher Education are presented. The review is organised around four sub-sections; each related to significant aspects of eLearning and bLearning in Higher Education. In the first sub-section, a broad overview of these elements is presented. In the second, five models for understanding the incorporation of learning technologies in learning and teaching are described. In the third sub-section, I turn to relational research conducted on students’ experiences of learning in blended learning (bLearning) environments. The fourth sub-section presents and analyses research on teaching using eLearning from a relational perspective. It finishes with a summary of the review presented.

2.3.1 The landscape of eLearning and bLearning

Laurillard (2006) stated that a university student who is learning through any form of information and communication technologies is using eLearning. Her definition of these technologies was wide and included:

1. Internet access to digital versions of materials unavailable locally.
2. Internet access to search, and transactional services.
3. Interactive diagnostic or adaptive tutorials.
4. Interactive educational games.
5. Remote control access to local physical devices.
6. Personalised information and guidance for learning support.
7. Simulations or models of scientific systems.
8. Communication tools for collaboration with other students and teachers.
10. Virtual reality environments for development and manipulation.
11. Data analysis, modelling or organisation tools and applications.
12. Electronic devices to assist disable learners.

eLearning could be deployed to support learning using any of the above-mentioned technologies. In addition, Laurillard stated that the possibilities of eLearning extend beyond what can currently be imagined, as new applications are continually being developed, thus extending the frontiers of what is educationally feasible. As an example of this, Laurillard referred to 3G mobile phones, which would have the potential of deeply impacting how people accessed learning environments. The author claimed that eLearning technologies could impact on different levels of the experience of learning. These were:

1. Cultural: students are used to, and comfortable with, eLearning methods as they are similar to information search and communication tools they use in other parts of their lives.
2. Intellectual: eLearning provides new ways of engaging with ideas, through both interactive materials and by interacting with people.
3. Social: the reduction of social difference and the blurring of roles afforded by online environments, fitting with the idea that students need to take more responsibility for their own learning.
4. Practical: eLearning allows the management of quality at scale, as well as sharing resources across networks. Additionally, flexibility in relation to time and place make eLearning good for widening participation.

In a similar line of thinking, McConnell (2000) used the concept of networked learning to refer to the emergence of these technologies. For him, networked learning had a great educational potential (pp. 190 – 191):

1. It has a focus on student-to-student collaboration.
2. It can change expectations of competition to expectations of sharing, cooperation and collaboration.
3. It implies a shift to a constructivist paradigm of learning.
4. It gives great importance to sharing (resources, ideas, etc).
5. It allows increased openness in the learning process.
6. It can be use to support online discussions effectively.
7. It allows integration of existing learning resources.
8. It promotes the development of learning communities.
9. The web and internet have wide possibilities to find, retain and use learning resources.
10. It softens the ‘authority’ of publications, allowing students to develop and share their own knowledge and learning resources.

For this author, eLearning had the potential to develop engaging, active and student-centred learning environments (McConnell, 2006).

Despite the predicted benefits of eLearning in Higher Education, its use has been the subject of intense debate. On one hand, it has been seen in terms of its potential for high quality learning, at the same time, providing learners with access to education anytime - anywhere; and, thus, preparing them for the knowledge society (eg. McConnell, 2006). Also, situations universities were currently facing, such as massification, lifelong learning demands and globalisation, could be addressed to some degree by incorporating eLearning. Mass higher education would require new ways of organising teaching and learning without losing quality due to an increasing number of students. Lifelong learning and the changing nature of students would require increasing flexibility. The use of eLearning could address both issues, by providing quality educational experiences in a context in which individual attention from teachers would be unlikely due to the large number of students, and could provide flexibility for those who were working full or part time and/or have other commitments. These technologies could, at the same time, accelerate the process of internationalisation of Higher Education. People from all over the world would be able to enrol in courses delivered through the web, as many Universities have already been doing (O'Donoghue, Singh, & Dorward, 2001). On the other hand, a negative perspective emphasizes that eLearning could undermine the quality of learning and be exploited as a resource to sidestep, rather than address properly, the problems affecting Higher Education. Chanon (2000) stated that governments may be tempted to see eLearning as a ‘quick fix’ for dealing with mass Higher Education and lifelong learning; but more efforts need to be made in order to maintain the quality of courses and not undermine the quality of the learning experience. A very negative position, held by Noble (2002) is that the emergence of eLearning and its relationship with distance education will lead to a process of automation in Higher Education with the aim of commodifying knowledge and commercialising the academy.
Despite divergent positions, reality suggests that eLearning is progressively being incorporated into the experience of learning and teaching. In an increasing number of universities, students are currently being exposed to the use of learning management systems (LMS), e-libraries and e-repositories to access course materials and resources; and some basic forms of online interaction; usually unstructured or loosely structured participation in the use of discussion boards. However, this is not seen as an advanced implementation of eLearning’s potential. Salmon (2005) stated that most universities have adopted or are planning to adopt a LMS; but she sees the early use of LMS as a kind of ‘flapped’ learning which attempts to transfer existing pedagogy to an online medium, adopting a ‘substitutional’ approach. (Her ‘flapping’ image is meant to evoke early attempts at human flight.) Salmon stressed that uploading PowerPoint slides into the LMS, or some loose participation in online discussions, is not enough to create good quality eLearning. Moreover, the work of small groups of innovators, who are using eLearning in an advanced manner, has not yet reached the larger teaching community at universities. For Salmon, these individuals were an exception at the time. Similarly, Laurillard (2006) stated that eLearning tools have effectively found ways to reach students in most universities, mainly in the form of online lecture notes, books and papers, digital materials and discussion boards. But, she highlighted that more could be explored and done with these new technologies, giving students the opportunity of engaging in exploring, manipulating and experimenting. An important issue for her was that emerging technologies have the potential to realise the shift of paradigm that educational theorists have been promoting: towards a more active, learning-centred experience. Therefore, the work of these authors suggested that eLearning has not yet reached a widespread advanced implementation. Although universities have become aware of eLearning as a medium for enhancing students’ learning experiences, more needs to be done to realise what can be expected from learning technologies.

In relation to current developments in the area of eLearning tools and technologies, it is possible to mention trends suggesting a further up-take of eLearning, as described by Salmon and Laurillard. Selected developments would be: improvements to LMS, synchronous virtual classrooms, mobile learning and web 2.0 technologies:

1. LMS are tools which allow teachers to manage their courses, provide materials and links to external websites and provide opportunities for engaging students in online discussions (Rehberg, 2001). Although these features may fall short of what Salmon
and Laurillard (2006) expect from eLearning, it is important to recognise that commercial LMS, such as Blackboard (www.blackboard.com), have recently incorporated blogs as a medium to provide the potential of developing more student-centred learning experiences. Besides, the existence of free, open source LMS, such as Moodle (www.moodle.org), supports the option to develop more ‘student-centred’ learning experiences, and promote constructionist learning. Moodle provides space and flexibility for the students to learn from their own experiences, which could lead to realising ‘student-centred’ learning environments (Cole, 2005).

2. Synchronous virtual classrooms allow learners and teachers to interact and collaborate online in real time. By using them, learners and teachers can participate synchronously in learning activities. Most permit using voice, video and text for communication, but also sharing information through an online whiteboard or even working together on a task, via a shared whiteboard; or on the participants’ desktops. These may be seen as examples of Salmon’s (2005) ‘substitutional’ approach, as they are an online reflection of the face-to-face classroom. However, if used in ways that go beyond the normal lecture, these tools could provide effective support for collaborative tasks. Examples of these synchronous virtual classrooms are Adobe Connect (http://www.adobe.com/education/products/acrobatconnect.html) and Elluminate live (http://www.elluminate.com). Both systems allow real time voice and visual contact between participants, shared whiteboard, an integrated area for the projection of slides or other visuals, capacity for text based interaction, means for learners to indicate that they have questions or are confused and tools for assessing current moods, opinions, and comprehension (Schullo, Hibelink, Venable, & Barron, 2007). More innovative uses of synchronous virtual classrooms have been recently trialled. Monahan et al (2008) reported the integration of collaborative virtual environments and virtual reality. In their research they found students welcomed the incorporation of virtual reality, particularly in relation to addressing social interaction among course participants.

3. Mobile learning technologies are extensive. They include tablet PCs, palmtop computers, personal digital assistants (PDAs), mobile phones (including 3G mobile phones), wireless infrastructure; etc (Cobcroft, Towers, Smith, & Bruns, 2006). These technologies are seen as having great potential for building and supporting collaborative, critical and communicative capacities in learning tasks and activities (Faroq, Schafer, Rosson, & Carroll, 2004). These technologies have been found to
offer other potentialities as well: for example, increased motivation and engagement with learning (Stead, Sharpe, Anderson, Cych, & Philpott, 2006) and a shift towards a more ‘student centred’ approach to teaching (Roschelle, 2003). Teaching resources include SMS (text messaging), audio based learning in the form of podcasting, java quizzes, specially designed modules using mLearning (‘mobile learning’) software, media collection via camera phones, online publishing via SMS, concept maps in mobile devices, among others (Silander, Sutinen, & Tarhio, 2004). mLearning is a rapidly changing area and new technologies are continually emerging.

4. Web 2.0 technologies refer to tools such as blogs, wikis, social networking and folksonomies, among others. O’Reilly (2005) stated that Web 2.0 applications are those which get better as more people use them, consuming and remixing data from multiple sources and, at the same time, providing their own data; which, in turn, can be used by others. Web 2.0 allows users to create, share, integrate, and mix their own and others’ content. In this way, it takes over from so-called Web 1.0 applications where users received content, but were not able to create, share or integrate their own. These technologies have been received enthusiastically in the educational technology community, as they seem to be better – oriented to promoting more active and collaborative forms of learning. In this area, Barnes and Tynan (2007) forecast a future in which university students will make extensive use of Web 2.0 applications. In this optimist’s future, Web 2.0 technologies would be part of the learning experience as a medium to share and create knowledge, blurring traditional spaces for learning. The literature in this area currently presents a wide range of authors experimenting with pedagogical uses of Web 2.0 applications. A few examples would be: implementation of wikis and factors affecting their use in learning and teaching (Choy & Ng, 2007; Elgort, 2007); use of Blogs for supporting collaborative learning (Tretiakov, Kaschek, & El-Qawasme, 2007); and integration of different Web 2.0 applications (McLoughlin & Lee, 2007; Samarawickrema, 2007).

These tools and technologies may have an important role in moving the field forward. Nevertheless, it is important to consider one lesson learnt through many years of attempts to incorporate learning technologies in teaching and learning with more or less success: technology by itself does not promote quality learning experiences. It needs to be grounded in sound pedagogy to be successful. This issue has been framed by Unwin (2007) as a tension between technology and pedagogy. Reflecting on LMS, he saw that most of them encourage
a ‘transmission’ model. Therefore, it would be dangerous to allow this sort of technology to lead the incorporation of eLearning in Higher Education. Some of the other technologies presented above may be seen as nearer to ‘student centred’ approaches; but without a proper pedagogical perspective supporting their incorporation into the students’ experiences of learning it is risky to assume that they will make a positive difference.

Originally, eLearning was closely associated with distance education. Garrison and Anderson (2003, pp. 35-39) stated that eLearning was easily adopted by first generation distance education as paper-based learning materials could be translated in a straightforward manner to the Web. Second generation tools, such as computer assisted instruction through simulations, multimedia and self-paced tutorials flourished on the Web. Third generation took advantage of the human interaction afforded through Web in the form of computer mediated communication. Fourth generation systems have been regarded as the integration of capabilities from the three previous generations. In this generation, three major attributes of the Web: information retrieval, communication and programming are put together to offer quality distance education courses. Moreover, distance education has obtained benefits from using the web, becoming able to reach global audiences (Bates, 2005).

Until the end of the last decade, traditional campus-based universities perceived little advantage in embracing eLearning for their on-campus learning and teaching activities. eLearning was perceived as of little use, as students were seen as being enrolled in a fully face-to-face on campus educational experience. However, this started to change in the first years of this decade. Expectations from students, who wanted to use online resources for learning, as they did for their other everyday activities, and employers, who wanted future professionals to be skilled information technology users, started to pressure universities towards incorporating eLearning (Selwyn, 2007). Moreover, trends such as the increasing volume of online learning resources and capabilities afforded by online environments, which allow interactions among peers, discussions, etc., have promoted the up-take of eLearning. Finally, the desire to make teaching more professional and offer higher quality learning experiences to students, have encouraged a significant number of traditional campus based universities to embrace eLearning seriously (Ellis, Steed & Applebee, 2006). This situation, in which face-to-face learning and teaching experiences are combined with online tasks and activities, has been named blended learning (bLearning).
bLearning has been a contested concept. Different authors have recognised its lack of clarity. For example, Graham (2006) stated that there are at least three uses of the concept in the literature: combining instructional modalities (or delivery media), combining instructional methods and combining online and face-to-face instruction. This author acknowledges the third definition as the most accurate in relation to the historical development of the bLearning concept. Oliver and Trigwell (2005) have pointed out the difficulty of finding a good definition for bLearning. They presented three possible definitions: integrated combination of traditional learning with web-based online approaches, the combination of media and tools employed in an eLearning environment, and the combination of multiple pedagogic approaches irrespective of learning technology use. The authors agree that the first of these definitions is the most commonly used. The definition of bLearning as the combination of face-to-face and online learning experiences can be found underlying research in this area. Examples of this type of research include the work of Davis and Fill (2007) who described and reflected on the experience of embedding bLearning in teaching, and Davies et al (2005) who worked on using blended approaches in a course on neurological analysis. Therefore, as stated by Ellis et al (2006, p. 244), the question would no longer be, why should teachers use eLearning if students are coming on campus anyway, but how eLearning contributes to the quality of the campus learning experience.

In this context, it would be possible to forecast a trend moving towards an increasing up-take of different bLearning experiences. Whether or not eLearning achieves widespread take-up as part of bLearning deployment at universities will depend on many factors, among which could be institutional pressures, lecturers’ approaches, students’ perspectives and so on. It is also a question whether this will lead to expected quality learning experiences. Ashwin’s (2006b) reflection about possible future scenarios for Higher Education is illuminating. He describes two scenarios: ‘bright’ and ‘bleak’. In the “bright” scenario, eLearning would have a key role in supporting collaborative learning, increasing the engagement with scholarly texts, using simulations and going further than just accessing text-based materials over the web. In the “bleak” scenario, the internet and subject databases would be the main sources of information, presented principally as text. Students would work in isolation, with no opportunity of using the web for communication and collaboration with their peers.
2.3.2 Models for understanding eLearning in Higher Education

Research into eLearning in Higher Education comes from a variety of perspectives and has a variety of different aims (Conole & Oliver, 2006). Some models have been developed to make sense of this diversity. Five of them are described in this sub-section:

1. The networked learning in Higher Education model.
2. Laurillard’s conversational framework.
3. Salmon’s eModerating framework.
4. Salmon’s eLearning and pedagogical innovation framework.
5. Garrison and Andersons’ communities of enquiry framework.

2.3.2.1 The ‘Networked Learning in Higher Education’ Team’s Networked Learning Framework

Goodyear et al (2002) developed a pedagogical framework for networked learning design. This framework has a primary aim of helping people develop units based on networking learning. However, it could be used as an analytical model to describe how teaching activities happen in networked learning environments. This is presented in Figure 4.

Figure 4: Goodyear et al model for Networked Learning

From Steeples, Jones and Goodyear (2002), p. 331.
This model considers two components: the pedagogical framework and the educational setting in which the pedagogy is deployed. In the pedagogical framework, the elements constituting it shift from high level beliefs about the purposes of learning, through commitments to a particular way of teaching (philosophy and high level pedagogy); to more practical elements such as descriptions of how to implement specific educational actions (pedagogical strategies and tactics). On the side of the educational setting are the learning tasks, organisational context and learning environment, which would affect student activities, and finally, learning outcomes.

2.3.2.2 *Laurillard’s Conversational Framework:*

Laurillard (2002) stated, for learning to happen conversations must occur among teachers and learners. This specific form of conversation is reflected in her ‘conversational’ framework (presented in Figure 5)

Figure 5: Laurillard’s conversational framework

At the top of the figure, teachers and students operate at the description level. This is the ‘discursive process’ in which the teacher and the student interact, presenting conceptions, theories and ideas and re-describing them. The left side, within the figure, presents the ‘adaptive process’ (‘T adapts task goals in light of S’s description of action’ and ‘S adapts action in light of T’s description’). This process is internal to each participant and implies how they adapt their actions in relation to the ‘discursive process’. At the bottom of the figure, the ‘interactive process’ can be seen, which is on the level of actions related with tasks, where: activities are conducted based on the task set by the teacher, how the student accomplishes the task, and the feedback provided by the teachers, which generate modifications on the student’s actions related to the set task. Finally, on the right of each side is the ‘reflective process’ (‘T reflects on action to modify description’ and ‘S reflects on interaction to modify description’).

Laurillard argued that while the conversational framework can be applied to any academic learning situation, restrictions related to time, number of students and so on can make the teacher-learner conversation presented in the framework impossible. Educational media emerge at this point as a way of enabling one or more interactions within the conversational framework. Five forms of educational media are distinguished. They are presented in Table 8.

<table>
<thead>
<tr>
<th>Type</th>
<th>Examples</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative</td>
<td>Print, audio-vision, television, video, DVD, lecture</td>
<td>Attending – apprehending</td>
</tr>
<tr>
<td>Interactive</td>
<td>Library, hypermedia, enhanced hypermedia, interactive television, web resources</td>
<td>Investigating – exploring</td>
</tr>
<tr>
<td>Communicative</td>
<td>Online conference – synchronous or asynchronous –</td>
<td>Discussing – debating</td>
</tr>
<tr>
<td>Adaptive</td>
<td>Simulations, virtual environments, tutorial programs, tutorial simulations, educational games</td>
<td>Experimenting – practising</td>
</tr>
<tr>
<td>Productive</td>
<td>Microworlds, collaborative microworlds, modelling</td>
<td>Articulating – expressing</td>
</tr>
</tbody>
</table>
University teachers need to combine and balance different types of media to cover all the activities required in the conversational framework. As one medium will not cover all the steps of the framework, a combination of media is required.

2.3.2.3   **Salmon’s eModerating Framework and eLearning and pedagogical innovation framework**

Salmon introduced the concept of ‘eModerating’ (2003) and ‘eTivities’ (2002) to elaborate on the teaching and learning online phenomenon. She developed a five stage model which presents the steps that eModerators follow. Each step has ‘technical support’ duties; and ‘eModerating’ duties involved in the teaching practice. The model is illustrated Figure 6.

**Figure 6: Salmon’s eModerating framework**


The bottom level is the first stage: ‘access and motivation’. In this stage participants will need some technological support to get started. Technical problems can be related to accessing
specific networks, passwords, hardware, software, etc. Welcoming and encouraging implies direct action from the eModerator. It is part of this process to motivate students and present the value of computer-mediated conferencing. The second stage is ‘online socialisation’. Students need to be socialised into the culture of this environment. This step is important because the participants need to feel comfortable with the culture to progress into contributing. The third stage is ‘information exchange’. It implies making learning materials available to students and supporting them within the learning process. In this stage, learners need to interact with the materials and with other people (eModerator and other students). eModerators will support the learning process by ensuring a good presentation of data and a good information exchange among students. At the same time, they will help with the preparation and planning of learning. The fourth stage is ‘knowledge construction’. In this stage, students start exchanging messages more related to the topic of the course in a deeper and meaningful way. eModerators should facilitate the process; helping with the development of ideas and encouraging collaboration.

At the top of the figure is the last stage: ‘development’. In this stage, students become more independent in their learning, and show a higher level of critical thinking. It can be deployed even to critique the basis of the learning process through computer-mediated conferencing and to reflect on experiences using this technology.

Salmon (2005) has also presented a model for innovation with eLearning in pedagogy. This is presented in figure 7.

Figure 7: The e-learning and pedagogical innovation strategic framework

From Salmon (2005), p. 212
Quadrant 1, 2 and 3 represent the deployment of the university’s existing capabilities through incremental innovation. Quadrants 1 and 2 suggest deployment of the university’s capabilities for teaching excellence, but adapting them to new technologies. Quadrant 3 refers to the understanding of capabilities and technologies already in place for promoting new businesses, solving problems and increasing quality. Quadrant 4 represents a more radical view of change using peripheral technologies, new products and exploring new markets and missions.

2.3.2.4 Garrison and Anderson’s Communities of Enquiry Framework

Garrison and Anderson (2003) developed a model of online communities of enquiry. In this model, three components are distinguished: cognitive presence, social presence and teaching presence. For meaningful learning to occur, all three components should have adequate representation. Cognitive presence represents the ability of the learners to construct meaning through critical thinking and practical enquiry, using sustained communication (Garrison, Anderson, & Archer, 2001). Social presence implies the development of an environment in which students feel comfortable enough to participate, express and share ideas. In order for this to occur, learners should be able to present themselves socially and affectively as part of the community of enquiry (Rourke, Anderson, Garrison, & Archer, 1999). Teaching presence is related to three critical roles: designing and organising the online learning context, facilitating discourse and the provision of direct instruction. The first role, designing and organising the online learning context implies selecting, developing and maintaining content, generating learning activities and setting an assessment framework. The second role is facilitating discourse. This is an essential element of online teaching, as it creates discourse where students develop their own understanding through the need to share thoughts and ideas with other learners. In order to facilitate this discourse, teachers need to read and elaborate responses to the students’ postings, ensuring individual understanding and community building. Finally, the third component of the teaching presence is direct instruction. This means that that the teacher provides intellectual guidance and shares their subject knowledge with their students (Anderson, 2004). This framework is presented in Figure 8.
In summary, five frameworks have been presented in this discussion. This implies that there is not a single broad theoretical model to interpret eLearning. The models illuminate different aspects of the phenomenon. For example, Salmon (2002, 2003) and Garrison and Anderson (2003) considered the activities teachers undertake. However, Salmon (2003) saw teaching online as a facilitating process, while Garrison et al (2003) emphasised providing instruction as well. Both Salmon and Garrison et al. assigned importance to online socialisation. The Goodyear et al (2001) model can be seen as more comprehensive. This includes dimensions relating to teaching and learning processes, as well as context. Also Salmon’s (2005) framework for innovation can be seen as broader. She included elements of teaching, related to the teaching and learning context, including the technological context. On the other hand, Laurillard (2002), Garrison et al (2003) and Salmon’s (2003) models are narrower regarding the teaching and learning process. Each of the models is useful in mapping the broader landscape within which eLearning is set. However, since the research presented in this thesis is related to conceptions, approaches and perceptions, I will focus on studies specifically addressing these topics.
2.3.3 Student’s experiences of eLearning and bLearning

Relational research on students’ experiences of eLearning and bLearning in Higher Education is quite a recent phenomenon (Ellis, Goodyear, Prosser & O'Hara, 2006, p. 246). Studies have been conducted on conceptions of learning, approaches to study and expectations of networked learning experiences (Goodyear, Jones, Asensio, Hodgson, Steeples, 2003; 2005), learning through online and face-to-face discussions (Ellis & Calvo, 2004; Ellis & Calvo, 2006; Ellis, Calvo, Levy & Tan, 2004; Ellis, Goodyear, Calvo & Prosser, 2008; Ellis, Goodyear, O'Hara & Prosser, 2007; Ellis, Goodyear, Prosser & O'Hara, 2006), blended problem based learning (Ellis, Goodyear, Brilliant & Prosser, In press), case-based learning (Ellis, Marcus & Taylor, 2005) and learning through writing (Ellis, 2006).

Goodyear et al (2003) researched conceptions of learning, approaches to studying and judgements about the value of networked learning experiences in four groups of social sciences students. Approaches to studying were investigated using two versions of the ASSIST (Entwistle, Tait & McCune, 2000). For researching conceptions of learning an instrument also based on the ASSIST as well as on the work of Marton, Saljo, Dall’Alba, among others (e.g. Marton, Dall'Alba & Beaty, 1993) was employed. A third instrument, for measuring judgement about the value of networked learning, was developed for the study. The authors conjectured, based on the literature on networked learning, that students with more sophisticated conceptions of learning and those who adopt deeper approaches to studying would judge more positively their experiences of networked learning. However, significant relationships between students’ conceptions of learning and judgement of the value of these experiences were not found. Further, there were weak correlations between deep and strategic approaches and positive judgements about experiences of networked learning; and between surface approaches and negative experiences of networked learning. These outcomes would suggest that all students would be able to benefit from networking experiences, not only those holding sophisticated conceptions and deep approaches. In the same line of research, Goodyear et al (2005) studied expectations and experiences about networked learning held by undergraduate students from the area of social sciences. Instruments similar to the ones reported in the previous study were used; although, in this case, observational and interview-based case studies were also conducted. Aims of the study were to inquire about differences between expectations at the beginning and the end of the
course; and to see whether there were significant differences in expectations or experiences between different groups. Four components emerged in relation to expectations: worth of using networking learning, confidence in using technology, utility in relation to new learning skills and benefit for future career; and interest in using networked learning technologies. These dimensions were stable at the start and end of the course. Feelings remained positive but were less positive at the end. Analyses of differences in expectations between groups of students were not significant between male and female. Older and more experienced students did have more positive expectations. Expectations were also significantly correlated with approaches to studying. Expectations were positively correlated with the deep approach and negatively with the surface approach to studying. No correlation was found with the strategic approach. In relation to change in feelings about the worth of networked learning between the start and the end of the course, there was a small but significant decrease in sense of worth, although positive views remained. No significant differences between settings or male and females were found in relation to change in the sense of worth. Besides, there were not significant correlations between change in sense of worth and age, technical expertise or end of course marks. Evidence suggested that those students who self-evaluated their progress more positively than the average remained more positive about worth of networked learning experiences. The same was suggested for students who adopted a strategic approach. The authors interpreted findings related to the reported sense of worth stating that probably students moved from being excited about an innovative and new learning situation to assimilating networked learning technologies as part of their mainstream experience.

Regarding learning through online and face-to-face discussions, three studies have explored qualitatively what students think they learn through discussions, their approaches to discussing face-to-face and online, as well as associations between conceptions, approaches and mark obtained. Two of these studies were conducted with engineering students (Ellis, Calvo, Levy & Tan, 2004; Ellis, Goodyear, Calvo & Prosser, 2008) and one with social work students (Ellis, Goodyear, Prosser & O'Hara, 2006). Table 9 presents a summary of the outcomes of these studies.
<table>
<thead>
<tr>
<th>Conceptions of learning through discussions</th>
<th>Approaches to learning through discussions (face-to-face)</th>
<th>Approaches to learning through discussions (online)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cohesive</td>
<td>Deep</td>
<td>Deep</td>
</tr>
<tr>
<td>- To understand the ideas that are closely related to the subject goals from a number of perspectives</td>
<td>- To reflect on the problems discussed from different perspectives to deepen understanding.</td>
<td>- To engage in online discussions by waiting and seeing what others do.</td>
</tr>
<tr>
<td>- To understand the ideas that are closely related to the subject goals.</td>
<td>- To reflect on the problems discussed from different perspectives to improve understanding.</td>
<td>- To engage in online discussions to read postings and avoid repetition.</td>
</tr>
<tr>
<td>Fragmented</td>
<td>Surface</td>
<td>Surface</td>
</tr>
<tr>
<td>- To exchange the ideas to find the answers.</td>
<td>- To engage in face-to-face discussions to develop communication skills.</td>
<td>- To engage in online discussions to find interesting ideas</td>
</tr>
<tr>
<td>- To develop communication skills</td>
<td>- To engage in face-to-face discussions to finish tasks.</td>
<td>- Engaging in online discussions to find interesting ideas</td>
</tr>
<tr>
<td></td>
<td>- To engage in face-to-face discussions to learn about the project from the experience of others</td>
<td>- Engaging in online discussions to use postings to add to ideas.</td>
</tr>
<tr>
<td></td>
<td>- To engage in face-to-face discussions to understand how to solve problems related to the project</td>
<td>- Engaging in online discussions to read postings and avoid repetition.</td>
</tr>
<tr>
<td></td>
<td>- Engaging in face-to-face discussions to analyse experiences and opinions through feedback.</td>
<td>- Engaging in online discussions to receive and provide feedback on the topic to improve collective understanding.</td>
</tr>
</tbody>
</table>

These results show significant stability in findings across the three settings. Quantitative associations showed in the three studies that cohesive conceptions were associated with deep approaches; and fragmented conceptions with surface approaches. It was also found that students holding cohesive conceptions and deep approaches were more likely to obtain higher marks.
There have also been quantitative studies researching experiences of face-to-face and online discussions. Ellis et al (2007) used three questionnaires to explore associations between conceptions and approaches to learning through discussion; and final mark in a social work course. These questionnaires were ‘conceptions of learning through discussions’, ‘approaches to learning through face-to-face discussions’, and ‘approaches to learning through online discussions’. Results of correlation analysis showed that the cohesive conception was positively and largely correlated with the deep face-to-face approach and positively and moderately correlated with the deep online approach. It was also found that the cohesive conception had a medium and negative correlation with the surface face-to-face approach. The fragmented conception presented a medium positive association with the surface face-to-face approach and a medium negative correlation with the course mark. Principal components factor analysis yielded two factors. In factor one, the cohesive conceptions, deep approach face-to-face and deep approach online were positively associated. In the second factor, the fragmented conceptions, surface approach face-to-face and surface approach online were positively associated. Also, course mark was negatively associated to those variables. Cluster analysis generated two clusters. In the first cluster, students had large negative scores on the cohesive conception, strong negative scores on the deep face-to-face approach, a strong positive score on the surface face-to-face approach and a strong negative score on the deep online approach. In the second cluster, students had a large positive score on the cohesive conception, a medium positive score on the deep face-to-face approach, a large negative score on the surface face-to-face approach and a medium positive score on the deep online approach. In a similar study, Ellis et al (2008) used the same questionnaires to research conceptions and approaches to learning through discussions in an engineering course. Correlational analysis showed that the cohesive conception were positively and highly correlated with the deep face-to-face approach, positively and moderately correlated with the deep online approach and presented a low and negative correlation with the surface face-to-face approach. The fragmented conception showed a moderate positive correlation with the surface face-to-face approach. The deep face-to-face approach presented a low negative correlation with the surface face-to-face approach and moderate high positive correlation with the online approach. The surface face-to-face approach had a moderate positive correlation with the surface online variable. The course mark did not correlate significantly with any of the variables. Cluster analysis found two groups of students: those with an orientation towards reproducing and those with an orientation towards meaning and
understanding. Students in the ‘reproducing’ cluster were identified as having relatively low scores on the cohesive conception, on the deep face-to-face approach and on the course mark. At the same time, this group presented high scores on the fragmented conception, on the surface face-to-face and on the surface online approach. Students in the ‘understanding’ cluster showed relatively high scores on the cohesive conception, on the deep face-to-face approach and on the course mark. Also, they had relatively low scores on the fragmented conception, on the surface face-to-face approach and on the surface online approach.

The questionnaires used in the two previous studies have been used together with a modified version of the ‘course experience questionnaire’ (Ramsden, 1991a) in studies conducted by Ellis and Calvo (2004; 2006). In these studies, similar associations between conceptions and approaches were found. They also added to the knowledge in the area by providing findings on the associations between conceptions, approaches and perceptions of the learning situation. One of the studies, conducted in a third year engineering course, showed that there were associations between cohesive conceptions and deep approaches; and a positive perception of appropriateness of workload, emphasis on independence and good teaching. On the other hand, fragmented conceptions and surface approaches were associated with a negative perception of the elements mentioned (Ellis & Calvo, 2006). The second study, conducted within the context of an e-commerce course, showed that cohesive conceptions and deep approaches were positively associated with clear goals and standards and good teaching; while fragmented conceptions and surface approaches were associated with negative perceptions of these elements (Ellis & Calvo, 2004).

Three other areas have received attention in this strand of studies, although less in quantitative terms. These are: problem solving, case-based learning and learning through writing. Ellis et al (in press) researched conceptions and approaches to problem based learning (PBL) in pharmacy. They found that students had the following conceptions of PBLs:

1. Problem based learning (PBL) as a way of developing independent clinical reasoning and problem solving.
2. PBL as a way of understanding and resolving pharmaceutical cases.
3. PBL as a way to rehearse for real situations, to practice in order to be able to solve problems in general.
4. PBL as a way of covering topics to answer problems.
5. PBL as a way of following a predefined process.
6. PBL as mainly a way of building general transferable skills.

The first two categories represent cohesive conceptions; while the last four represent fragmented conceptions. Approaches to PBL in face-to-face settings were:

1. Resolving problems face-to-face using professional methodologies and judgment.
2. Resolving problems face-to-face by contextually narrowing symptoms of the patient in order to perform well.
3. Gathering information related to the problems face-to-face.
4. Engaging in routine work face-to-face to solve problems.
5. Engaging face-to-face to develop generic skills.

The first category represents a deep approach. The second represents a strategic approach. The last three categories are surface approaches. Approaches to PBL in online settings were:

1. Researching PBL scenarios on-line to develop an understanding of professional resources necessary for diagnostic reasoning.
2. Researching PBL scenarios on-line to understand problem scenarios in order to perform well.
3. Using on-line databases to find information related to PBL scenarios.
4. Using on-line databases to find answers to PBL scenarios.
5. Using on-line databases for PBL scenarios only when they are easy to use.

The first category represents a deep approach. The second one represents a strategic approach. The last three categories are surface approaches. A quantitative analysis of course results showed that students who held cohesive conceptions of PBL and deep approaches tended to perform better; and students who held fragmented conceptions of PBL and surface approaches tended to perform at a lower level.

A study on case based learning has been also conducted. (Ellis, Marcus, Taylor, 2005). In this one, conceptions of case based learning were:
1. Case-based learning as a way of learning how to think and act like a professional veterinarian.
2. Case-based learning as a way of using theoretical knowledge to solve authentic problems.
3. Case-based learning as a way of collecting information from a variety of sources.
4. Case-based learning as a way of recalling information.

The first two categories represented cohesive conceptions and the last two represent fragmented conceptions.

Approaches to case-based learning (face-to-face)

1. Engaging in case-based learning in order to develop broader thinking through application and integration of knowledge.
2. Engaging in case-based learning in order to develop integration and understanding of relevant knowledge.
3. Engaging in case-based learning in order to obtain information to answer questions.
4. Engaging in case-based learning in order to find and recall information.

The first two approaches are deep and the second two represent surface approaches.

Approaches to case-based learning (online)

1. Engaging with the online case-study resources to develop an approach to differential diagnosis appropriate for a practicing veterinarian.
2. Engaging with the online case-study resources to understand how to develop differential diagnosis skills.
3. Engaging with the online case-study resources to primarily access information.
4. Did not engage with the online case-study resources.

The first two categories represent deep approaches while the second two are surface approaches. Results from a quantitative analysis suggested that students who adopt a cohesive conception are more likely to adopt a deep approach to case-based learning both at the face-to-face and the online level. These students also tend to perform at a higher level.

Finally, in relation to learning through writing, Ellis (2006) investigated the experiences of science students who used a writing database, bulletin board and word processor as part of an
undergraduate science course. Questionnaires on conceptions, approaches and perceptions were adapted to this particular context. Correlational analysis showed large positive associations between the deep approach using technology and the cohesive conception, the generic skills variable and a medium positive association with the good teaching variable. The surface approach had a large positive association with the surface approach using technology, a medium negative association with the subject mark, and a large negative association with the writing mark. Large positive associations were also found between the overall satisfaction item and the following variables: cohesive conception, appropriate workload, clear goals and standards variable, emphasis on independence, generic skills, good teaching and the overall subject mark and writing mark. A partial correlation analysis was also conducted. It showed that, after controlling for student approaches in general, there was little variance explained by the students' approaches using technology in the writing process. Factor analysis was also conducted. As the number of respondents was low (n=43), the perceptions subscales were factor analysed in order to reduce the number of variables. This regressed factor score was then submitted to factor analysis together with the other variables. Results from principal components factor analysis yielded two factors. Factor one showed that a higher score in the surface approach variable was positively related to the surface approach using technology, the fragmented conception and negatively associated to the perceptions factor score and the writing mark. Factor two presented a higher score on the deep approach variable, was positively related to the deep approach using technology, the cohesive conception, the perceptions factor score and the writing mark. The last analysis conducted in this study was cluster analysis. Two clusters emerged. The first one, called understanding, had positive scores on the deep approaches and cohesive conception, and negative scores on surface approaches and fragmented conceptions. It also had positive scores on subscales associated with perceptions. Subscales on emphasis on independence and good teaching presented the higher scores. Finally, the cluster had positive scores both for writing and subject mark. The second factor had positive scores on the surface approaches and fragmented conception, and negative scores on deep approaches and cohesive conceptions. Also, negative scores were associated with negative perceptions and lower marks.

In summary, relational research on experiences of learning in face-to-face and online settings - using a variety of educational approaches (discussions, PBL, case-based learning, scientific writing) and in different academic disciplines (social sciences, engineering, pharmacy, vet
sciences, science) - has suggested that cohesive conceptions and deep approaches (both face-to-face and online) are associated, and lead to, a higher level of academic achievement. On the other hand, fragmented conceptions and surface approaches (both face-to-face and online) are associated to, and lead to, lower levels of academic achievement. Also, perceptions of the learning situation would have an impact on how students approach learning. Positive perceptions would promote deep approaches; while negative perceptions would promote surface approaches. This line of research is meaningful and worthwhile. It has extended previous work on relational research to blended learning environments generating knowledge which is timely and useful. It has increased the amount of research in this area and has the potential to provide guidelines for successfully implementing blended learning experiences. Additionally, it has gone further than traditional research which has compared face-to-face and online activities finding no significant differences (Clark, 1994). Rather than evaluating if a learning task yields better outcomes when conducted face-to-face or online, this sort of research has provided insights into how both face-to-face and online tasks and activities can together promote high quality learning experiences. Another important outcome of these studies is that they have provided some evidence on associations between cohesive conceptions, deep approaches and marks obtained. As stated in a previous section of this literature review, studies have suggested positive associations with high quality learning outcomes (usually measured using the SOLO taxonomy), but associations with course marks were less strong. Finally, although sample sizes are relatively small and contexts are quite specific, it is possible to say that the stability of findings attests to the robustness of the evidence provided by these studies.

2.3.4 Teachers’ experiences of eLearning and bLearning

Relational research into teachers’ experiences of incorporating learning technologies into their teaching has been less extensive than research into students’ experiences. To the best of my knowledge, there are just five papers reporting research into teaching with eLearning using this framework. Four of them report research in blended settings (although not all of them use the concept ‘blended learning’ to refer to the setting where the research was conducted) (Ellis, Steed & Applebee, 2006; Lameras, Paraskakis, & Levy, 2007; McConnell & Zhao, 2006; Roberts, 2003) and one reported an inquiry into fully online distance teaching (Gonzalez, in press).
Roberts (2003) researched the use of eLearning for teaching on-campus students. In her study, three conceptions of teaching using the web emerged, as well as a set of strategies to describe the approaches taken by lecturers. Conceptions of teaching using the web that she discovered are as follows:

1. The web as a source of information.
2. The web used for individual and independent self-paced learning.
3. The web used for group analysis, decision making and dialogue.

These conceptions would indicate an incremental use of technologies for teaching campus-based students. Taken as a whole, they represent the definition of networked learning (McConnell, 2000, 2006). Roberts presents two other possible conceptions based on literature in the field, but not found in her empirical research with lecturers: the web for real-time (synchronous) interaction and dialogue; and the web for asynchronous dialogue and reflective learning. Regarding approaches, the author uncovered six strategies. They are presented in Figure 9.

**Figure 9: Strategy dimensions for approaches to teaching using the web.**

Ellis et al (2006) studied conceptions of blended learning and teaching, and approaches to design. Conceptions of blended learning emerging from this study were:

1. Blended learning as critically investigating changes in the world around us.
2. Blended learning as actively building understanding.
3. Blended learning as replicating ways of learning using different media.
4. Blended learning as using all the different media.

The first two categories represent cohesive conceptions and the last two represent fragmented. Conceptions of blended teaching are:

1. Blended teaching as helping students develop and apply new concepts.
2. Blended teaching as developing student understanding through aligning media to intended learning outcomes.
3. Blended teaching as providing students with information.
4. Blended teaching as replacing part of the responsibility of being a teacher.

The first two categories represent cohesive conceptions and the last two represent fragmented. Approaches to design found in this study are:

1. Design reshapes approaches to teaching.
2. Design influences approaches to teaching.
3. Design overwhelms relationships to teaching.
4. Design is unrelated to teaching.

The first two approaches were labelled as surface-embedded and the last two ones as surface-unintegrated. A quantitative analysis demonstrated statistically significant and strong relationships between: a) fragmented conceptions of blended teaching and fragmented conceptions of blended learning; and cohesive conceptions of blended teaching and cohesive conceptions of blended learning; b) fragmented conceptions of blended learning and surface approaches to design; and cohesive conceptions of blended learning and deep approaches to design; and c) fragmented conceptions of blended teaching and surface approaches to design; and cohesive conceptions of blended teaching and deep approaches to design.
McConnell & Zhao (2006) researched conceptions of eLearning held by a group of Chinese university teachers who usually taught ‘conventional’ face-to-face classes. Preliminary outcomes showed that lectures were the preferred method of teaching. eLearning was not conceived as a good medium for a full mastering of course content. Besides, these lecturers conceived networked learning as a sort of resource based learning, in which some materials were uploaded online, for the students to use on their own. Therefore, these teachers presented fragmented conceptions of eLearning. In a preliminary report of findings, Lameras et al (2007) presented outcomes from a study into conceptions of teaching using a virtual learning environment (VLE), held by a group of five university teachers of computer science. Three categories and six subcategories emerged. These are:

1. Information transfer, which has the subcategories:
   a. Providing information.
   b. Developing information.
   c. Clarifying information.

2. Understanding concepts, which has two subcategories:
   a. Understanding the topic.
   b. Rethinking the topic.

3. Developing the concept, which has one subcategory:
   a. Developing the topic.

The first category is associated with the informative feature of VLEs while the second and third were more associated to communicative features.

In a different setting, fully online distance courses in the area of the allied health sciences, Gonzalez (in press) found three conceptions of teaching using eLearning: for individual access to learning materials and information, and for individual assessment; for learning-related communication (asynchronous/synchronous), and as a medium for networked learning. These conceptions as well as dimensions delimiting them are presented in Table 10.
Table 10: Conceptions of teaching using the web

<table>
<thead>
<tr>
<th>Teacher</th>
<th>The web for individual access to learning materials and information; and for individual assessment</th>
<th>The web for learning related communication (asynchronous and/or synchronous)</th>
<th>The web as a medium for networked learning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provides structured information/directs students to selected web sites</td>
<td>Set up spaces for discussion/facilitates dialogue</td>
<td>Set up spaces for communication, discussion and knowledge building/facilitates guides the process</td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>Individually study materials provided</td>
<td>Participate in online discussions</td>
<td>Share and build knowledge</td>
</tr>
<tr>
<td>Content</td>
<td>Provided by the lecturer but students can modify - extend it through online discussions</td>
<td>Provided by the lecturer</td>
<td>Built by students using the space set up by the lecturer</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Owned by the lecturer</td>
<td>Discovered by students within lecturer’s framework</td>
<td>Built by students</td>
</tr>
</tbody>
</table>

From Gonzalez (In press).

Moreover, two approaches to teaching using the web were found. These are presented in Table 11.

Table 11: Approaches to teaching using the web

<table>
<thead>
<tr>
<th>Intensity of use</th>
<th>Informative/Individual learning focused</th>
<th>Communicative/Networked learning focused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small range on media and tools used to support learning tasks and activities (mainly sources of information with small opportunities for interaction and communication)</td>
<td>Wide range of media and tools used to support learning tasks and activities (with emphasis on interaction and communication)</td>
<td></td>
</tr>
<tr>
<td>Role of the lecturer</td>
<td>Select and present information.</td>
<td>Design spaces for sharing and communication. Support the process.</td>
</tr>
<tr>
<td>Role of the students</td>
<td>Study individually information provided.</td>
<td>Participate in a process of knowledge building.</td>
</tr>
</tbody>
</table>

From Gonzalez (In press).
Additionally, this study suggested that contextual elements had an influence on how teachers approach teaching using the web; institutional influence and the nature of the students being the most salient.

It is important to note that, while these studies have been conducted in different settings and by different researchers, similarities can be seen. In relation to conceptions of teaching using eLearning, findings from different researchers suggest that conceptions range from eLearning as a medium to provide information to a medium for engaging in communication and networked learning. In the informative-focused conceptions, university teachers would see eLearning as a medium to provide information to students in the form of lecture notes and online resources. It would be understood as a delivery medium rather than a space for learning. In the communication/networked learning conceptions, eLearning would be seen as a medium to engage in discussing, debating, developing understanding and building knowledge. In this case eLearning would be seen as a space for engaging in learning tasks and activities. A summary is presented in Table 12.

**Table 12: Conceptions of teaching using eLearning**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- The web as a source of information</td>
<td>- The web used for individual and independent self-paced learning</td>
<td>- Blended teaching as replacing part of the responsibility of being a teacher</td>
<td>- Information transfer</td>
<td>- Information transfer</td>
<td>- The web for individual access to learning materials and information, and for individual assessment</td>
</tr>
<tr>
<td>- The web used for group analysis, decision making and dialogue</td>
<td>- Blended teaching as providing students with information</td>
<td>- eLearning as a medium for uploading material</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conceptions focused on communication/networked learning</td>
<td>- Blended teaching as developing student understanding through aligning media to intended learning outcomes</td>
<td>- Blended teaching as helping students develop and apply new concepts.</td>
<td></td>
<td></td>
<td>- The web for learning related communication (asynchronous/synchronous)</td>
</tr>
<tr>
<td></td>
<td>- Understanding concepts</td>
<td></td>
<td></td>
<td></td>
<td>- The web as a medium for networked learning</td>
</tr>
<tr>
<td></td>
<td>- Developing concepts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Only two of the papers discussed in this sub-section presented outcomes of research into approaches to teaching using eLearning (Gonzalez, In press; Roberts, 2003). However, it is possible to say that these two studies found similar ways of approaching teaching with eLearning. One approach emphasises provision of information with little space for interaction; while the other approach emphasises communication for knowledge building and interaction among course participants.

In summary, although there are a limited number of studies on experiences of teaching using eLearning, there has been some interesting research in this area. The studies reviewed suggested similarities across the work of researchers from different contexts. Two broad experiences emerge. One is focused on providing information through the web; the second is focused on engaging students in online activities leading to deeper learning.

2.3.5 Summary and relation to my study

The current landscape of eLearning and bLearning in Higher Education is complex and presents many different perspectives. Positives perspectives about incorporating eLearning in learning and teaching highlight its potential for realising student centred pedagogies as well as addressing issues such as massification, lifelong learning and globalisation. Negative perspectives see eLearning as a ‘quick fix’ for Higher Education dilemmas. At the same time, promoters of eLearning see the current state as one in which much of the potential of eLearning has yet to be realised. These researchers are looking for educational usage which goes beyond than merely ‘uploading notes to the web’. New technological developments, such as improvements to learning management systems, synchronous virtual classrooms, mobile learning and web 2.0, may be in line with the positive perspective about eLearning; but it is difficult to forecast if the up-take of eLearning will lead to a ‘bright’ or ‘bleak’ scenario. In the context of different perspectives analysing eLearning, five models were presented. Models focused on different aspects of the phenomenon, ranging from those pedagogically focused to those focused more on management and innovation. Relational research on students’ experiences of learning in blended environments showed cohesive conceptions and deep approaches (both face-to-face and online) were associated and tended to lead to higher levels of academic achievement; and, fragmented conceptions and surface approaches (both face-to-face and online) were associated and tended to lead to lower levels
of academic achievement. Perceptions of the learning situation appeared to have an impact on how students approach learning. Positive perceptions would promote deep approaches; while negative perceptions promoted surface approaches. At this time, relational research on teachers’ experiences of eLearning has not been extensive but suggested some trends. One experience appeared to focus on providing information through the web; while the other appeared to be focused on engaging students in online activities, leading to knowledge building.

In relation to my study, the review presented in this section helps:

1. Situate my research in the context of previous research on eLearning and bLearning.
2. Create a shared awareness of the current state of relational research into learning and teaching, which points to areas needing further research.
3. Show how the model of analysing experiences of teaching, described in the previous sections, can be applied to blended learning settings.

2.4 Conclusion

The literature review presented in this chapter has shown that:

1. Research into students’ learning in traditional settings has been extensive and has provided useful and relevant insights into the experience of learning; creating a well established body of knowledge in the area. This research has extensively investigated conceptions, approaches and perceptions about learning; providing clear descriptions about how these elements are associated.
2. There has been less research into teachers’ teaching in traditional settings; although what has been done has developed quite a rich body of knowledge about the experience of teaching. Like research into students’ learning, research into teaching has investigated university teachers’ conceptions, approaches and perceptions about teaching and learning; also providing clear descriptions of the associations among these elements.
3. In the last few years, research into the experience of bLearning has started to emerge, creating a small but growing body of knowledge. This emerging area of research has
inquired into conceptions and approaches, and in some cases perceptions. There is a growing understanding of how elements of the students’ experience of bLearning are associated.

4. Less attention has been given to teaching in blended learning environments. There have been studies in this area, but fewer than those relating to students’ experience of bLearning. These few studies have investigated conceptions and approaches. One study incorporated some elements of the context. More evidence is needed about teaching that combines face-to-face and online experiences, in order to develop an adequate understanding of this area.

Therefore it can be said that research inquiring into how university teachers cope with the increasing pressures to combine eLearning with their traditional face-to-face teaching is not yet extensive. With the exception of a few studies, there is little knowledge of what they think eLearning is good for in their teaching, how they approach teaching when eLearning is involved and how the perception of their teaching situation promotes or hinders the up-take of eLearning. There is little understanding of how these elements are associated, both when considering elements of face-to-face and online teaching separately; and when incorporating all of them as a whole. However, one may conjecture that conceptions and approaches deployed in face-to-face teaching may be associated with how teachers conceive of and approach teaching when using eLearning. At the same time, it may be conjectured that perceptions of the teaching situation may be associated with approaches to teaching face-to-face and also with approaches to teaching using eLearning. Research in this area is important and timely. It can provide knowledge of teachers’ experiences of blended teaching. It can also provide guidance about how to offer better support for teachers who are facing the challenges of integrating eLearning into their teaching in ways that are most beneficial to their students. This provides a framework, rationale and focus for the research reported in this thesis.
Chapter 3: Methodology

This chapter focuses on the methodology employed in this research. It starts by presenting the aim and research questions. In the second section, key terms are defined. In the third section, the methodological approach employed is described. This approach draws upon relational research in Higher Education; which has mixed qualitative and quantitative approaches to investigate various experiences of learning and teaching at this level of education. The main features of the qualitative and quantitative approaches used are described. In the next two sections, how these approaches have been employed in this particular research study is presented and described. In section four, the qualitative phase is presented. It is organised into these sub-sections: aims, sample data collection, analysis, validity and reliability, and criticisms. The fifth section presents the quantitative phase of the research. It is structured in a similar way to section four. Ethical issues are considered in the sixth section.

3.1 Aim and research questions

The literature review presented in the previous chapter demonstrated that research on teachers’ experiences of eLearning, and how they incorporate it within their face-to-face on campus teaching, has been not widely undertaken. Although some studies have emerged, a thorough body of knowledge in this area is still to be developed. This is particularly relevant in a context in which pressures for incorporating eLearning into conventional face-to-face teaching have increased and little is known about what university teachers think eLearning is good for in their teaching, how they approach teaching when eLearning is involved and how the perception of their teaching situation affects how they use eLearning in combination with face-to-face teaching. The aim of this research is to increase knowledge in this area, through an inquiry into university teachers’ experiences of teaching in blended learning environments, those in which face-to-face teaching is combined with eLearning. Such inquiry needs to consider the main elements of the experience of teaching (conceptions, approaches and perceptions) at both face-to-face teaching and using eLearning; as well as associations between these elements. The main question guiding this research is:
1. What are university teachers’ experiences of blended learning environments?

Such a complex phenomenon can be better explored when the main question is broken down as follows:

1. How do university teachers’ understand good teaching? What is eLearning good for in teaching? How are these conceptions associated?
2. How do university teachers approach teaching? How do they approach teaching using eLearning? How are these approaches associated?
3. What are university teachers’ perceptions of their teaching situation when teaching in blended learning environments?
4. How are the elements of the experience of teaching in blended learning environments (conceptions, approaches and perceptions) associated?

At the end of this research, there should be a better understanding on how university teachers conceive of and approach teaching when eLearning is involved, as well as how the perception of the situation affects their teaching.

3.2 Definition of terms

In this section, the main terms used in this research are briefly defined. These terms are:

1. Blended learning environments.
2. eLearning.
3. Conceptions.
4. Approaches.
5. Perceptions.
7. Coherence/incoherence.
8. Teaching profile.
9. Teaching orchestration
The first two concepts refer to the space in which the phenomenon under inquiry happens or to which it is related. Concepts 3 to 5 are the elements of the teaching experience. Concepts 6 to 9 represent how elements of the teaching experience are associated.

*Blended learning environments* refer to learning and teaching environments in which web based and face-to-face learning are systematically combined (Ellis & Calvo, 2004; Ellis, Steed & Applebee, 2006). In this study, blended learning environments include any sort of combination between web based and face-to-face teaching. In this way a descriptive and exploratory perspective is employed, rather than a normative one.

*eLearning*. In this research, eLearning refers to the LMS in use at the Universities in which the study was conducted; and its capabilities for provision of information (for example, provision of materials and access to bibliographic databases) and communication (for example, discussion boards). It also refers to any sort of web-based tool or resource used for learning purposes employed alone or in combination with the institutional LMS. This second class of eLearning tools and resources is broad and may include interactive tutorials or educational games; simulations or models of scientific systems; virtual reality environments for development and manipulation; blogs and wikis; etc.

*Conceptions* represent the meaning attached to particular phenomena; which reflect the understandings people have about those phenomena. They are related to personal epistemologies: beliefs about the nature of knowledge and of coming to know. Conceptions are usually broader and more stable than approaches (Ellis, Goodyear, Calvo & Prosser, 2008). In the case of this research, conceptions refer to the ways in which university teachers conceive what good teaching is and what eLearning is good for in their teaching.

*Approaches* refer to how people go about something, in this case, how university teachers go about their teaching in blended learning environments. In phenomenography, approaches are composed of a referential and a structural aspect. The structural aspect is equivalent to the strategy in use; ‘how’ an individual does something. The referential aspect is equivalent to the intention associated with one particular strategy; ‘why’ an individual wants to do something in a particular way (Marton & Booth, 1997).
Perceptions of the teaching situation refer to elements perceived by university teachers as affecting their teaching. These perceptions have an impact on the approaches to teaching they choose to adopt. Research has identified elements such as the control teachers perceive they have over their teaching, appropriateness of class size, students’ characteristics, departmental support for teaching and academic workload as being associated with the approaches taken by university teachers (Prosser & Trigwell, 1997a).

Consonance/dissonance. There have been two conceptualisations of this phenomenon in the literature. In the first conceptualisation, consonance/dissonance is employed to refer to associations among approaches to teaching. Dissonance was established when content-focused approaches appeared associated with learning-focused approaches (Prosser et al., 2003). In the second conceptualisation, consonance/dissonance refers to associations between conceptions and approaches (Postareff et al., 2008). In the current research, dissonance will be understood as theoretically unexpected relations in the descriptions of conceptions and/or approaches in face-to-face and/or eLearning settings.

Coherence/incoherence refers to associations between approaches to teaching and the perception of the teaching situation. An incoherent pattern is one reflecting unexpected associations. For example, perceiving the teaching situation as affording a ‘student focused’ approach, but adopting a ‘content focused’ one (Prosser et al., 2003).

Teaching profiles. This concept represents how combinations of conceptions, approaches and strategies are associated, i.e. it is a profile as defined by Postareff et al (2008). Profiles can be consonant or dissonant depending on whether the elements constituting them are aligned.

Teaching orchestrations refers to a contextualised teaching approach adopted by university teachers given their conceptions of teaching. It comprises the approach to teaching, the conception of teaching and the perception of the teaching situation. Therefore, it can be seen as a teaching profile plus the perception of the teaching situation (Postareff et al., 2008).
3.3 Research approach

Relational research into learning and teaching in Higher Education has used a mix of qualitative and quantitative approaches. Programs of research in this area usually start with interview-based studies. Some of these use the outcomes for creating questionnaires reflecting key elements of variation found in the qualitative analysis of the interview-based study. In turn, these inventories are used to explore the phenomenon in larger samples or to explore associations between phenomena. In relation to research into teaching, an example of this approach is the work of Trigwell and Prosser (1994a; 1994b), who started with a qualitative study of conceptions and approaches to teaching held by university science teachers. From the outcomes of the qualitative phase of their research they developed the ‘approaches to teaching’ inventory (Prosser & Trigwell, 2006; 1996; 2004; Trigwell et al., 2005) and the ‘perception of the teaching situation’ questionnaire (Prosser & Trigwell, 1997). The first inventory originally had the aim of exploring associations between teachers’ approaches to teaching and students’ approaches to learning (Trigwell et al., 1999). The questionnaire was originally developed to explore associations between teachers’ approaches to teaching and their perception of the teaching situation (Prosser & Trigwell, 1997).

Another example of research combining qualitative and quantitative approaches, this time focussing on learning, is the work of Ellis et al (2008). This group of researchers investigated engineering students’ conceptions of, and approaches to, learning through discussions in face-to-face and online contexts. In the qualitative aspects of their research, they used interviews and open-ended questionnaires which were analysed phenomenographically. The quantitative data came from three closed-answer questionnaires: ‘conceptions of learning through discussions’; ‘approaches to learning through face-to-face discussions’ and ‘approaches to learning through online discussions’. The quantitative data collected were analysed through correlational and cluster analysis.

Combining qualitative and quantitative approaches has not been the only way in which researchers have approached relational research into learning and teaching in Higher Education. Many studies have focused on only one of the approaches. However, since the research presented here follows a mix of qualitative and quantitative approaches, it is relevant to highlight how these approaches have been used together in the past.
In terms of the qualitative approach, phenomenographic interview-based studies are typically used. The aim of the researchers is usually to build a hierarchically organised set of categories of description reflecting the experiences of students and/or teachers in relation to the phenomenon under investigation.

Regarding the quantitative approach, questionnaires are employed to measure key variations in relation to particular phenomena. Specific studies using the quantitative approach may be focused on developing and testing an inventory, applying one or more inventories in a particular sample, or adapting and applying one or more previously developed inventories to a specific setting, situation or task. In the next two subsections, I describe the main features of these approaches to research. First, the main features of phenomenography, the qualitative branch of relational research, are presented and described. Second, the use of questionnaires, the quantitative branch of relational research, is presented and described.

3.3.1 Phenomenography

3.3.1.1 Phenomenography and its object of study

This approach has its roots in the work that Marton and Saljo conducted in Sweden in the mid-seventies (e.g., Marton, 1975; 1976a; Marton & Dahlgren, 1976; Marton & Saljo, 1976b). However, the term phenomenography was only coined and proposed as a research specialisation in the early eighties (Marton, 1981). The unit of study of phenomenography is the way in which people experience phenomena (Marton & Booth, 1997, p. 111). It promotes understanding of the relationships that people create with the world around them and the phenomena which constitute it; facilitating research on people’s experiences and how they conceive, understand and perceive phenomena in their world (Marton & Pong, 2005). It is important to understand that experiences are neither physical nor mental entities. Phenomenography understands them not as something located in the phenomenon itself nor in the person; but in the relationship between the two. Experiencing something implies establishing a relationship between the subject, the experiencer, and the object, the experienced. This idea is based on the phenomenological principle of intentionality.
(Dall'Alba, 2000), which establishes that experiences can never be separated from what is experienced: the experience is always an experience of something.

Phenomenography is concerned with an investigation of the relation between the experiencer and the experienced (Marton, 1986). Investigating people’s experiences implies that phenomenography is situated in a second order perspective, dealing with the world-as-experienced rather than with the world itself. For example, making a statement about a particular phenomenon or situation is a first order perspective; but when inquiring about how people experience that particular phenomenon or perspective, a second order perspective is taken. These ways of experiencing are often taken for granted by the person having the experience. The experiencer does not see her or his own ‘ways of experiencing’ a particular phenomenon; but rather is focused on the phenomenon itself. This has a strong implication for conducting phenomenographic research: when adopting a second order perspective, the focus is on the ways in which people experience a particular phenomenon, not the phenomenon itself. Marton and Booth (1997, p. 121) argued that researchers must be aware of this and explicitly adopt the second order perspective seeing the phenomenon through the eyes of the person experiencing it; stepping back from the researcher’s own experiences of the phenomenon. Marton and Booth proposed that only then is the researcher able to describe how other people experience particular phenomena in their world.

In order to study people’s experiences, Marton and Booth (1997) differentiate the referential and structural elements of the experience. The referential aspect refers to the direct object, the meaning assigned to a particular phenomenon; which makes us aware that we are experiencing something as such. On the other hand, the structural aspect refers to how people go about something. The structural aspect can be differentiated into structural and referential components. The structural part refers to the way in which something is carried out, the act; while the referential aspect of the approach implies the indirect object; what the experiencer wants to achieve in going about something in the way she/he does (Marton, 2000). In relation to the experience of learning, these elements can be seen in Figure 10.
Phenomenography claims that there is a limited number of qualitatively different ways in which people can experience phenomena. This means that this approach does not only focus on the experience of people but also in the qualitatively different ways of experiencing. Therefore, phenomenographic research aims to empirically investigate the limited ways in which people experience, conceive, and perceive particular aspects of the world. It searches for variation in ways of experiencing. Further, phenomenography is not focused on individuals but on ways of experiencing phenomena at the collective level. Descriptions that phenomenographic analysis develops are related to variations in ways of experiencing and, therefore, are not necessarily associated specifically with individuals but with the collective level. This implies a difference between phenomenography and phenomenology. The first is focused on the variation in ways of experiencing at the collective level; while the latter is focused on describing the richness of an individual experience of a person and her lifeworld. The aim of phenomenography is to describe the anatomy of awareness at the collective level.

### 3.3.1.2 Categories of description and the outcome space

In phenomenographic analysis, different ways of experiencing form categories of description. These categories are hierarchically organised, creating an ‘outcome space’, which is the final product of the phenomenographic analysis. The outcome space is presented as a structured set of categories of description, constituted by the researcher to represent different ways of experiencing a particular phenomenon (Åkerlind, 2005c). Marton and Booth (1997, p. 125) describe three criteria for assessing the quality of the outcome space:
1. Each category needs to reflect something distinctive about the phenomenon;
2. Categories are logically related, in most cases in a hierarchical relationship; and
3. The outcome space is parsimonious. This means that variation in experience is represented by as few categories as possible.

The second criterion represents an important feature of the outcome space: the rule of a hierarchical relationship among categories of description. This hierarchical relationship assumes that different ways of experiencing are organised in an increasingly complex set of categories of description which, in turn, would represent the totality of possible experiences in relation to a particular phenomenon. Lower level categories of description would represent less complex or less complete ways of experiencing something; while higher level categories of description would represent more complex or more complete ways of experiencing.

It is important to note that the researcher is able to describe the people’s experiences of the phenomenon only partially, from the reports available from the interviewees. Therefore, a category of description refers to the partial account that the researcher is able to build, based on others’ reports of their experiences of a particular phenomenon. This is stressed by Åkerlind (2002) who states that categories of description are empirically interpreted characterisations of key aspects of the experience, but not the experience itself.

In practical terms, phenomenographic studies are usually conducted using interviews, although other data gathering methods have been employed (e.g. open-ended questionnaires). The researcher selects a number of possible interviewees who have experienced the phenomenon under inquiry. Interviews aim to uncover interviewees’ ways of experiencing particular phenomenon. In order to achieve this, the interviewer needs to lead the interviewee to a level of meta-awareness in which he/she is able to reflect on his/her experiences. Questions are designed to explore referential and structural aspects of the interviewee’s experience. Follow-up probe questions are employed as a means to ensure interviewees’ reflection and agreement on meaning. During this process the interviewer needs to take an open approach; trying not to guide the interviewees’ answers in order to allow the interviewee’s focal awareness about a particular phenomenon to be revealed.

Analysis of phenomenographic interviews starts with a full immersion in the data, usually by reading the interview transcripts many times. Researchers attempt to approach data as openly
as possible and without a predefined set of categories into which to fit the data. One of the
main features of phenomenographic analysis is that categories of description ‘emerge’ from
the data. The analysis is a highly iterative process in which the researcher searches for
similarities and differences, grouping and sorting sections of interviews, developing a
provisional set of categories, contrasting them against data iteratively until the system
becomes stable. In the section describing the qualitative analysis, these elements will be
considered again, extending the discussion and describing how guidelines for conducting
phenomenographic research were used in this study.

3.3.2 Questionnaires

Questionnaires are collections of items developed to measure one or more underlying
constructs (Fabrigar & Ebel-Lam, 2007). Questionnaires made up of closed-ended questions
are most commonly employed in quantitative relational research. These are based on scales
composed of a number of items measuring constructs such as deep and surface approaches to
studying; or cohesive and fragmented conceptions of learning, among others. In creating
these scales, researchers usually follow steps suggested in the literature. An example of this
are the guidelines provided by DeVellis (2003):

1. Determine clearly what it is going to be measured. It is important to know exactly
what is going to be measured from the beginning to develop a set of items that
directly reflects the object of measurement.
2. Generate an item pool. In developing the item pool intended to measure one or more
constructs the following guidelines are provided:
   a. Creating redundant items at this stage is recommended. The aim is developing
      as many items as possible.
   b. In terms of writing, a good start is to paraphrase what is going to be measured
      in different ways. Quality in statement writing should not be sought at this
      stage. Writing quickly and uncritically at this stage is suggested. The aim of
      this stage is to create a large number of items which can later be refined.
   c. However, it is also important to be aware of good item writing suggestions,
      such as: use an appropriate reading difficulty level, use vocabulary that is easy
to understand, avoid multiple negatives, avoid ambiguous pronoun references, avoid sentence ambiguity and avoid exceptionally lengthy items.

3. Selection of measurement format. Once an initial set of items is developed, the researchers needs to determine the format of measurement. Various types of scales can be selected, such as those of Thurstone, Guttman or Likert.

4. Expert review of items. At this stage the initial pool of items needs to be reviewed by experts. This is a key step as it helps to maximize the content validity and face validity of the scales being developed. Experts may confirm or critique the definition of the phenomenon. Experts can be asked to rate how relevant the item is for what it is intended to measure (for example, experts can rate items as low, moderate or high); and then suggest if items should be kept or modified. They can also be asked to point out awkward and confusing items; and suggest rewording if considered necessary. However, it is important to state that the final decision on what items to keep and what items to delete should be based on the professional judgment of the person developing the scale.

5. Send the items to an initial development sample. In this step, the items which survived the previous procedure are administered to a development sample. DeVellis suggest a large sample (around 300) should be employed for this purpose because in small samples patterns of covariation may be stable; and the sample may not be representative of the population. Moreover, small samples are not suitable for factor analysis, a key step in developing scales.

6. Evaluate items. Using the data obtained in the original administration, items need to be evaluated. A correlation matrix is developed to see which scale items are intercorrelated. If there are items whose correlations with other items are negative, then the appropriateness of reverse scoring of those items should be considered. Also, items which do not correlate may need to be deleted.

7. Conduct a factor analysis of items. Once the inter-correlation matrix has yielded the items which present good levels of correlation, factor analysis should be conducted. This must be done, as a set of items is not necessarily a scale. Determining the nature of latent variables is needed and factor analysis can help with this. Factor analysis needs a large sample. As a rule of thumb, 10 cases per item are needed.

8. Assess reliability. Outcomes yielded by factor analysis are assessed using coefficient alpha, which is one of the most important indicators of scale reliability. All the problems that scales have will decrease alpha, so it can be used to see how successful
the development process has been. Alpha takes on values from 0 to 1. DeVellis (2003) recognizes that different authors suggest different values as acceptable. His own suggestions for interpreting coefficient alpha are the following:

a. Below .60 unacceptable.
b. Between .60 and .65 undesirable.
c. Between .65 and .70 minimally acceptable.
d. Between .70 and .80 acceptable.
e. Between .80 and .90 very good.
f. More than .90 excellent (may consider shortening the scale).

9. The final step is optimizing scale length. The researcher needs to be aware that shorter scales are good because respondents would be more willing to complete them. However, there is a trade-off in terms of reliability, as shorter scales tend to be less reliable. The developer needs to assess if the situation can afford the deletion of some items. An example would be when a scale has excellent reliability. If there is no ‘reliability to spare’, it is better to keep the scale as it is rather than to shorten it.

It is important to recognize that guidelines, for example those described above, are interpreted and used differently by individual researchers. Although most researchers follow the general steps suggested, it is possible to find some differences in terms of the use of factor analysis and levels of reliability accepted.

First, in terms of factor analysis, some researchers have not followed strictly the guideline of submitting items to factor analysis from the beginning but have conducted this analysis at the level of scales. This is the case, for example, with the ‘approaches to teaching’ inventory (Trigwell & Prosser, 1996). In the development of this questionnaire items were written reflecting two intentions and three strategies discovered in a previous qualitative research. Altogether this questionnaire had 39 items. Correlational and principal components analyses were carried out. Results were consistent with the previous qualitative study and, therefore, the inventory was claimed to be sufficiently robust. The inventory went through many transformations over a period of 10 years and only recently has a confirmatory factor analysis of the items been presented (Prosser & Trigwell, 2006). This analysis yielded a two factor solution reflecting an ‘information transmission/teacher focused’ scale and a ‘conceptual change/student focused’ scale. In relation to the ‘perception of the teaching situation inventory’ (Prosser & Trigwell, 1997), a similar situation can be found. In the original report,
only a principal components analysis conducted in conjunction with the scales of the ‘approaches to teaching inventory’ was presented. A questionnaire developed by Gow and Kember (1993) on orientations to teaching used the same procedure of factor analysing the scales rather than the items. The research perspective underlying the development of Gow and Kember’s questionnaire followed a different theoretical perspective; however it is mentioned due to the similarity of the procedure. A different approach has been used for developing questionnaires measuring elements of the students’ learning experience. In this case, factor analysis at the item level is more commonly employed. For example, both the conceptions of mathematics questionnaire (Crawford, Gordon, Nicholas & Prosser, 1998a; 1998b) and the study process questionnaire (Biggs, Kemer & Leung, 2001; Biggs, 1987) followed this procedure. Therefore, procedures followed by researchers suggest that factor analysis both at the level of items and at the level of scales have been recognised as acceptable. This also suggests that researchers take into consideration the robustness of the qualitative material upon which the questionnaires have been developed and the coherence between the results of qualitative and quantitative analyses (Prosser & Trigwell, 2006).

Second, in relation to levels of reliability, in some cases there have been accepted levels which are not considered good enough in terms of DeVellis’ (2003) guidelines. For example, in the above mentioned research by Trigwell and Prosser (1996) coefficient alpha for the teacher-focused strategy was .57; and for the student-teacher interaction strategy was .56. More recently, Ellis et al (2007) reported alphas of .39 and .36 in the ‘appropriate assessment’ and ‘appropriate workload’ scales respectively. It is important to mention that levels of reliability accepted vary and depend on different factors. The values presented here may be seen as unacceptable if following DeVellis’ guidelines, and even more unacceptable if taking into account Kline’s (2000) suggestion of considering reliable only those values above .8. However, it is important to note that Cronbach’s alpha is influenced by the number of items in the scale (the more items, the higher the value of alpha; Cortina, 1993). Trigwell and Prosser’s scales had 4 and 3 items respectively; while Ellis’ et al scales had 3 items each. In considering the reported levels of reliability, the small number of items should be taken into account. These elements suggest that accepted values for reliability are not absolute, and need to be considered for each situation and are, finally, subject to the professional judgement of the researcher.
Further, outcomes from quantitative relational studies need to be interpreted differently than those obtained within the framework of traditional psychological measurement. Results of questionnaire based studies in relational research are not indicators of stable constructs within the cognitive structure of teachers and students, but indicators of their experiences in specific situations. For this type of research, the experience is constituted in the relation between the subject and the object; and this is what it is intended to be captured through using, in this case, questionnaires (Prosser & Trigwell, 1999, p. 172). This has the implication that teachers and students need to be told to answer the questionnaires based on one specific teaching or learning experience, current or past. In this way their awareness is focussed on one very particular situation. Following this guideline, it would be possible to capture the relational nature of teaching and learning experiences. In the section describing the quantitative phase of this research, I will describe how these guidelines for conducting questionnaire based relational research were employed in the design of this study.

3.4 Qualitative phase

The first stage of this research was a qualitative study which aimed to explore university teachers’ experiences of blended learning environments. In this section, I explain how this study was conducted. I focus on the specific steps carried out and decisions I had to make in order to follow guidelines for conducting phenomenographic research.

3.4.1 Aims

The aim of the first stage of this research is to explore university teachers’ experiences of blended learning environments. Specific objectives are as follows:

1. To explore university teachers’ conceptions of, and approaches to, teaching both in face-to-face settings and when using eLearning; and perceptions of their teaching situation in blended learning environments.
2. To explore, through the concepts of consonance/dissonance, coherence/incoherence, profile and orchestration, how elements of the teaching experience in blended learning environments are associated.
3.4.2 Sample

In phenomenographic research, some guidelines have been developed regarding how to select participants and how many of them to include. Regarding selection, Marton and Booth (1997, p. 129) claim that, as we are dealing with experiences of phenomena, people included in the sample need to have had the experiences the researcher is interested in. Bowden (2000b) adds that we are aiming for variation in experiences, so we should take measures to ensure variation. Therefore, at the same time as we include people who have the experience we want to investigate; we should ensure that participants represent a variety of experiences.

Regarding the number of participants, Trigwell (2000) recommends samples between fifteen and twenty, for two reasons. Firstly, at the lower end, fifteen is considered the minimum number for ensuring the chance of uncovering variation. Secondly, at the upper end, the limiting factor is the volume of data produced and its manageability. For this author, conducting between fifteen and twenty interviews would allow reasonable data management; while at the same time providing the chance of obtaining variation in experiences.

In the case of this study, the scope was to investigate university teachers’ experiences of teaching in blended learning environments. Having this in mind, a purposive sample of teachers meeting the requirement of having had this experience was considered the most appropriate. In order to be invited to participate in this research, university teachers had to have had the experience of teaching on campus face-to-face units which incorporate some form of eLearning; and this experience had to be recent (within the previous year). In order to increase variation in experiences of the participants the following criteria were also employed:

1. University teachers coming from different disciplines; and ideally covering disciplinary variation as defined by Becher and Trowler (2001).
2. University teachers with different ranges of experience in teaching.
3. University teachers representing a wide range of academic positions.
4. A similar number of female and male university teachers to keep a balance in gender.
Having defined the above mentioned criteria, the search for suitable and willing interviewees was conducted in four ways:

1. In one of the two universities from which teachers were invited to participate, senior eLearning staff helped to develop a list of about fifteen names of suitable interviewees. In this case, it was people who had incorporated eLearning in their units, and in the process had some involvement with eLearning staff. I emailed this group of teachers briefly explaining how I got their emails and names; and introduced the research. In the same email, I invited them to participate in the study as voluntary interviewees. Most of them indicated they were willing to participate. However, time constraints did not allow all of them to be interviewed. Five university teachers were incorporated in the study sample following this procedure.

2. At the same university, I was offered a chance to include an advertisement about the study in one Faculty’s newsletter. This Faculty was from the area of Social Sciences. This was a good alternative to contact potential interviewees as this newsletter is distributed through email to approximately one hundred teaching staff. A message describing the research was included in two issues of this newsletter, together with my contact details. People who were interested contacted me through email. I provided them with further information and, then, they decided whether they wanted to participate in the research. Four people were recruited using this approach.

3. Contact was made at the same university with a group of university teachers from the area of allied Health Sciences. These teachers had originally been interviewed for a different study on conceptions and approaches to teaching using eLearning but in a different setting (postgraduate distance courses which were conducted fully online, see Gonzalez, in press). Teachers were originally willing to participate but not all of them had recent experience of teaching on-campus units. I explained personally what this study was about to those who met the criteria for inclusion in this research. Three of these teachers were interviewed.

4. Finally, in the second university, senior eLearning staff was approached. In this case, the help offered was including an advertisement about my research through the LMS system in use at that university. In this way, each time university teachers logged into the LMS a pop-up window announcing the study emerged. People who followed the link in this pop-up window had access to further information and to my email address.
The advertisement was kept on the system for one week and six people were recruited for interviews using this method.

As a result of these four approaches, a sample of eighteen university teachers was achieved. In Table 13, I present characteristics of interviewees (University, discipline, gender, years of teaching experience and academic position).

**Table 13: Sample of university teachers participating in the study**

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>University</th>
<th>Discipline</th>
<th>Gender</th>
<th>Teaching experience</th>
<th>Academic Position</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>Hard applied</td>
<td>Male</td>
<td>Between 6 and 10 years</td>
<td>Senior Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>Soft applied</td>
<td>Male</td>
<td>Between 6 and 10 years</td>
<td>Senior Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Soft applied</td>
<td>Male</td>
<td>Between 11 and 20 years</td>
<td>Associate Professor</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>Hard pure</td>
<td>Female</td>
<td>Between 11 and 20 years</td>
<td>Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>Hard applied</td>
<td>Male</td>
<td>Between 6 and 10 years</td>
<td>Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Hard pure</td>
<td>Female</td>
<td>More than 20 years</td>
<td>Senior Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>7</td>
<td>2</td>
<td>Soft applied</td>
<td>Female</td>
<td>Less than 5 years</td>
<td>Associate Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Hard pure</td>
<td>Male</td>
<td>More than 20 years</td>
<td>Senior Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Soft applied</td>
<td>Female</td>
<td>Between 11 and 20 years</td>
<td>Lecturer</td>
<td>Undergraduate</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Soft applied</td>
<td>Female</td>
<td>Between 6 and 10 years</td>
<td>Lecturer</td>
<td>Undergraduate</td>
</tr>
</tbody>
</table>

(Continued on next page)
In Table 14, the basic guidelines for developing a suitable sample for a phenomenographic study, and how they were followed in this research, are summarised:

**Table 14: Guidelines for developing a sample and how they were considered in this research**

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How was achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample reflects experiences of the phenomenon under investigation (Marton &amp; Booth, 1997)</td>
<td>All university teachers included in the sample had had the experience of teaching on-campus face-to-face units incorporating eLearning (the definition of blended learning environment employed in this study). Information regarding their level of experience was requested in the initial contact, when agreeing time and date for an interview; and confirmed at the beginning of each individual interview</td>
</tr>
</tbody>
</table>
### 3.4.3 Data collection

Interviews were used as the data collection method. The aim of conducting phenomenographic interviews is to uncover people’s ways of experiencing the particular phenomenon under investigation. The interviewer seeks to encourage the participants to reflect on their experiences leading them to a state of meta-awareness. The aim is to make the interviewees aware of their own awareness. In phenomenographic interviews, the role of the interviewer is to make the interviewee bring forth her/his awareness through reflection on her/his experience (Marton & Booth, 1997, p. 130; Prosser, 2000).

In practical terms, guidelines have been developed for the researcher to assist him/her to bring the interviewee to the level of meta-awareness needed to uncover her/his experiences. The first guideline is to be flexible and open with questions (Marton, 1986). Accordingly the recommendation is to have a set of questions but to be open to following the course different interviews may take. Allowing flexibility, interviewees may be encouraged to show their understanding of particular phenomenon. Therefore, it is suggested interviews should not have too many predetermined questions or details defined in advance. Using questions that are as open-ended as possible is also recommended. Interviewees should be left to choose the dimensions of the question they want to answer. These dimensions are a key aspect for understanding their individual relevance structure. What interviewees choose reflects the elements they are focally aware of in relation to the phenomenon under investigation. The second recommendation is to use questions that are directly related to the phenomenon of
interest (Marton & Booth, 1997, p. 131). For example, what is meant by X? How did you go about X? It is important to note that, regarding this issue, Bowden (2000a) disagrees about what sort of questions should be used to bring forth interviewees’ awareness. For this author, questions of the type ‘what is X’ may hinder the purpose of accessing the interviewee’s experience of a particular phenomenon. Bowden proposes alternative ways of interviewing, using techniques such as posing problems or referring to shared topics. For him, this is more likely to be effective in revealing interviewee’s experiences. Both ways of conducting interviews have been used in phenomenographic research with good results. The third recommendation is to employ follow-up probing questions which are thought to help make interviewees reflect on and reveal their awareness. This technique would allow a deeper insight into interviewee’s experiences. The basis for the use of follow-up probing is what the interviewee has already said. The interviewer may ask questions such as ‘could you explain more?’ or ‘what do you mean by that?’ in order to encourage the interviewee to reflect on her/his experiences. The importance of follow-up probing has been stressed by Prosser (2000). He argued that these types of questions were essential for the quality of data obtained in a study on university students’ conceptions of motion and approaches to study. Some of the students stated they did something because they wanted ‘to understand’. However, careful probing showed that, for them, ‘understanding’ actually meant ‘recall’. Therefore, students’ intentions were surface, although initial questions, without follow-up probing, suggested deep intentions. Trigwell (2000), however, advises being careful about constantly probing interviewee’s answers because it may be confusing, elicit suspicion, upset the interviewee or make them think they are not giving the answers expected or desired by the interviewer. Therefore, while follow-up probing is important, it should only be used to the extent that it does not disturb the flow of the interview.

Turning to the data gathering that formed part of this research, interviews were the selected method of data collection. Interview questions were related to conceptions of teaching and eLearning, approaches to teaching and eLearning, and perceptions of the teaching situation. Questions included the following:

1. What does ‘good teaching’ mean to you?
2. What is eLearning good for in your teaching?
3. How do you approach teaching in this particular unit? What do you do in your teaching? Why? What do you want to achieve?
5. What factors influence how you teach?
6. What factors influence how you incorporate and use eLearning in your teaching?

The questions employed reflected the structure of the experience of teaching in blended learning environments presented in Figure 11. Questions 1 and 2 were designed to investigate what university teachers conceive as good teaching and good teaching using eLearning. Questions 3 and 4 investigated strategies (what teachers do) and intentions (why they did it, what they wanted to achieve) in relation to the face-to-face and online components of teaching. Questions 5 and 6 aimed to gain information on participants’ perceptions of factors influencing how they approach teaching in general and using eLearning.

**Figure 11: The experience of teaching in blended learning environments**

The interview schedule also included questions regarding background information about teachers (such as years in teaching, discipline, academic level and gender); and some contextual information about the unit of study they selected to talk about during the interview.

Part of the interview schedule was trialled in a small study conducted previously with seven teachers who taught postgraduate distance units using eLearning. For the purpose of the
present study, I added the questions required for exploring the face-to-face setting and I made some adjustments based on the previous study.

Interviews were all conducted in places suggested by interviewees. In most cases, these were their offices at the Universities involved in the study. I agreed to conduct the interviews in these places as they were appropriate in terms of privacy and quietness. I had available a meeting room in case interviewed teachers preferred this place. However, only one interviewee preferred to meet here and in this case, it was a tutor who did not have a permanent office space in her Faculty. Interviews lasted between 35 and 75 minutes, with an average of around 45 minutes. All of the interviews were audio recorded and fully transcribed in preparation for analysis. I transcribed personally twelve of the eighteen interviews. This proved to be an advantage when I started with the analysis as I had became very familiar with the transcripts. In conducting the interviews I made an effort to follow the guidelines outlined above. A summary of how these guidelines were implemented is presented in Table 15.

Table 15: Guidelines for conducting interviews and how they were considered in this research

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How this was achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure questions are related to the phenomenon</td>
<td>Questions were designed having in mind the elements of the experience of teaching in blended learning environments. These are: conceptions, approaches and perceptions. Each question was intended to explore interviewees’ awareness of these elements.</td>
</tr>
<tr>
<td>investigation (Marton &amp; Booth, 1997)</td>
<td></td>
</tr>
<tr>
<td>Allow flexibility in interviewing (Marton, 1986)</td>
<td>Although a set of predefined questions was developed and included in the interview schedule, space was allowed to follow the natural conversation generated during the interviews. This meant that every interview did not follow exactly the same structure, but explored the issues as described by the interviewees. Two elements were kept in mind during interviewing. The first one was trying to cover all of the elements the interview schedule intended to cover, although not necessarily in the predetermined order. The second one was to redirect the interviewee to the topics I wanted to explore when the conversation was leading to themes completely out of the scope of the study.</td>
</tr>
<tr>
<td>Lead the interviewee to state of meta-awareness</td>
<td>These last three guidelines are related to the same issue of bringing forward the awareness of the interviewee. They were followed by using follow-up probe questions directed to trigger interviewees’ reflection. When interviewing, questions such as ‘could you explain more?’ and ‘what do you mean by that?’ were used. However, I tried not to pressure interviewees with too many follow-up probe questions, changing the focus of the interview if it seemed that the interviewee was getting confused or suspicious.</td>
</tr>
<tr>
<td>(Marton &amp; Booth, 1997)</td>
<td></td>
</tr>
<tr>
<td>Use follow-up probe questions (Prosser, 2000)</td>
<td></td>
</tr>
<tr>
<td>Avoid excessive use of probe questions (Trigwell, 2000)</td>
<td></td>
</tr>
</tbody>
</table>
3.4.4 Analysis

There is some commonality and some variation in the practice of phenomenographic analysis of interview transcripts (Åkerlind, 2005c). Researchers using phenomenography commonly approach data analysis with an open attitude, in which predetermined categories are not imposed on the data, and they understand this practice to be a highly iterative process. One element common to a large number of phenomenographic analyses, an open attitude, implies approaching data without predetermined categories in mind as these may lead to imposing a fixed structure on the data. In phenomenographic research, categories emerge from the data. Reaffirming this point, Marton (1986, p. 43) states that a key difference between phenomenography and content analysis is that in the latter, categories are determined in advance. Further, the process of analysis should be open to adjustments following reflection, discussion and the development of new perspectives. Phenomenographic researchers need to keep an open mind when conducting analyses: allowing the meaning to emerge from the transcripts. It is important to be aware, however, that in some cases there will be research conducted previously in relation to the phenomenon of interest. Researchers need to be aware of this, and be open to the possibility of constituting new categories or further clarifying existing ones (Prosser, 2000, p. 37). The second common element is that the process is highly iterative and comparative. This implies that the analysis is conducted with emphasis on continuous sorting and rearrangement of data. Similarities and differences are sought between and within transcripts. Quotations or transcripts are selected and organised, leading to the establishment of provisional categories; which are iteratively tested, adjusted and retested against the data until the whole system of meaning is stabilised (Marton, 1986).

Åkerlind (2005c) also argues that there is variation in practice. This variation can be found in relation to the quantity of transcripts considered, the emphasis given to collaboration, ways of managing the data, and ways of constituting the outcome space. In relation to the quantity of transcripts, practices vary from considering small quotations or utterances from the transcripts (e.g., Marton, 1986), to considering the entire or significant parts of the interview transcripts (Prosser, 1994b; Trigwell, 2000). The first approach has been predominately employed by Swedish researchers, while the second has predominately been employed by Australian researchers (Åkerlind, 2005c). In relation to collaboration, although this type of analysis is often conducted by researchers working independently, some researchers
emphasise the importance of collaboration. Collaboration is seen as a medium to improve the development of the outcome space by taking into account different perspectives and sharing and contrasting perspectives on the data. On the other hand, Åkerlind (2005c, p. 328) stresses that good quality phenomenographic research can be conducted by researchers working independently, as demonstrated by doctoral theses following this approach. There has also been variation in the practice of how to manage the data. Phenomenographic interviews can yield enormous amounts of data. Some of the practices reported include:

1. Focusing on the referential (what) or structural (how) aspects of the phenomenon.
2. Focusing on similarities or differences within and between transcripts, resolving possible inconsistencies or disagreements between researchers working on a particular project.
3. Focusing on borderline transcripts and on those containing elements which do not fit in the emerging categories.
4. Focusing on implications of changes in one category for the entire outcome spaces being developed.
5. Some researchers start with a subset of transcripts and then move on to incorporating the full set for analysis (e.g., Prosser, 1994).
6. Removing excerpts which seems to be irrelevant, unhelpful or redundant.

Finally, there is variation in ways of constructing the outcome space. In this case the problem is to what extent the structure of the outcome space emerges from the data or reflects the researcher’s judgement. For Åkerlind this is just a question of degree as the final outcome space is built using both the data and the researcher’s judgement interpreting the data. (2005c, p. 329).

In conducting the analysis, I followed the guidelines from the commonalities in practice described by Åkerlind and needed to make decisions in relation to elements where there is a lack of agreement among researchers. Next, a description of the analysis is presented.

1. The first step in the analysis involved becoming familiar with the interviews. In order to achieve this, I read the entire set of interviews. I had an advantage as it was not my first encounter with the transcripts since I had transcribed most interviews (12 out of 18); which provided me with a good understanding of their content. Those interviews
that I did not transcribe needed to be read twice in order to become familiar with their content. In these early readings, the focus was on gaining a sense of the variation in the teachers’ experiences of incorporating eLearning in their teaching. I made notes on responses which were illuminating for the topics I was interested in. For example, some of the interviewed teachers provided key comments on how eLearning was conceived as beneficial for teaching; or some very good descriptions of their strategies for embedding online activities into their teaching. I highlighted and made comments on such responses, which would later be used to build categories of description.

2. Each interview had six sections (background questions, conceptions of teaching, conceptions of eLearning, approaches to teaching, approaches to eLearning, perception of their teaching situation). For data management purposes, at this stage two decisions were made: one related to the volume of transcripts to be employed in the analysis; and the other concerned whether to begin analysis with the full set of interviews or start with a smaller group. The first decision was to work with large sections, related to specific topics approached during the interviews, and considering the entire interview when needed. I had two reasons for this. Firstly, larger sections provided better insights into what interviewees were describing as their experiences. Further, outcomes of follow-up probe questions were better considered in this way than working with smaller quotations. Secondly, I found a similar situation to the one reported by Trigwell (2000, pp. 67 - 68). This author found that interviewees did not differentiate clearly between conceptions and approaches; and, for example, some descriptions of conceptions appeared when asking about intentions. This author proposed to work with entire transcripts to handle this issue. Also, in my interviews there were occasions in which the structure of the schedule was not strictly followed; because I wanted to be open enough to uncover teachers’ experiences. This implied that it was necessary to make reference to different sections of the transcripts to illuminate the analysis. Therefore, reference to the entire interview was in many cases required. The second decision was to work with the entire set of interviews: 18 interviews seemed a reasonable number to work with. Åkerlind (2005b, pp. 116-117) reported research in which she had 28 interviews to analyse. She decided to start with 17 to have a manageable number (only one less than my total). Besides, my involvement with the transcription process equipped me with enough knowledge of the data, which was a good base to work with the entire set.
3. I started working with sections of interviews related to conceptions and approaches. For each of the elements covered (conceptions of teaching and eLearning and approaches to teaching and eLearning) I conducted a similar individual analysis. Firstly, I repeatedly read sections of interviews associated with the element under analysis, focusing on emerging categories of description. I did this by further annotating illustrative paragraphs and making summaries of them. I searched for similarities and differences between sections of transcripts employed. In conducting this process I kept an open attitude, trying not to impose categories on the data (Marton, 1986) but searching for common aspects in the transcripts which might later configure categories of description. However, I was also aware of the previous work conducted quite extensively on conceptions and approaches to teaching in ‘conventional’ settings; and less extensively on conceptions and approaches to teaching when eLearning is involved. Regarding this point, I needed to take that research into account and, at the same time, keep an open mind in order to develop my own categories of description or clarify previously articulated ones (Prosser, 2000). The important issue here is being aware of previous research but not imposing a predetermined set of categories on the data. The analysis conducted allowed me to come up with an initial list of categories of description. This initial set was reduced by considering some of the categories represented the same thing under a different heading.

4. Sections of transcripts were read again in relation to the initial categories of description. The aim was to see if the categories accurately represented the experiences described by the university teachers. This led to an iterative process in which categories were tested and retested against data until the system of meaning stabilised (Marton, 1986). In the case of this research, the number of iterations needed ranged from four (approaches to teaching) to eight (conceptions of eLearning). Although in early stages of the analysis logical relationships were suggested by the emerging categories, it was at this stage that relationships between categories of description were systematically analysed. In order to build the final outcome spaces I followed Marton and Booth’s (1997) criteria of distinctiveness, structurally inclusive relations and parsimony. This implied that the categories of description included in each of the developed outcome spaces reflected something very distinctive about the phenomenon; it was possible to organise categories in a hierarchy in which lower
level categories were included in the higher level ones; and a small number of categories represented the variation in experiences of phenomena under investigation.

5. Analysis of perceptions of the teaching situation followed a thematic, rather than phenomenographic, analysis. According to Braun and Clarke (2006), thematic analysis has been poorly conceptualised and is sometimes confused with content analysis. These authors argue that thematic analysis can be seen as a broad method which can be used within both an objectivist and an interpretative epistemology. In the case of this study, I used thematic analysis in an inductive manner. Instead of imposing categories on the data, I explored and discovered the themes university teachers perceive in relation to their teaching environment. In this sense, thematic analysis follows similar steps to phenomenography in its early stages. Thematic analysis starts by becoming familiar with the data, then following with initial ‘codes’, searching and reviewing themes, naming the themes and producing the report. In contrast to phenomenography, this type of analysis does not create an outcome space. However, the aim of this analysis was not the same as for conceptions and approaches; instead the focus was on identifying themes relevant for the teachers in their teaching situations.

6. ‘Once stable outcome spaces for conceptions and approaches were achieved, each interviewee was allocated to one category of description, when they could clearly be seen as belonging to one, or to more than one category if it was unclear. Where interviewees were allocated to more than one category, they were regarded as presenting ‘dissonant’ descriptions of their conceptions and/or approaches. This procedure differs slightly from previous phenomenographic research. It was employed to explore teaching profiles and orchestrations (Postareff et al, 2008) in blended learning environments. For Postareff et al (2008) only one element of dissonance would lead to a dissonant profile. Therefore, an early identification of a dissonant description of conceptions or approaches is important in discovering a dissonant profile. Allocation to the highest category of description presented in an interview would tend to hide dissonance: the focus would be on the allocation rather than on uncovering dissonant descriptions. Therefore, attention to possible dissonant descriptions of conceptions and/or approaches will be employed in the analysis presented in chapters 4 and 5. Also, interviewees were classified as having a perception of their situation as mostly adequate, mostly inadequate or unclear. This classification allows the identification of coherent or incoherent associations between
teaching profiles and perceptions of the teaching situation. In this way, I will be able to use the concept of ‘teaching orchestrations’ for conceptualising associations between conceptions, approaches and perceptions.

A summary of how methodological concerns shared by phenomenographic researchers were addressed in the current research is presented in Table 16. Table 16 also covers methodological concerns where there is no clear agreement in the literature.

Table 16: Guidelines for conducting the analysis and how they were considered in this research

<table>
<thead>
<tr>
<th>Guidelines on aspects shared/decisions of aspects not agreed</th>
<th>How this was achieved/what was decided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain an open attitude (Marton, 1986)</td>
<td>Categories were not predetermined. While I was aware of previous work on experiences of teaching, this was seen as a reference and not as categories to be applied during the analysis.</td>
</tr>
<tr>
<td>Approach analysis as an iterative process (Marton, 1986)</td>
<td>Analysis on conceptions and approaches was conducted iteratively. Initial categories of description were tested and retested against the data until a stable set emerged.</td>
</tr>
<tr>
<td>Decide amount of transcripts to be used (Åkerlind, 2005c)</td>
<td>I worked with larger sections of interviews, extending the analysis to the full transcript when required. This allowed the development of a deeper insight on the descriptions of experiences and retrieve useful data from different sections if needed.</td>
</tr>
<tr>
<td>Decide what sort of collaboration to use (Åkerlind, 2005c)</td>
<td>As a PhD project, I conducted the analysis independently. However, preliminary results were presented in conferences and research seminars to get feedback on the work I was conducting (this is further described in the next section).</td>
</tr>
<tr>
<td>Decide how to optimise data management (Åkerlind, 2005c)</td>
<td>I worked with the entire set of transcripts as they were a manageable number. Then I focused on one element to be analysed at a time.</td>
</tr>
<tr>
<td>Decide how to build the outcome space (Åkerlind, 2005c)</td>
<td>The outcome space was built both by considering the data and my own judgement as a researcher.</td>
</tr>
<tr>
<td>Follow steps for conducting thematic analysis systematically (Braun &amp; Clarke, 2006)</td>
<td>I followed the steps suggested by the mentioned authors: getting familiarised with the data, developing initial ‘codes’, search and review themes, provided names for the themes and write the report.</td>
</tr>
</tbody>
</table>

In the chapters below, where outcomes of the analyses are presented, quotations from the transcripts are employed for illustrative purposes. Parentheses are used when required within the quotations to make clearer the context in which the statement was made. Ellipses (three dots) indicate pauses or hesitations in what interviewees were saying. Each interviewee was
assigned a number (1-18) and these numbers are present next to the quote in order to identify who made the comment, statement or affirmation. This is to identify quotations coming from different transcripts while at the same time ensuring interviewees’ anonymity. The Learning Management System is called [LMS] when appears within quotations.

3.4.5 Validity and reliability

Åkerlind (2005c) argues that although issues of validity and reliability come from a positivist tradition of research, qualitative researchers are also required to address them, though they need to be reinterpreted. Next, I describe how they are addressed in phenomenographic research and how I applied them in this particular study.

3.4.5.1 Validity

Three ways of ensuring validity can be found reported in the literature: communicative validity (Guba, 1981; Kvale, 1996), pragmatic validity (Entwistle, 1997; Kvale, 1995, 1996) and comparison with related research outcomes validity checks (Åkerlind, 2005b, pp. 126 - 127). In qualitative research, interpretations made of a data set may differ. Therefore, interpretations are not considered ‘right’ or ‘wrong’ but more or less defensible (Åkerlind, 2005c, p. 330). This relates to the capacity of the researcher to convince her/his intended audiences that the interpretation she/he has made is a reasonable one. In the case of this research, intended audiences are the community of learning and teaching in Higher Education and the associated community with interest in eLearning; as well as the phenomenographic research community. I presented outcomes of the study in two peer reviewed conferences, four internal research seminars and had a paper accepted in a well-regarded peer reviewed journal. I also received very important and useful feedback from my supervisor and associate supervisor, as well as from the community of PhD students and researchers I was part of. Finally, I sought feedback from people working on improving university teaching at the university wide level but also at the Faculty level.

Pragmatic validity refers to how useful and meaningful the outcomes of the research are for the intended community. It implies that the research would increase its validity if the outcomes provide insights for operating in more effective ways in the world. This research
can provide useful insights into how university teachers conceive and approach eLearning in their teaching as well as the factors influencing how they go about incorporating eLearning into their teaching. From a pragmatic perspective, since research of this type has not been widely undertaken, its outcomes may be useful for people working in the area of academic development and eLearning support. Employing the outcomes of this research, they would be better equipped to provide informed support for teachers who are incorporating eLearning in their teaching.

The last type of validity to address is concerned with checking the outcomes of one’s research against findings of similar studies. In this project, I compared the outcome spaces generated as well as the associations between aspects of the experience of blended teaching, with previous research on teaching in ‘traditional’ face–to–face settings, and on experiences of teaching using eLearning. Categories of description and themes that will be presented in the analysis chapters present a degree of overlap with similar studies. The general congruence between my findings and those reported in previous studies provided a further validity check on the outcomes of this study.

3.4.5.2 Reliability

In qualitative research, reliability is associated with the use of appropriate methodological procedures which ensure quality and consistency in data analysis (Åkerlind, 2005c, p. 331). Two approaches to ensuring reliability have been employed in the literature. The first emphasises the use of coder and dialogic reliability checks (Kvale, 1996). Coder reliability checks are those in which independent coding of interviews carried out by (two or more) different researchers are compared. Dialogic reliability checks are those in which agreement is reached through discussion among researchers. Both have been used in phenomenographic research, although there is not uniform agreement on their appropriateness for this type of approach. The second approach to ensuring reliability is making open and clear the interpretative steps followed by the researcher. This implies providing a detailed account of the steps followed during the analysis, as well as giving examples of how the analysis was carried out (Åkerlind, 2005a). I have followed these guidelines by providing a detailed step by step description of how the analysis was carried out. Moreover, following guidelines on methodological and interpretative rigour helps to ensure reliability (Hasselgren & Beach,
methodological rigour implies being aware of, and using, methods reported in the literature explaining guidelines for conducting phenomenographic research. I have read widely on how phenomenographic research has been conducted, noting commonalities and differences; and making informed decisions on how to conduct my own study. Interpretative rigour means treating all the accounts given by the interviewees fairly and with balance. Further, it implies being aware that multiple interpretations are possible; and the one selected reflects only a partial-arguable outcome. I have kept in mind the fact that my interpretation is only one of a range of possibilities. I have presented the steps I followed to arrive at my particular interpretation and do not expect this to be a definitive or unquestionable one. Moreover, it is important to consider Sandberg’s (1997) guidelines, which state that conceptions held by the researcher need to be ‘bracketed’ for the outcomes of a phenomenographic study to be reliable. Therefore, the researcher needs to be aware of her/his own preconceptions of the phenomenon under investigation; and how they may affect the analysis and development of the outcome space. In the case of my own research, I have held back my own conceptions about what are effective ways of incorporating eLearning into teaching; and have checked, when carrying out the analysis; interpretations were grounded in interviewees’ understandings and not in my own conceptions.

In Table 17, a summary of the guidelines for ensuring validity and reliability, and how they have been applied to this study, are presented.

Table 17: Guidelines for ensuring validity and reliability and how they were used in this research

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How was achieved/what was decided</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Validity</strong></td>
<td></td>
</tr>
<tr>
<td>Communicative validity (Guba, 1981; Kvale, 1996)</td>
<td>I have presented outcomes of this research in two conferences, four internal research seminars and published one paper. I also sought feedback from people in relevant audiences.</td>
</tr>
<tr>
<td>Pragmatic validity (Entwistle, 1997; Kvale, 1995, 1996)</td>
<td>The outcomes of this research intend to provide a better understanding of how university teachers conceive and approach their teaching when eLearning is involved; and what elements support or hinder its incorporation. Thus, these results are available to the academic community of Higher Education as well as academic developers and eLearning support teams.</td>
</tr>
</tbody>
</table>

(Continued on next page)
<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How was achieved/what was decided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison with related research outcomes validity check (Åkerlind, 2005b)</td>
<td>Results are congruent and coherent with similar research in the area of teaching both in ‘traditional’ face-to-face settings and in online environments.</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td></td>
</tr>
<tr>
<td>Describing openly and clearly steps followed in the analysis (Åkerlind, 2005a)</td>
<td>I have described, step by step and with due detail, the procedure followed when conducting the analysis.</td>
</tr>
<tr>
<td>Methodological and interpretative rigour (Hasselgren &amp; Beach, 1997; Lincoln &amp; Guba, 2000)</td>
<td>I have read widely on how to conduct phenomenographic research and I have applied to this research the guidelines derived from those articles and books. Also, I am aware that my interpretation is not ‘absolute’, but only one of a range of possibilities.</td>
</tr>
<tr>
<td>Being aware of researcher’s own awareness of the phenomenon under investigation (Sandberg, 1997)</td>
<td>I have been aware of my own conceptions about eLearning and teaching. When conducting the interviews and the analysis, I have held back those conceptions to be truthful with interviewees’ accounts.</td>
</tr>
</tbody>
</table>

### 3.4.6 Criticisms

Finally, in this section, it is important to describe some criticisms of phenomenography that can be found in the literature. This approach has been criticised because of its ‘over’ reliance on interviews; and the problem that conceptions of reality are seen as discursive practices with no firm psychological roots (Jones & Asensio, 2002). Using interviews as the main research method has been also criticised by Kane et al (2002). These authors state that research using only what teachers say about their practices is at risk of telling only ‘half of the story’, as there may be incongruence between what teachers say and what they do. They advocate the use of observation as a better or complementary way of researching teaching. In relation to phenomenographic analysis, Webb (1997) has critically claimed that the development of the outcome space is not grounded in the data but rather in the researcher’s perspective. This perspective would be informed by the point of view of modern science and, in this way, the supposedly more ‘advanced’ conception of the phenomenon investigated would be in accordance with the dominant scientific point of view at one particular point in time. For Webb, this would be a ‘trust me, I know the right answer’ attitude (Webb, 1997, p. 202).
In this research, I am aware of the issues mentioned above. In dealing with them, I follow Jones & Asensio’s (2002) approach, adopting a sceptical stance towards the results of the interviews, keeping in mind that they are accounts given that may be intended to fit in with the purposes of the interview; but, at the same time, being aware that these are valuable reports, giving insight into conceptual resources that university teachers had available for teaching in blended learning environments at the moment of the interviews. It is important to note that McAlpine et al (2006) set out to address the possible incongruence between what teachers says and what they do, and found that university teachers were congruent between practice and discourse on their practice. It is also important to acknowledge that this is only one study. Further research should be conducted to assess the value of observation for complementing interviewing in teaching research. Regarding Webb’s (1997) critique, it is important to note that I have followed guidelines to make myself aware of my own understanding of the phenomena I am researching. Therefore, I can claim that I have tried not to impose a structure on the data but leave categories of description to emerge from the interview transcripts.

3.5 Quantitative phase

The second stage of the research was a quantitative study which had the objective of investigating how approaches to eLearning are associated with approaches to teaching and perceptions of the teaching situation. In this section, I describe how this stage was carried out; focusing on steps followed and decisions made.

3.5.1 Aims

The second stage of the research has the aim of investigating associations between approaches to eLearning, approaches to teaching and perceptions of the teaching situation. Specific objectives are:

1. To develop a questionnaire regarding approaches to eLearning that allows an investigation of how a broad group of university teachers approach teaching when eLearning is involved.
2. To further explore if associations between approaches to eLearning, approaches to teaching and the perception of the teaching situation found in the qualitative stage of this research can be seen in a broader sample of university teachers.

It is important to remember that quantitative studies within the framework of relational research are used to investigate how people experience phenomenon in particular situations and, therefore, have the same assumptions as qualitative phenomenographic research (described above). Conducting a quantitative study in this context does not imply shifting towards a positivist paradigm of research, but maintaining a relational perspective; and using questionnaires which are firmly grounded in findings emerging from qualitative research. The aim is to use a different method for investigating variation in teachers’ experiences in particular situations.

3.5.2 Questionnaires used in this study

The main aim of this stage was to explore whether experiences found in the qualitative study could be seen in a broader group of university teachers. The first task, therefore, was to find if there were already questionnaires available, suitable for the proposed aim. Two such questionnaires were found: the ‘approaches to teaching’ inventory (Prosser & Trigwell, 2006; Trigwell & Prosser, 1996; Trigwell & Prosser, 2004; Trigwell et al., 2005) and the ‘perception of the teaching situation’ questionnaire (Prosser & Trigwell, 1997). A questionnaire on approaches to teaching using eLearning could not be found and consequently needed to be developed (the ‘approaches to teaching using eLearning’ questionnaire). Next, I describe the development and use of the two inventories already available; as well as the steps in developing a questionnaire for investigating approaches to teaching using eLearning.

3.5.2.1 The approaches to teaching questionnaire

The ‘approaches to teaching’ inventory was developed by Trigwell and Prosser (1996) based on a qualitative study of university science teachers’ approaches to teaching (Trigwell et al., 1994). In building the inventory, the aim of these researchers was to measure key variation in experiences of teaching and explore relations between teachers’ approaches to teaching and
students’ approaches to learning (Trigwell & Prosser, 2004, p. 416). The original version had five scales, two for intentions - information transmission and conceptual change - and three for strategies - teacher-focused, student-teacher interaction and student-focused. A principal components analysis was carried out. This turned out to be consistent with the theoretical model underlying the development of the questionnaire; and the claimed associations between intentions and strategies. The ‘student-interaction’ subscale loaded heavily on the student-focused subscale and was eliminated. Further development was carried out in order to make the questionnaire suitable for contexts different from the original science teaching setting. In 2004, a study including 656 cases was presented to reaffirm the statistical validity of the inventory (Trigwell & Prosser, 2004). Results of this study showed that items from the ‘conceptual change/student-focused’ and ‘information transmission/teacher-focused’ scales loaded on two clear factors. Also, levels of reliability were in both cases over .7. The authors have provided further analysis of the approaches to teaching inventory. Confirmatory factor analysis was conducted which supported the hypothesised structure of the inventory (Prosser & Trigwell, 2006). The ‘approaches to teaching’ inventory has been used quite widely by the authors and other researchers. It has, for example, being used to inquire into how approaches to teaching are influenced by discipline and context (Lindblom-Yläne, Trigwell, Nevgi, & Ashwin, 2006); to explore dissonance in teaching (Prosser et al., 2003); or to explore teaching in specific academic disciplines, such as design (Trigwell, 2002). The current version of this questionnaire has 22 items (Trigwell, 2008, March 13). This is the version I am employing in this stage of the research.

3.5.2.2  The perception of the teaching situation questionnaire

The ‘perception of the teaching situation’ questionnaire has followed a path of development similar to the ‘approaches to teaching’ inventory. It was first reported by Trigwell and Prosser (1997) in a study about the relationships between perceptions of the teaching environment and approaches to teaching. The authors interviewed a group of 13 university teachers about the factors they thought influenced their approaches to teaching. Outcomes of the analysis of interviews formed the basis for developing an initial pool of 250 items. These were reduced with a preliminary set of items collapsed into five scales representing factors teachers thought affected their teaching: control of teaching, appropriate class size, students’ characteristics, departmental support for teaching and appropriate academic workload. This
preliminary version of the questionnaire was sent out to the teachers previously interviewed, plus seven others. Their answers as well as their comments and suggestions lead the researchers to a questionnaire composed of five scales and 36 items. This version was sent out together with the ‘approaches to teaching inventory’ to a group of 46 teachers. The results of this study have been described in the literature review section (above). For the purpose of this methods section, it is important to note that this questionnaire has been subjected to less statistical work than the ‘approaches to teaching’ inventory. Also, it has been used less extensively than the ‘approaches to teaching’ inventory. Besides the original study, it has been used in studies such as a replication of the original work (Ramsden, Prosser, Trigwell, & Martin, 1997) and a study on dissonance in teaching (Prosser et al., 2003). In this study, I use the current version of this questionnaire, as provided by one of the authors (Trigwell, 2008. March 13).

3.5.2.3 The approaches to teaching using eLearning questionnaire

At the time of conducting the present research, I was not aware of any questionnaire developed to examine university teachers’ approaches to teaching using eLearning. Therefore, to explore associations between approaches to teaching using eLearning, approaches to teaching in conventional face-to-face settings and perceptions of the teaching situation; the development of a novel questionnaire was required. I set out to accomplish this task having the outcomes of the qualitative research as the main source for its development. Next, steps in developing the scales composing the questionnaire are described:

1. As part of the qualitative stage of this research, interviews were analysed and an outcome space for approaches to eLearning in teaching was developed (chapter 5). This, together with sections of interviews referring to approaches to teaching using eLearning, was the basis for developing an initial set of items. A set of about 70 items were originally developed.

2. This pool of items was sent to 6 people who volunteered to review the initial set. At that time, they were all working in research projects involving eLearning. Therefore, they were considered highly capable of providing professional judgment about the items. This group included one Senior Lecturer, one Lecturer, two Research Associates and two PhD candidates. They were asked to rate each item in terms of
relevance to what it was intended to measure (low, moderate and high). They were also asked to provide comments on the general structure of the scales, wording and/or other suggestions. A large number of comments and suggestions were provided. These were collated and analysed. The process led to changes in the questionnaire which involved a reduction in the number of items, deletion of one scale and the rewording of some items.

3. This draft questionnaire was then sent to the original 18 interviewees. The aim of this step was to see if the inventory was able to capture the approach to teaching using eLearning they had described in their interviews and, also, receive feedback and comments from them. Seven of the 18 original interviewees responded. This step suggested that there was congruence between the questionnaire and what this group of teachers described previously in the interviews. They also provided feedback on the wording of the items.

4. A second expert judgement was sought. At this stage, I had a questionnaire with six scales reflecting three approaches. Professional judgement was requested to see if judges allocated each item to the scale it belonged to in the proposed design. In this way I wanted to check if the intended structure was likely to reflect the variation in experiences of using eLearning in teaching I wanted to capture. Three people volunteered to judge the structure, one Senior Lecturer, one Lecturer and one PhD candidate. The task was to allocate each item to one of the scales developed and provide feedback on those which were unclear or presented difficulties for them. This stage showed that the structure of the questionnaire, representing three broad approaches to eLearning, was clear for the judges. Comments leaded to the deletion of one item; and the rewording of another five.

5. The version of the questionnaire emerging from step 4 was put together with the ‘approaches to teaching’ and ‘perception of the teaching situation’ questionnaires; plus background questions (gender, teaching experience, academic position and academic discipline) and two open-ended questions (one related to comments about the instrument and the second one about possible uses of eLearning not reflected in the items). These were sent out to the target population (see below for further details). Statistical analyses were carried out using the answered surveys. Analyses were conducted to evaluate the novel questionnaire and to explore associations between variables.
Outcomes of steps 2 to 5 are presented in detail in chapter 9. Procedures for data gathering and analyses are described below. Table 18 presents guidelines in using and developing questionnaires and how they have been followed in this research.

### Table 18: Guidelines for using/developing questionnaires and how they were used in this research

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How this was achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify clearly the object of study (DeVellis, 2003)</td>
<td>The object of study was university teachers’ approaches to eLearning in teaching and associations with approaches to teaching and perceptions of the teaching situation.</td>
</tr>
<tr>
<td>Develop an initial pool of items and submit them to expert judgement (DeVellis, 2003)</td>
<td>A pool of 70 items was originally developed based on the results obtained from the qualitative stage of this research. Feedback from experts was sought twice. Firstly, all 70 items were sent to a group of 6 eLearning researchers who were asked to rate the relevance of the items in relation to what they intended to measure. Secondly, the remaining items were sent to a group of 3 eLearning experts to confirm the allocation of the items.</td>
</tr>
<tr>
<td>Send the items to a testing sample and conduct proper statistical analyses (DeVellis, 2003)</td>
<td>The questionnaire was sent to university teachers who had the experience of incorporating eLearning in their teaching. 86 questionnaires were answered. Statistical analyses including correlation, principal components and maximum likelihood analysis were conducted.</td>
</tr>
</tbody>
</table>

### 3.5.3 Sample and data collection

Two issues needed to be addressed at this point: the population sample and how to conduct the data collection. In relation to population sample, the same broad guidelines used for the qualitative stage needed to be followed here. Applied to this stage, these guidelines were about ensuring that people who answered the survey had the experience of teaching in blended learning environments and to maximise variation in those experiences. The population was defined as all university teachers from one Australian university who have incorporated eLearning in their teaching. This needed to be in the semester in which the data gathering process was conducted; or in a recent one (no more than two semesters prior to the one in which the questionnaire was sent out). For practical purposes, it was understood that teachers were using eLearning if they had a website open in the university’s LMS, associated with one of more of their units. Moreover, similarly to the qualitative study, it was desirable that the other four criteria for ensuring variation were also considered in this stage.
(disciplinary variation, gender, experience in teaching and academic position). However, in contrast to the previous stage, it was not possible to follow each case to ensure these criteria were achieved, because there were too many potential respondents. Therefore, the strategy followed was to contact as many teachers as possible. Nevertheless, this self selected sample turned out to meet the defined criteria quite well (see Table 19).

In relation to how to conduct the data gathering, there were two possible alternatives: normal post and electronic. In social research, sending out surveys through normal post with a postage-paid addressed return envelope has been widely used (Neuman, 2000). However, in recent years, the internet has allowed the use of email as a medium for easily reaching the targeted population. In order to choose between these two methods I researched the pros and cons of using a web-based survey as the medium for data collection. Web-based surveys have been promoted as an efficient and convenient way of data gathering; as well as having the potential to reach widely distributed populations (Lefever, Dal, & Matthiasdottir, 2007). Mertler (2002) also stresses the convenience of web-based surveys as they guarantee a rather short time for data collection and are time- and cost-efficient. Further, the use of web-based surveys would allow better data management, preventing the loss of data and saving time because the researcher does not need to (re)enter any data (Carbonaro & Bainbridge, 2000; Ilieva, Baron, & Healey, 2002). Lefever et al (2007) claim that attention must also be paid to potential problems of web-based surveys. A minimum requirement from the respondents is having access to a computer and an internet connection. If a population is unlikely to have access to a networked computer, a web-based survey would not be suitable. Also, fraudulent responses may be obtained from people surfing the internet and completing the survey with false answers. Furthermore, some potential respondents may lack skills in using the internet and their answers could be limited by this. Finally, these authors state that emails containing invitations to participate in web-based surveys may be treated as junk email, decreasing the potential response rate. Reflecting on Lefever’s claims, it is possible that time, costs savings and data management are an advantage of web-based surveys. In relation to foreseen pitfalls, it is possible to say that they are unlikely to have a major impact in this study. Potential respondents would all have access to the internet and good computing skills as they are highly educated people. Regarding the issue of junk mail, it is also possible to say that this did not affect the data gathering because the invitation was sent from a university email; meaning that it did not get caught in spam filters and potential respondents were able to
identify it as coming from their own institution. Accordingly, the web-based survey was seen as a suitable strategy to reach the intended population.

Some guidelines originally developed for improving the response rate of posted surveys are applicable, with minor adjustments, to the email based data collection (Neuman, 2000, p. 270). Adapted to this study, these guidelines would be as follows:

1. Send each email to a specific person rather than to a generic nomination such as ‘university teacher’. In this case, each letter was directed to the person who would receive the email; including her/his academic position and name.
2. The email presenting the study, and inviting teachers to answer the survey, was carefully written. It clearly explained its aims and context. How confidentiality and anonymity would be ensured was also highlighted.
3. The survey should have a clear and neat layout. In this case, it was not possible to change the layout. The Faculty’s web-survey tool has only one default layout. This is, however, of good quality and includes the university’s logo and Faculty name. It allows potential respondents to identify the survey as coming from their own institution.
4. An email was sent after one week to thank the people who already answered, and to remind those who had not that they still were able to take part in the study, if they wanted.
5. I mentioned the Faculty and the supervisor as well as the context in which the data collection is taking place, in this case a PhD project. A better response rate could be gained when the respondents associate the sender with a familiar institution.

Next I describe steps followed in collecting the data:

1. Contact was made with university senior eLearning staff. A list of around 2000 units of study with an active website in the university’s LMS was used as the basis for developing the list of potential respondents. This list was compared with information from the Faculties’ handbooks and websites. A list of university teachers including their names, emails and Faculties was the outcome of this step.
2. At the same time, I established contact with Deans of Faculties, in the smaller ones, and Head of Schools, in the big Faculties, seeking their endorsement for the data
gathering. Most Deans and Heads endorsed the data gathering. Some of them explicitly asked that teachers were told that answering the questionnaire was absolutely voluntary. Around 700 teachers from the list I had compiled were in Faculties or Schools where endorsement was granted.

3. The survey was uploaded to the Faculty’s web-based survey tool. It contained:
   a) The consent form, which teachers needed to read and agree with before proceeding to the questions.
   b) Background questions related to gender, discipline, years of teaching experience and academic position.
   c) The ‘approaches to teaching using eLearning questionnaire’.
   d) The ‘approaches to teaching inventory’.
   e) The ‘perception of the teaching situation questionnaire’.
   f) One open ended questions for comments and suggestions about the survey.

The ‘participant information sheet’ was uploaded to a website. In this way, potential respondents were able to read further about the study and make an informed decision about their participation.

4. Before contacting potential respondents, I tested that there were not problems accessing the website in which the survey was hosted. This was carried out opening the website from within the university network and from outside. I did the same with the website where I had uploaded the participant information sheet. These checks were conducted to ensure that no technical problems would hinder the data collection process. Both the website with the survey and the one with the participant information sheet were working correctly and did not present any problems during the data gathering process.

5. I then started contacting potential respondents. An email was sent inviting teachers to participate in this study by completing the survey. In the email, the study was introduced, explaining its aims and situating it as a PhD project. The email contained a link to the survey’s web site, as well as a link to the participant information sheet. In order to obtain consent, the first question of the questionnaire had the form of a paper based participant consent form. Before continuing to the questions, respondents needed to provide consent by selecting the option ‘yes’.

6. The majority of responses arrived the same day I sent out the survey (n=29) and then started declining. The second day, I receive 23. The third day 8. One week after the first email, a second one was sent with thanks to those who already had participated.
and inviting again to answer the survey to those who did not. I advised teachers that the web site containing the survey would be closed four working days later. This was done to have a clear ‘closure’ day and not keep receiving answered surveys once I had started with the analyses. Similarly to the pattern of responses received the previous week, 19 surveys arrived the same day. Then, the second day I received 7 responses. After the website was closed, some teachers (4) contacted me claiming they had been too busy or away; but were interested in answering the survey. These contacts happened between 4 days and two weeks from the website’s closure; when I was already working with the data. Therefore, it was not possible to include them in the sample.

A sample of 86 university teachers was achieved using the steps described above. It represents a rate of 12.3% of the total population. This is low, although it is important to consider that university teachers are a difficult group to approach. They have multiple commitments and answering a survey is an activity they struggle to fit into their busy schedules. Quantitative results need to be considered with due caution. The low rate of response does not allow generalisation to a sampled population. Rather, replication will be needed to provide further evidence of the outcomes presented in chapters 8 and 9. Characteristics of the sample are presented in Table 19.

<table>
<thead>
<tr>
<th>Table 19: Characteristics of the sample of university teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>----------</td>
</tr>
</tbody>
</table>
| Gender   | Female: 44 (51.2%)  
|          | Male: 42 (48.8%) |
| Academic discipline | Hard pure: 26 (30.2%)  
|                   | Hard applied: 29 (33.7%)  
|                   | Soft pure: 11 (12.8%)  
|                   | Soft applied: 20 (23.3%) |
| Years in teaching | Less than 5 years: 8 (9.3%)  
|                   | Between 6 and 10 years: 14 (16.3%)  
|                   | Between 11 and 20 years: 30 (34.9%)  
|                   | More than 20 years: 34 (39.5%) |

(Continued on next page)
Variable Characteristics

<table>
<thead>
<tr>
<th>Academic position</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tutor</td>
<td>1 (1.2%)</td>
</tr>
<tr>
<td>Associate lecturer</td>
<td>6 (7.0%)</td>
</tr>
<tr>
<td>Lecturer</td>
<td>30 (34.9%)</td>
</tr>
<tr>
<td>Senior lecturer</td>
<td>25 (29.1%)</td>
</tr>
<tr>
<td>Associate professor</td>
<td>16 (18.6%)</td>
</tr>
<tr>
<td>Professor</td>
<td>8 (9.3%)</td>
</tr>
</tbody>
</table>

Table 20 presents guidelines for sampling and data collection and how they were achieved in this research.

Table 20: Guidelines for data collection and how they were used in this research

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How this was achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample reflects experiences of the phenomenon under investigation (Marton &amp; Booth, 1997)</td>
<td>The population was defined as all university teachers from one Australian university who had incorporated eLearning in their conventional teaching. In this way it was ensured that all had the experience of teaching in blended learning environments</td>
</tr>
<tr>
<td>Sample maximises variation (Bowden, 2000)</td>
<td>Although it was not possible from the beginning to design a sample for ensuring variation, it turned out to meet variation criteria (disciplinary variation, gender, teaching experience and academic position) fairly well.</td>
</tr>
<tr>
<td>Use web-based surveys as an efficient way of data gathering (Levefer et al, 2007; Mertler, 2002)</td>
<td>A web-based survey was employed. This turned out to be an efficient way of data gathering, allowing the saving of time and resources.</td>
</tr>
<tr>
<td>Manage data efficiently (Carbonaro &amp; Bainbridge, 2002; Ilivia et al, 2002)</td>
<td>Respondents’ answers were stored at the Faculty of Education’s server. They were password protected so I was the only person with access to the data gathered. Data were easily downloaded and required minimum preparation before being exported to statistical software.</td>
</tr>
<tr>
<td>Use guidelines to increase mail survey responses which are applicable to this email survey (Neuman, 2000)</td>
<td>Emails inviting teachers were sent to the specific recipient. The email was carefully written explaining the study, inviting participants to answer the questionnaire and providing alternatives for further information. The survey was built in the Faculty of Education’s web-based tool which has only a default layout; but which is clear and neat; and also allows easy identification with the Faculty and the university. A reminder email was sent one week after the initial one.</td>
</tr>
</tbody>
</table>
3.5.4 Analysis

Two analyses were conducted. The first analysis examined the items and scales of the ‘approaches to teaching using eLearning’ questionnaire. The second analysis explored associations between approaches to teaching, approaches to teaching using eLearning and perceptions of the teaching situation.

3.5.4.1 Development of the approaches to teaching using eLearning questionnaire

Data collected helped to establish the validity and reliability of the questionnaire. Analyses conducted included face validity (experts’ judgements), unidimensionality analyses at the level of items and scales (factor analysis), and reliability (Cronbach’s alpha). Next I describe each of these analyses.

Face validity refers to experts’ subjective assessment of items to ascertain whether they appear to correspond to the concepts or constructs they intend to measure (Mostert, 2007). It usually takes the form of experts rating items by relevance or assessing to what extent they fit the proposed scale structures. Also, it is used to get broader feedback on the overall constructs. As described in the sub-section above on the development of the ‘approaches to teaching using eLearning’ questionnaire, exploration of face validity was carried out through initial expert judgement, feedback from some of the interviewees from the qualitative phase of this research, and a second expert judgement.

Unidimensionality is a key element in developing scales. It implies that conducting factor analysis is a critical step in scale development. Factor analysis is a generic name given to a class of multivariate statistical methods used to find the underlying structure of a data matrix. It addresses the issue of analysing the structure of correlations among a large number of variables by defining a set of common underlying dimensions: the factors. For the items to be claimed to comprise a scale they need to load highly on a single factor. If this happens, then it is possible to state that scales are truly uni-dimensional (Hair, 1998). A variety of types of factor analysis are available, including: component analysis, also known as principal components factor analysis; and common factor analysis. The main difference between
component and common factor analyses is that component factor analysis considers the total variance found among the variables; while common factor analysis is based only in the common variance. Selection of the method for testing unidimensionality has been highly contested. On one hand, researchers have stated that the use of principal components or common factor analysis yield similar results and therefore do not affect the outcomes of the research; particularly if communalities exceed .60 for most variables (Hair, 1998, p. 103; Thompson, 2004). On the other hand, researchers such as Costello and Osborne (2005) state that principal component analysis with varimax rotation is not the optimal approach, particularly in the social sciences, where often data do not meet the assumptions of this method. They claim that factor analysis methods, such as maximum likelihood with oblique rotation should be used in social sciences research. In the area of relational research in Higher Education, Trigwell and Prosser (2006) have been criticised regarding the ‘approaches to teaching’ inventory for preferring principal components analysis instead of common factor analysis (Meyer & Eley, 2006). Another issue under debate is in the number of respondents per items needed to conduct factor analysis. The rule of thumb has been at least ten cases per item (DeVellis, 2003). However, Costello and Osborne (2005) analysed 303 articles from PsychINFO and found that 40.5% of them used a respondent item ratio of five or less. These authors state that small sample sizes can be used if data is strong. This means uniformly high communalities plus several variables loading highly in one factor. However, a set of data producing these results is rare in the social sciences. Bigger sample sizes and respondent-item ratio are proposed to help diminish error from small samples (Osborne, Jason, & Costello, 2004). Regarding the analysis conducted in this particular study, the following decisions were made:

1. The ratio of respondents to items was 3.1 (86 respondents, 28 items). This was too low for conducting an analysis of the items altogether. Therefore, factor analysis was conducted separately for each of the six scales. The aim was to examine whether the items composing each of the single scales formed one factor only. In order to know the appropriateness of the correlation matrices for factor analysis the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was employed. A KMO value lower than .5 indicates that it is not appropriate to conduct factor analysis. In deciding how many factors to extract, the rule of eigenvalues over 1 was used (Thompson, 2004, p. 32) and items with loadings over .4 were kept.
2. The analysis was also conducted at the level of the scales. In this case, summated scores of scales resulting from the previous analyses were factor analysed. This had the objective of testing whether the results were coherent with the structure of intentions and approaches suggested by the qualitative study. Considering the six summated scales as single variables, the ratio of respondents to variables was 14.3. KMO was again calculated to see if the matrix was appropriate for factor analysis. The eigenvalues over 1 rule was also employed in this case. Loadings over .5 were considered significant.

3. In relation to the type of analysis, I decided to conduct both the principal components factor analysis and the maximum likelihood factor analysis to see if they yielded similar or different results. In the case of principal components analysis, varimax was used as the rotation method. This is the most common orthogonal rotation method, widely employed in conjunction with principal components analysis (Costello and Osborne, 2005). In the case of maximum likelihood factor analysis, promax rotation was employed. This is one of the oblique methods available and is regarded as superior to the direct oblimin solutions because of its relatively simple conceptualisation and computational simplicity (e.g., Lee and Ashton, 2007). These analyses were performed at the level of items comprising single scales and with the summated scales.

Reliability testing is aimed at ensuring the internal consistency of scales. The most common method for assessing reliability is Cronbach’s alpha. In judging levels of reliability I followed DeVellis (2003) guidelines (below .60 unacceptable; between .60 and .65 undesirable; between .65 and .70 minimally acceptable; between .70 and .80 acceptable; between .80 and .90 very good; more than .90 excellent); but also considered that Cronbach’s alpha is influenced by the number of the items, with shorter scales tending to have lower levels of alpha (Cortina, 1993).

3.5.4.2 Correlation, principal components and cluster analyses

After conducting the analysis mentioned above, the remaining items and scales of the ‘approaches to teaching using eLearning’ questionnaire were analysed together with the other two instruments. Correlation, principal components and cluster analyses were conducted with
the entire dataset. Items composing the questionnaires’ scales were summated for the analyses. Reliability tests for all the scales were also conducted using Cronbach’s alpha. These analyses are described next.

Pearson’s correlation measures the degree of linear relationship between two variables. Its value ranges from 1 to -1, where the closer the coefficient is to these numbers the greater the correlation. Moreover, a value of zero indicates no linear relationship between two variables (Howell, 2008). Following Cohen’s (1977) criteria for effect size, a value of .1 can be interpreted as low, a value of .3 as moderate; and a value of .5 as large. In the analysis conducted here, Pearson’s correlation was used to look at the strength of the associations between the summated scales that provided scores for university teachers’ approaches to teaching, approaches to teaching using eLearning and perceptions of the teaching situation.

As stated previously, the aim of factor analysis is to discover the underlying set of dimensions in a data matrix (Hair, 1998). In the case of this study, principal components factor analysis with varimax rotation was used to look at structural relationships amongst groups of variables. Variables included the summated scales from the three questionnaires (approaches to teaching, approaches to teaching using eLearning; and perceptions of the teaching situation). KMO was calculated to check whether it was the appropriate to submit the correlation matrix to principal components analysis. The rule of thumb concerning eigenvalues over 1 was used to extract the factors (Thompson, 2004, p. 32). Varimax rotation was employed and loadings over .3 were kept.

Cluster analysis is the name of a group of multivariate techniques which are primarily used to group cases based on the characteristics they have. These techniques classify respondents in such a way that each one is very similar to the others in the cluster in relation to predetermined variables. Thus, resulting clusters should be very homogeneous internally (within-cluster) and highly heterogeneous externally (between-cluster) (Hair, 1998, p. 473). In concordance with techniques used previously in the area of relational research, a hierarchical cluster analysis using Ward’s technique, which is based in the increasing value of the squared Euclidean distance between clusters, was employed (e.g., Prosser et al, 2003; Ellis et al, 2007). Hierarchical procedures involve the construction of a treelike structure. In its agglomerative variant, each observation starts as if it was one independent cluster. In successive steps the two closest clusters (or individuals) are grouped together into a new
aggregated cluster. This process continues until all the observations or individuals are grouped into one single cluster. An important issue with cluster analysis is how many clusters should be formed. There is not a single objective rule about this; but some suggestions have been provided. Some theorists argue that the researcher should examine agglomeration scores searching for sudden jumps in the within-cluster distance. This would give an indication of the number of clusters to be formed. Another suggestion is to complement empirical judgement with theoretical reasons that may suggest the number of clusters to be formed (Aldenderfer & Blashfield, 1984; Hair, 1998). In the case of the analysis presented in chapter 9, a combination of these two orientations was used. After the number of clusters to be formed was decided and its features were described, descriptive statistics were examined to explore cluster members’ profiles.

It is important to mention that the sort of statistical analyses conducted (correlation, principal components factor analysis with varimax rotation and hierarchical cluster analysis using Ward’s technique) are commonly used in related relational research (e.g., Ellis, Goodyear, Calvo & Prosser, 2008; Ellis et al, 2007; Prosser et al, 2003; Prosser and Trigwell, 1997; Trigwell & Prosser, 1999). The statistical techniques employed are suitable for research which is descriptive and analytic, as is the case with relational research, rather than causal and explanatory (Prosser & Trigwell, 1999, p. 172). A summary of guidelines for conducting these analyses, and how they were used, is presented in Table 21.

**Table 21: Guidelines for analysis and how they were used in this research**

<table>
<thead>
<tr>
<th>Guidelines</th>
<th>How this was achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ensure validity and reliability of the</td>
<td>Face validity (expert judgement), unidimensionality (factor analysis) and reliability</td>
</tr>
<tr>
<td>‘approaches to teaching using eLearning’ questionnaire</td>
<td>(Cronbach’s alpha) analyses were conducted.</td>
</tr>
<tr>
<td>Select statistical analyses which are suitable for, and coherent with,</td>
<td>Correlation, principal components factor analysis and hierarchical cluster analysis</td>
</tr>
<tr>
<td>the underlying research framework used (Prosser &amp; Trigwell, 1999)</td>
<td>were employed. These techniques are in line with previous research in the area.</td>
</tr>
<tr>
<td></td>
<td>Moreover, they are focused on description and analysis rather than causality and</td>
</tr>
<tr>
<td></td>
<td>explanation.</td>
</tr>
</tbody>
</table>
3.5.5 Validity and reliability

Most validity and reliability issues have already been addressed in the previous sub-section. Therefore, I will briefly summarise them and add issues related to the validity and reliability of previously-developed questionnaires employed in this study.

The ‘approaches to teaching using eLearning’ questionnaire was evaluated for validity and reliability using:

- Face validity through expert judgement.
- Unidimensionality through factor analysis.
- Reliability through Cronbach’s alpha.

The other two questionnaires, ‘approaches to teaching’ inventory and ‘perception of the teaching situation’ questionnaire have been evaluated for validity and reliability through their own processes of development as well as in many studies which have used them for exploring different topics of research. In this current study, reliability was calculated using Cronbach’s alpha for each of these questionnaires’ scales.

3.5.6 Criticisms

Meyer and Eley (2006) have criticised the development and application of the ‘approaches to teaching’ inventory (Prosser & Trigwell, 2006; Trigwell & Prosser, 2004). They were critical of its conceptual origins and its psychometric development. In terms of conceptual origins, these authors critique the following:

1. Some categories of approaches in the qualitative study were made up from only one interviewee.
2. It is difficult to distinguish between conceptions and approaches.
3. The original interview sample came only from science teachers.
4. Gender was not considered in the original study.

In terms of psychometric development the following criticisms were made:
1. The face validity checks reported were considered subjective and non-empirical.
2. The use of principal components with varimax rotation would be inadequate and maximum likelihood factor analysis with oblique rotation should have been used.
3. Rather than imposing the structure of the intention-strategy scales on the data, it is suggested that the scales should emerge from item-response data.

Mayer & Eley state that as a consequence of these problems the ‘approaches to teaching’ inventory is irremediably flawed and should be dismissed. Without making detailed criticisms, Mayer & Eley also state that similarly developed instruments, such as the ‘perceptions of the teaching situation’ questionnaire, would have the same problems. In one sense, this criticism can be interpreted as a ‘focused’ discussion of a broader debate on what type of factor analysis is better for developing questionnaires. Part of this debate was presented in the sections above.

In relation to this study, I am aware of these criticisms. In the case of the evaluation of the ‘approaches to teaching using eLearning’ inventory, I used both the principal components analysis and the maximum likelihood factor analysis to investigate how these issues can be explored in this particular study and how they would affect my own results. However, at the same time as I am aware of Mayer and Eley’s claims, and will take action on them, it is important to mention that the ‘approaches to teaching’ inventory is based on strong qualitative outcomes and has been demonstrated to be coherent with that material. Further, it has contributed to an understanding in the area of approaches to teaching through different studies and is, at the present, the best available instrument to undertake research in this area. The same can be said of the ‘perception of the teaching situation’ questionnaire; although there have been fewer studies confirming its capabilities. I see the current study as helping further clarify our understanding of the value of these instruments.

3.6 Ethical issues

Issues related to informed consent, anonymity and confidentiality (Neuman, 2000, pp. 96 - 100) were considered through the entire research process. How they were taken into account is described next.
1. Qualitative phase:
   a. Informed consent: interviewees were informed of the features, scope and implications of the study. In this way, they were able to decide whether they wanted to participate. All the participants were provided with a participant information sheet and a consent form. They were required to sign the consent form after reading the participant information sheet and received clarification when this was requested.
   b. Anonymity: this was accomplished by not disclosing any information provided in a way that personally identified participants. Qualitative data collected has been kept locked in room 237, Education Building (A35). One person assisted with transcribing six of the interviews. In order to ensure anonymity in this case, I provided her with the audio files without the name of the interviewee. Further, this person did not have contact at all with the Universities from which the interviewees came at the moment of transcribing (she was not an academic, administrative staff or student).
   c. Confidentiality: Interviewees have not been personally identified in this thesis. Only numbers have been used to identify illustrative quotations coming from different interview transcripts. Also, care has been taken in not providing details in any section of this thesis that may lead to the identification of any interviewee.

2. Quantitative phase:
   a. Informed consent: as in the case of the qualitative phase, potential respondents were informed about the features, scope and implications of the study. Thus, they were able to decide whether they wanted to participate. Initial information was provided in the email sent out to invite them to answer the survey. The participant information sheet was uploaded to a website that they could access to get further information about the study. My email and my supervisor’s email were provided in case they wanted further clarification. The consent form was provided as the first question of the survey.
   b. Anonymity: this was ensured by not disclosing information that may lead to the identification of any interviewee. The data gathered was kept in the Faculty’s server, which is located within the Faculty's main building and is
password protected. All the analysis has been conducted by me, so nobody else has had access to the quantitative data.

c. Confidentiality: findings have been shown as trends and patterns. Data has been treated in an aggregated manner. Therefore, it is not possible to identify specific individuals.

In order to ensure that the research met ethical standards, an ‘Ethics application for research involving humans’ was presented to the University of Sydney’s Ethics committee. An original application was sent at the beginning of 2006. This application was based on a smaller study I was intending to undertake with teachers who were involved in teaching fully online distance units. This research was part of the conditions established for confirming my PhD candidature. An amendment was presented to the Ethics committee at the beginning of 2007 in which I asked for permission to extend my research to other Faculties within the same university and to other universities. Moreover, I stated that the study would include teachers teaching in blended situations rather than only in online settings. A final amendment was presented at the beginning of 2008. In this case, I asked for authorisation to send out the survey for exploring associations between approaches to teaching (face-to-face and online) and perceptions of the teaching situation. It is important to mention that during the process of this research no ethics-related problems emerged.
This chapter presents results of the analyses of conceptions of teaching and conceptions of eLearning, as well as their associations. The first section presents results about conceptions of teaching and the second presents results about conceptions of eLearning. Both are organised in the same way. Each contains three subsections covering categories of description, dimensions of variation and hierarchical relationships among conceptions, and each ends with a brief summary. The third main section in this chapter examines associations between conceptions of teaching and eLearning, with the aim of presenting conceptions of blended teaching as emerging from those associations. The chapter finishes with an overall summary of the findings.

**4.1 Conceptions of teaching**

In this section, conceptions of teaching emerging from the analysis are presented. Data for this analysis come from the question: what does ‘good teaching’ mean to you? The data also come from follow-up questions used to explore the initial answers in more depth. (Could you explain more? What do you mean?). These questions also permit the exploration of specific dimensions of teaching. The analysis is organized as follows:

- Firstly, four categories of description are presented and described. The analysis shows that teaching is conceived as a) transmitting the basic information of the discipline; b) transmitting lecturer’s understanding; c) developing students’ understanding; and d) challenging – changing students’ understanding.

- Secondly, four key themes are presented to describe relationships between conceptions of teaching face-to-face: a) role of the lecturer; b) role of the students; c) content; and d) motivation.

- Thirdly, the hierarchical relationship found between categories of description is analysed.
Finally, the section ends with a brief summary of findings.

4.1.1 Categories of description

4.1.1.1 Category A: Teaching as transmitting the basic information of the discipline

In this conception, teaching is understood as transmitting the ‘basic’ information of a particular discipline. It is conceived that there is a basic stock of information that students need to get as the outcome of the learning process. Transmitting the basic information of the discipline should be the aim of teaching. This basic information represents the body of knowledge that the discipline being taught has accumulated, and which every student of that discipline needs to know. This basic information is seen as a ‘foundation’ for further studies related to that particular area of knowledge.

Providing the basics of the subject can be understood as a way of giving students a ‘window’ on the topic.

Give them the basics, principles of a new topic. I think that’s important…I think a window into an area can save you hundreds of hours on your own struggling. My lecture materials are precise materials in that sense…. I don’t think it should be all student directed learning. I don’t think students have enough knowledge of the specific discipline you are teaching. I’m always very responsive to students input and needs; but I do think you should give them a window into the area. (I12)

Besides, teaching is understood as a way of transmitting the information, seen as the minimum required for the students to become ‘competent’ in their field or profession.

Teaching is about providing students with a certain amount of basic information that they have to learn, that sort of pass level facts…that any course has got those, that when they move to other subjects they will be expected to know these things. So there are facts that they have to know…because…if you are a physiotherapist…I am giving you some basics now….this information will be needed…you will need this tool box when you go out in to the real world… because there is basic info that you need to be sure the students have acquired. (I6)

Teaching for me is providing the foundations of the discipline…if you want to do these three topics here…you need to understand these things… and in science is like this, you need to know the
foundations to go to a higher level and in these units I’m trying to build the foundations with the students. (I8)

This represents a fragmented understanding of teaching, because teachers see themselves as providers of information, as the person who owns the basic knowledge of the discipline that needs to be passed on to students. Students are seen as having a rather passive role: receiving the expert knowledge. Their previous knowledge appears not to be considered. They need to know the discipline ‘from the foundations’ – the basics. Students are seen as having no previous information, therefore they need to start ‘from the beginning’. The role of the teachers is ‘opening a window’ into the area. Content taught is dictated by the ‘basics’ of the discipline: what is considered as the accumulated knowledge in a particular area and what anyone involved in that discipline needs to know. Motivation is not considered as an issue by teachers holding this conception.

4.1.1.2 Category B: Teaching as transmitting lecturers’ understanding

As in the first category, this one focuses on provision of information. But in contrast to Category A, teaching is understood here as transmitting the lecturer’s understanding rather than the basics of the discipline. The lecturer’s synthesis is what is presented to students as expert knowledge. The content of the discipline to be taught is mediated by the teacher’s expertise. Therefore, the teacher’s understanding of the discipline is what comes to the fore and transmitting it to students is the aim of good teaching.

The meaning of good teaching for me is….you know my job here is to….obviously… to get across what you need to get across…because I have some knowledge, I can get that across…what they need to know. You know the undergraduates coming in, for example…they wouldn’t know how to do the de-escalation process in a situation, probably they would be quite fear about doing it, and then I say look, here you have some principles; here you have what I know and my experience... (I13)

The expert knowledge of the teacher is of importance in this conception. It represents her/his understanding of the subject, which is transmitted to the students. Besides, it validates her/him as a university teacher.
You need to be an expert in your area. I’m an expert in my area so I feel comfortable teaching these topics… For me teaching is someone who has some knowledge and delivers this knowledge or skills to other people. (I11)

This second conception advances from emphasizing teaching as transmitting the basic content of the discipline to transmitting the teacher’s understanding. However, it still represents a fragmented understanding of teaching. Although the focus changes from the basics of the subject to the teacher’s synthesis, still, teaching is related to a transmission focus. Students continue to be seen as passive. Their role is receiving the expert knowledge of the teacher. Teachers see themselves as providers of content, which they have selected and delimited based on their expertise. Developing motivation in students about what is being taught does not appear as a relevant issue.

4.1.1.3 Category C: Teaching as developing students’ understanding

This third category represents a significant shift in the understanding of teaching. The focus moves from the provision of information to supporting students' learning.

In this conception, teaching is seen as developing students’ understanding. The emphasis is on what students learn rather than what teachers teach. The focus is on promoting understanding, engaging students in applying concepts or content to real life situations, and analysing, relating, explaining and reflecting about what is being taught. Previous experiences of students are considered as ‘material’ for developing their understanding.

Good teaching is about engaging students beyond the conceptual understanding of things…. It is about feeding them with some sort of understanding of concepts, but bringing them into some sort of understanding… where they fit in relation with really quite complex ideas, controversial ideas, very challenging work they are doing in social work.. And I think that may be achieved….the thing I have been always trying to do is going…is giving them….is to go beyond the abstract ideas and think about what are their experiences from that particular situation. Their own families or their communities, so is putting them into the picture…thinking of people they’ll be working with, or as if they potentially were receiving social work assistance. So is giving them a real embodiment and understanding of the concepts. (I10)
Emphasis is placed on the relationships among topics or concepts taught rather than on separate and unrelated pieces of information

I want them to understand that every topic is connected so the whole unit is an entity and anything we talk connects with the other topics in the unit...they get more deeply...how everything connects together...not only, I did something on attachments and I did something else on counselling, without understanding how these two things come together So, I want them to get a bit deeper in learning about what they are doing, think slightly different from what they might thought before. (I18)

This category represents a shift in the understanding of teaching, representing a cohesive conception. The teacher is not anymore the provider of information but a facilitator who helps students to develop their own understanding about what’s being taught. Teachers are focused on students’ learning. Students are conceived as active participants in the process of learning. Rather than just receiving the basics of the discipline or the teachers’ understanding, they are asked to engage in reflection, going beyond the information provided and developing their own understanding about the contents of the subject matter. Their experiences are important for the learning process. Teachers intend to build understanding upon these experiences. Contents are seen in a more flexible and contextualized manner. Engaging students appears as a very important issue in this category. Being able to motivate students is seen as an important aspect of good teaching.

4.1.1.4 *Category D: Teaching as changing students’ understanding – developing critical thinking*

In this conception, teaching is understood as changing students’ understanding and developing critical thinking. As in the previous conception, the focus is on supporting students’ learning. However, this one goes further. In this category, teaching is seen as making students advance to more sophisticated ways of understanding and to think critically about contents they are engaged with.

Teaching is seen as providing tools for thinking. The aim of teaching is providing these tools; so that students are able to question the validity of information they encounter.

I….basically want them to learn critical thinking and then apply that to whatever area of science that interest them … I use science fiction to teaching them science with a strong emphasis on understanding
the social implications of science and developing critical thinking…I think good teaching gives them tools to think: why is this people supporting this argument? Is it really possible to support it from a scientific point of view? (I4)

Teaching is seen as a way to generate some changes in students, to enable them to see particular aspects of the world in a different way.

Good teaching for me is when we change some student attitudes towards some usual type of work or when they see things in a different way…and so…so it’s… build the soft skill, and those soft skills are normally related to attitudes, ways of approaching how to do things, how to understand things differently. (I1)

I guess for me good teaching is…to me good teaching is all about getting students to think about their own assumptions, their own experiences and to be open to different sources of ideas. So…to me…I feel I’m being successful if I get students to say to me ‘I never thought about that topic before in that way’ or ‘I’m now having to revise the way I do things’ or ‘I’m starting to think that things happening at work are lots clearer than what I’ve experienced in the past’… So to me that’s what good teaching is. (I7)

In this conception, teaching is seen as an interactive – dialogic process. Sharing experiences among teachers and students is an important aspect of teaching. Students’ knowledge and understanding is used in the unit; and is seen as being as valid as the teacher’s knowledge. Knowledge and experiences that students bring to the unit are seen as very valuable.

Teaching for me is a sort shared learning experience where I can share some of my skills, information that I’ve got; and students share some of their information and skills with me so is a dialog rather than directive: ‘I have to tell you everything I know’…students will always have information, life experiences. I think is a really important way of teaching…is working where people are at and encourage them learning something else using their own skills. I think that most people have something that they bring to education, something that you can work with. So I tend to be using a mixture of tutorial, it tend to be a mixture of some information giving and content based but mainly is about using content to explore issues and to get people to think critically about things that they see in the world and move on a little bit on that. (I9)

This last conception of teaching is the most advanced found in the analysis of the transcripts; and represents a cohesive understanding. Teaching is seen here as a way of changing students’ understanding about particular aspects of the world and developing critical thinking. Teachers see themselves as facilitators who share the learning process with students. The
focus is on what students do. Active learning is encouraged. Students are asked to reflect, share and develop a critical view of the world. Previous experiences of students are seen as material for engaging them in learning. Rather than just being able to repeat the knowledge of the discipline, the goal is for students to get a deeper understanding of the world, which allows them to engage in critical thinking. It is seen that an important outcome of teaching should be enabling students to question arguments they encounter. Generating motivation in students is seen as a very important aspect of teaching. Lecturers holding this conception see motivating their students as a central feature of good teaching.

4.1.2 Relationship between categories of description

Four dimensions of variation are presented here to provide a richer view of conceptions of teaching: the role of the lecturer, the role of students, content and motivation. These provide further insights into the relationships among conceptions.

4.1.2.1 Role of the lecturer

This first topic presents an expanding focus - from the lecturer with a role as a provider of information to a role as a facilitator. Categories A and B represent an understanding of the role of the lecturer as a provider of information. There are, however, differences between category A and B. In A, teachers understood their role as provider of the basics of the discipline.

I’m providing them with factual information, basic information, because they need some of it. They will need it to be able to solve clinical problems… (I6)

In category B, this role of provision of information moves from the ‘basics’ towards the lecturer’s understanding.

I think I have a role…My role is giving them what I know about counselling…I provide some knowledge because, I’m a sex expert…so students can expect from me to provide some knowledge…so I’m a kind of provider of information. So if you want to know something about this go there, you can find it in this book or go to that link in that website, so is a provider of knowledge. I provide my expertise to them. (I11)
In categories C and D there is a very different understanding of what is the teachers’ role. It changes from being someone who provides information to someone who facilitates the learning process.

I like to be a bit creative about it to get them to engage…There is usually a bit drawing in practical experiences as a social worker and thinking about what’s really like the practice, the concepts we are trying to discuss, for example social justice. (I10)

My role is more of a facilitator, organizing the points of discussion you go around, creating or looking at scenarios or case studies that will bring in those issues and, yeah, just organizing them around the time of students. (I5)

4.1.2.2 Role of the students

In the second theme, ‘role of the students’, it is possible to see an expansion in focus from students as passive recipients of information to active developers of knowledge. In categories A and B the role of the students is understood as essentially passive. They need to get the basic understanding of the discipline or the knowledge given by teachers.

If they are able to show me they have got what I wanted to get across…that’s a good outcome. They have learnt the concepts... they need to be able to tell you the concepts. (I13)

Categories C and D represent an understanding of the role of students as active learners. They are seen as people who need to engage in developing their personal understanding of the subject, actively participating in activities of the unit of study, and being responsible for their own learning. Students are expected to reflect, relate the contents taught to their own experiences, ask questions, etc.

Students are adults, they can choose if they come or not [to face-to-face activities]. I’m not a school teacher. They are responsible for their learning. (I9)

I give them activities…where they do the work rather than just sitting passively. I’ve included active learning things… what they really need is a set of tutorials where they can do things by themselves…work in their own time and…so…and…yeah, so I think it is very important…some things
are much better taught by the students themselves, and they learn better this way rather than in a lecture theatre…(I4)

Though it is slightly different from category D, category C still supposes a learner who is active. However, in category D, the role of the learner is seen as one who engages actively with the topics of the unit, developing critical thinking skills, and changing her/his understanding: advancing towards more sophisticated ways of understanding particular aspects of the world. In category C, the students are seen as having an active role in the learning process, but this is more related to developing their understanding of the topic than engaging in critical thinking.

4.1.2.3 Content

This dimension of variation presents an expanding focus from the content delimited by the discipline; towards an understanding of the content mainly as developed by students. In category A, content is seen as needing to be selected by the teacher, based on what is understood as the basics of the discipline. Importance is given to external demands, such as prescribed curriculum and external agencies promoting competency in graduates.

We are very constrained with the subjects we are teaching; and there is a minimum amount in them because the whole focus is knowledge that a safe practitioner must have when they graduate, and that defines every single unit. So, there isn’t any flexibility, no space in the curriculum to do something interesting, because you have to cover the heart and the blood vessels and this and that. Yes, you can emphasize, understanding and principles, but there is no space for be doing more innovative learning things. (I6)

In category B, the content is seen as what the teacher decides to present, based on her/his knowledge. This comes to the foreground when deciding what to teach. The focus is on providing teachers’ knowledge.

I can deliver knowledge of course. For example, referring students to some books or some good articles… they can expect from me to do that, because I know what is in the literature. I can deliver that knowledge. Knowledge…you can find it in a book or in an article…and I think part of my job is delivering knowledge to students. (I11)
Categories C and D represent a shift in the understanding of the content. It is not seen as something rigid, but as something more open, which can change or accommodate because of participation in activities during the unit of study. Rather than a prescribed content to be taught, it may be a flexible set of topics which guides the teaching process, but does not constrain it. Content is seen as susceptible to alteration during the unit because the learning process is seen as an open one; flexible enough to meet the demands of the process itself.

It is really important for them to be present at the lecture, because we have these interactive sessions, we don’t know where we are going to end up. We have lecture notes but they are actually dot points. I use interactive techniques, I actually don’t know where it will end up, we may get half way through the notes…the content I thought we were going to see…it is important what they learn…not really if we cover everything. (I14)

4.1.2.4 Motivation

Motivation emerged as a very important issue for teachers whose conceptions of teaching fell into categories C and D. For these teachers motivating, inspiring and engaging their students with the subject is an important outcome of the learning process. They wanted to show students their own interest and passion for the subject taught. They thought they were doing good work as teachers if they achieved such student engagement.

I think [teaching] is about motivating and inspiring them to learn. (I5)

At a level of the students’ attitudes to study I’d like them to feel enthusiastic about the subject. So I think I’m doing well when I make students enthusiastic about the subject matter. (I3)

I think is important when I make my students interested in that particular topic…to me, if I’m teaching asthma, for example, and if they really are impressed and they look at different types of asthma patients, they show me that they have that interest, that’s enough feedback that I’ve been able to give a bit of my own passion for that subject to the students. (I17)

Motivation didn’t emerge as a theme in categories A and B.

Table 22 presents a summary of dimensions relating categories of description.
Table 22: Dimensions relating categories of description of conceptions of teaching

<table>
<thead>
<tr>
<th>Role of the lecturer</th>
<th>Transmitting basic information of the discipline</th>
<th>Transmitting lecturer’s understanding</th>
<th>Developing students’ understanding</th>
<th>Changing students’ understanding – Developing critical thinking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of the students</td>
<td>Passive recipients</td>
<td>Passive recipients</td>
<td>Active learner</td>
<td>Active developer of understanding</td>
</tr>
<tr>
<td>Content</td>
<td>Delimited by syllabus – external demands</td>
<td>Delimited by the lecturer</td>
<td>Constructed by students within lecturers’ framework</td>
<td>Constructed by students</td>
</tr>
<tr>
<td>Motivation</td>
<td>Not considered</td>
<td>Not considered</td>
<td>Emphasized</td>
<td>Emphasized</td>
</tr>
</tbody>
</table>

4.1.3 Hierarchical relationship among conceptions of teaching

Conceptions of teaching are claimed to be in a hierarchical relationship. ‘Changing students’ understanding – developing critical thinking’ is the highest in the hierarchy and ‘transmitting basic information of the discipline’ is the lowest. This proposed hierarchy is supported by the fact that the higher level conceptions include the lower ones, but the lower level conceptions do not include the higher ones, being less inclusive and complex.

Teaching as ‘changing student’s understanding – developing critical thinking’ represents the most complex and inclusive conception. It conceives of teaching as being to help students change their understanding and develop critical thinking skills. But, it also sees teaching as, to some extent, transmitting the lecturers’ understanding and transmitting the basic information of the discipline. A teacher who holds this conception will think that teaching is an activity that needs to be aimed at providing the basic information of the discipline, through the lectures’ understanding, to develop students’ understanding, and to change their understanding and develop critical thinking.
A teacher who has a conception of teaching as ‘developing students’ understanding’ will have an awareness of transmitting the basics, her/his own understanding and developing students’ understanding of the discipline. However, she/he will not have an awareness of teaching as ‘changing student’s understanding – developing critical thinking’. In this way, this is a less inclusive conception than conception D.

Teachers holding a conception of teaching as ‘transmitting lecturers’ understanding’ will be aware of teaching as transmitting the basics of the discipline and her/his own understanding. However, she/he will not be aware of teaching as developing students’ understanding nor changing their understanding and developing critical thinking. Therefore, it will be an even less inclusive and less complex conception.

Finally, ‘transmitting basic information of the discipline’ represents the most limited understanding of teaching. Teachers holding this conception will be aware of teaching only as transmitting basic information, but will not consider teaching as transmitting the lecturers’ understanding, as developing students’ understanding, or as changing students’ understanding and encouraging critical thinking.

Conceptions are in an inclusive relation only from the higher to the lower ones. Lower level conceptions do not include higher level ones. They are, therefore, less complex and less inclusive as they present an awareness of fewer elements. An example of how this hierarchy works at the individual level is taken from one teacher situated at the highest conception. This is presented in Table 23.
Table 23: Example of hierarchy of conceptions of teaching

<table>
<thead>
<tr>
<th>Conception teaching</th>
<th>What is good teaching for you? (I4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmitting the basic information of the discipline</td>
<td>‘There are a couple of things they need to know anyway… I think it is important they spend some time reading the lecturer notes’</td>
</tr>
<tr>
<td>Transmitting lecturers’ understanding</td>
<td>‘I’ve been teaching in the area of physics for many years. So I know what a good scientific article is… I think you can try to teach them to recognize good science…’</td>
</tr>
<tr>
<td>Developing students’ understanding</td>
<td>‘yeah….and is about making them understand how these ideas can relate to very current things…. like the whole climate change debate… you can apply what you’ve learnt to understand opinions people make…. science is often left out and… whatever your opinion, it’s very important to understand about the opinions that people make’</td>
</tr>
<tr>
<td>Changing students’ understanding – critical thinking</td>
<td>‘I want them to learn how to be critic… to have a critical approach… to tell if this is good science or not. I’m teaching them critical thinking so I want them to read articles and tell if they are good science or not’</td>
</tr>
</tbody>
</table>

Relationships between referential and structural aspects of conceptions of teaching, as well as the inclusiveness of higher-level conceptions, are presented in Table 24.

Table 24: Referential and structural aspects of conceptions of teaching

<table>
<thead>
<tr>
<th>Referential (what)</th>
<th>Structural (how)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission</td>
<td>Learning</td>
</tr>
<tr>
<td>perspective</td>
<td>perspective</td>
</tr>
</tbody>
</table>

Fragmented conceptions

- (A) Transmitting the basic information of the discipline
- (B) As in (A) and transmitting lecturers’ understanding
- (C) As in (B) and developing student’s understanding
- (D) As in (C) and changing students’ understanding – critical thinking

Cohesive conceptions

- Category A
- Category B
- Category C
- Category D
4.1.4 Section summary

The analysis of interview transcripts yielded four categories of description representing conceptions of teaching. Teaching is seen as:

A) Transmitting basic information of the discipline  
B) Transmitting lecturers’ understanding  
C) Developing students’ understanding  
D) Changing students’ understanding – developing critical thinking

Four key topics were presented for better describing variation in conceptions of teaching:

- Role of the lecturer, which is in a continuum from provider of information to facilitator.
- Role of students, ranging from passive to active.
- Content, ranging from delimited by the syllabus – external demands to being constructed by students.
- Motivation, ranging from not considered to emphasized.

Finally, a hierarchical relationship between conceptions was established. ‘Changing students’ understanding – developing critical thinking’ is the most complete and complex. ‘Transmitting basic information of the discipline’ is the least complete and complex.

4.2 Conceptions of teaching using eLearning

The analysis of conceptions of teaching using eLearning is presented in this section. As described in the methods chapter, data used in this analysis was gathered using the question: what is eLearning good for in your teaching? This was followed by questions employed to provoke reflection on teachers’ initial answers and to explore specific dimensions of eLearning. The analysis is presented as follows:

- In the first place, four categories of description emerging from the analysis are presented and described. eLearning is conceived as a medium a) to provide
information – content to students; b) for communication among unit participants, with two subcategories: 1) for occasional communication, and 2) for engaging in online discussions; and c) to support knowledge-building tasks.

- Secondly, dimensions of variation helping to better describe conceptions of teaching using eLearning are presented. Four interrelated themes emerged: a) role of the lecturer in the online environment; b) role of the students in the online environment; c) course participants’ online interaction; and d) relationship with the face-to-face component of the unit.

- Thirdly, the hierarchical nature of these categories of description is analysed.

- Finally, a summary of the section’s findings is provided.

**4.2.1 Categories of description**

**4.2.1.1 Category A: eLearning as a medium to provide information – content to students**

In this category, eLearning is understood as a medium to provide information – content. This information can be related to administrative matters or it may be academic content. Regarding administrative issues, teachers find the unit’s website good for uploading the course outline, providing information related to deadlines, links to university policy documents, marks, etc.

> Well, there is always a course profile, which is the main source for the students; it pretty much contains everything about the administration and the assessment, and I always direct them to the website first. (I15)

> I think this is good [the web] to disseminate information about assignments, about what the university says about plagiarism, marks…things like that. (I7)

> It’s an information tool, it carries information on the unit, there is an outline of the module, the content, the readings, all of the necessary material to support the unit content…and we upload the power points. (I13)
The information provided is related to academic content as well, such as lecture notes, links to websites with relevant academic information, links to the library to get papers or book chapters, etc.

I think [LMS] is very good as students may log in and have a look as they wish, so they can download the [lecture] notes, or look at web links, and any other material provided. (I5)

In relation to providing information, an issue about which teachers remarked is the ‘immediacy’ that eLearning affords. If something new, related to professional practice or academic materials, comes up during the semester it can be uploaded straightaway to the unit’s website.

I think it is also good…for example if I put 70 references…I can put new things as they appear…you can actually be more current. Previously, you would need to wait until the next semester. Now you just write to the library and they put it up on the web for you. It can be very very current. (I17).

In my area the big thing that happens…if there is a case decided by the court on some aspect of taxation that involves the court…The moment I become aware of that I can make it available to students. I don’t have to wait. The web has this immediacy thing…and is a distribution channel. This is a sort of practical aspect. I put up a link to materials and that’s it. (I3)

This first way of understanding eLearning represents a fragmented conception, because it is seen as a medium for providing information: a ‘supply channel’ rather than a medium for learning. Teachers see themselves as providers of online information. The corresponding role for students is to be recipients of online materials or resources, with few opportunities to define, select or modify what they are given.

4.2.1.2 Category B: eLearning as a medium for communication among unit participants

In this category what comes to the foreground is the communicative aspects of eLearning. Two very different understandings about what sort of online communication may be good for teaching were found. The first one (B1) emphasises occasional communication. This is where students can, from time to time, ask questions related to content or administration to teachers
or other students. Similarly, teachers can make announcements about changes, invited speakers, etc. The second one (B2) emphasises the engagement of students in tasks promoting high level understanding, such as online discussions in which they can analyse and propose applications of concepts, theorize, reflect, etc. There are two main differences between these conceptions. Firstly, in conception B1 teachers are not aware of the value of designing tasks around communication that may happen on the web. They leave online communication for the occasional question, the need to announce something, etc; while in B2 teachers are aware of the value of designing structured tasks for the online environment. Secondly, in conception B1 teachers do not see the online communication as a space where high order learning tasks can take place. In conception B2, teachers see online communication as a space for the students to engage in online discussions leading to the promotion of deep thinking. These categories can be described as follows.

**Category B1: eLearning as a medium for occasional online communication**

This category positions eLearning as a medium for occasional online communication with people involved in the unit. Occasionally means, in this context, that online communication is not encouraged as part of a designed task; and may or may not happen if unit participants feel, or do not feel, they need to say something. In this conception, it is seen that online communication can be deployed in different ways: to ask and answer questions, to make announcements, to have a space for keeping in touch.

Related to questions, it is seen that eLearning provides an opportunity for students to ask teachers directly about doubts in relation to contents or administrative matters. They can directly email the teacher or post a question in a discussion board.

> It gives students the opportunity to ask questions. Not being scared….Now, if I’m teaching something and they don’t understand they use the web to say ‘I don’t understand. Can you explain that?’ (I17).

> We have discussion boards for a number of purposes…for each topic we have two discussion boards, one open for general questions…questions…related to the textbook, and then we have a separate discussion board for how I will ask questions …in the exams. I have a separate discussion board for administration questions. We have a pre-test, and there will be a discussion board for pre test questions. We have a discussion board regarding to the mid semester exam questions…. (I2)
Making announcements about issues affecting the unit and keeping in touch in between lectures are seen as relevant things for which the web is good. This refers mainly to an administrative use.

To communicate with students between classes, because this is easier than email students, to post announcements into the [LMS], and that is a nice and convenient way to do that. (I2)

The difference between this category and category A is that here the communicative feature of eLearning comes to the foreground. It opens a channel for students to access their teachers and to occasionally communicate among themselves, as well. However, lecturers are still seen as the main providers of information. Students may or may not participate in online communication, and may or may not ask questions through email or using discussion boards; but where they do, this is seen as a ‘peripheral’ part of the learning experience. It is not seen as a space to promote tasks leading to high level understanding. The online component of the unit has a low level of embeddedness with the face-to-face side; what happens online is not necessarily related to what happens face-to-face. This conception represents a fragmented one because eLearning is still understood as a medium for transmission of information.

**Category B2: eLearning as a medium for engaging students in online discussions**

This category of description emphasizes the possibilities for online discussions to promote high level understanding among students. These online discussions can be structured around the content of the course or work being carried out. The common ground is that the focus shifts from teachers’ understanding to the development of students’ ways of understanding what is being taught. The online side of the learning experience is conceived as a space where students can analyse, apply, theorize, reflect, etc.; and, in this way, develop their understanding. The active involvement of students in online discussions comes to the fore in this category of description. Online communication becomes part of the core process of learning.

In this conception, structured online discussions are seen as a task that may promote high level understanding. In such cases, students make sense of the theories taught by discussing them online in groups. In this way, they are able to apply and reflect about what is being
learnt. Moreover, they are able to relate these online discussions to their own personal experiences or to their imagined future experiences as professionals.

The first level is to get the theory and lectures; the second level is start discussing and understanding roughly in the tutorials; third level is go away and think about it on their own, reflect on how connects to themselves; then [online] talk about it to each other and respond to each other. So, that’s a nice sort of deepening of learning that takes place from the theory to real personal application. I think online discussions are good for students to start thinking deeply about what they are learning. (I18)

I’m very very communicative in this subject, I keep communicating with them…opening [online] discussions…and I response to every single…every single…query or discussion question. I use it as well to give them information about last minute things, like, for example, last year there was an incident in which a particular large supermarket chain managed to get a whole lot of pharmacies in a very unique way... And I told them to look what had happened; and one of the things I want them to do is to reflect on how this affects their future as a pharmacist. You can do it [promote reflective online discussions] very very contextually, around things that are happening….Other things have happened about a particular medication being advertised on TV as well, so I could put that up too. That’s how I found it very useful [eLearning for online discussions]. These are things related to reality and students can reply and some other can reply to that student; and then I jump in and say something else. (I17)

In addition, the web is seen as a medium to provide a space for encouraging deep thinking about the students’ own work associated with the course.

When the web is used for students in the field…practicing…is where I really think it’s where….it’s teaching with the web rather than supporting students’ learning with lecture notes. When actually out there, the majority of their learning is happening in that agency in which they are working, which could be a hospital or a government partner or whatever. So, most of the learning is happening by thinking about the broader context, putting concepts into practice, getting feedback from their supervisor on site. And, then the university component of that is getting them from the practice, their specific tasks, and again going back and thinking broadly about the concepts again, so it’s different layers of learning…where you can use it to have discussions…we have a website…it is their opportunity to engage with some university thinking. Stand back from the day to day tasks they are working on to be critic…so again, this course is very much about start a critical reflection…being critic about what they are doing…in terms of the issues they are dealing with…so the web is a tool to do that, to stay in touch with them, to make sure they are standing back from what they are doing and is a series of set questions they have to address and some reading and some thinking about specific questions and then they engage with each other in the discussion site in the web, as in a way of thinking about and sharing information with their fellow students colleagues about how they are dealing with that sort of issues. (I10)
I think it is the time for them to think about what their learning means… Personally I think we send them out, not to learn therapeutics, but to learn about management, to learn about the profession. So they go out and learn about pharmacy management, for example, and then they reflect on that using the online discussion boards and share their experience with other students doing the same. (I17)

This conception represents a shift in the understanding of the web for teaching. There is a change from the focus on providing information to supporting students’ learning. Teachers are not anymore the main source of online information. Online tasks promoting high level understanding give space for students to develop their own learning. Lecturers set up and facilitate tasks for high level understanding, while students are expected to participate actively in the tasks designed. The online component is embedded in the broader work of learning. Online discussions can be the continuation of face-to-face discussions or a space for deepening understanding. Participating in online discussions is an integral part of the unit, and it is clearly related to other unit components. As stated before, this conception represents a different understanding of eLearning for teaching because the importance of structured online activities is recognised and there is a clear awareness of the relationship between online and face-to-face components of the unit. This represents a cohesive conception of teaching using eLearning, because there is a shift towards supporting students’ learning.

4.2.1.3 **Category C: eLearning as a medium to support knowledge-building tasks**

As in conception B2, this conception includes an awareness of eLearning as a way to engage students in tasks promoting high level understanding. What makes this conception a qualitatively different one, at a higher level, is the understanding of eLearning as a medium to support collaborative knowledge building tasks. The online component of a unit of study is understood as a medium to share, create and build knowledge. eLearning is seen as a space in which students can work collaboratively and tasks are designed in this way. In this process students may use the full potential of available tools, related to content, such as relevant websites, communication, such as discussion boards, chat, email, and collaboration tools such as repository space, blogs, wikis, etc. The web may support the creation of some learning products, which reflects high level engagement and understanding: a collaboratively written report, an e-poster, a wiki, or a blog. This is a key element of this conception: students are engaged in collaboratively creating something reflecting their learning.
[LMS] is vital for my teaching…That is vital to it, because that’s the place where they can all communicate with one another, as well as do the drafts and store their material…that they’ve already got: the summaries, the booklets or whatever. So, that’s a really important repository, as well as the communication device of the teams [which are writing group reports]. (I14)

At the same time, the unit’s website is seen as a space where students can provide feedback on the work of other groups: as a space for collaboration in knowledge-building.

Normally the way we do it is…each group posts their reports and the other groups give them feedback. It also allows the students to see what other teams are doing, and engage in discussions about those topics…sometimes they engage in meaningful discussions [related to feedback], and that’s what I think is successful learning. (I1)

Rather than eLearning being a medium to provide content, the content itself is created by students. Blogs are seen as a good tool to do this. Students engage in developing their blogs, which are seen and commented on by other participants in their groups. It is seen that through blogs, students can develop their own understanding about what they are learning.

The reason of using blogs is that I want the students to develop their own voice, and blogs are less formal, less structured…. And the idea here is that they get their own idiosyncratic voice about blogging and they can be personal, they can give an opinion, things that you can’t do in essays…without a lot of formality. (I14)

The sense of community is seen as an important aspect to promote in online tasks. Sharing information is conceived as a key part of participating in these tasks. It emphasizes the role of students in selecting materials relevant for them and creating the content of the unit’s websites.

Well, I think [the online component of the course] is good…it creates a bit of a community. So that…I said to the students if you find anything you may think it would be helpful for other people then host it in that general site…and they do. So they say ‘I saw a video last night that relates to the lecture we did and it was really good, or the TV show coming up, or I found this website which is really good’. So there is a sharing of information and an interest on other people’s learning that often happens, which is nice. So it is not all just from me. They offered for each other as well, which is good. (I18)
‘The web as a medium to support knowledge building tasks’ represents the most advanced category of description emerging from the analysis of the interview transcripts. It is a cohesive conception. Teachers see their role as setting up online environments in which students can collaboratively construct and develop their understandings about course contents, etc. They are seen as active learners who create reports, blogs, etc., and as having an active role in developing a community of learners and sharing information. Participating online is a core and integral part of the unit. Online tasks have a very high level of embeddedness in the units of study, with the online and face-to-face components given equal importance.

4.2.2 Relationship between categories of description

Four key dimensions of variation are presented here to provide a richer view on conceptions of teaching using eLearning, and to help describe relationships between conceptions. Four critical themes emerged: the role of the lecturer in the online environment, the role of students, course participants’ interaction, and perception of embeddedness with the face-to-face component.

4.2.2.1 Role of the lecturer in the online environment

This theme represents an expanding focus, from the teacher as a provider of online materials to the teacher as responsible for a) creating an online space for knowledge-building and collaboration and b) acting as guide and facilitator.

In category A, the teachers’ role is seen as a provider of online information. He/she has the knowledge for selecting what students need to access to learn about the content of the unit. The lecturer uploads lecture notes, selects websites and/or online materials which reflect their own understanding of what is being taught.

I use it [online environment] for content for students…if I want them to read something, I’ll put a link up to the article. I won’t make them find it themselves. (I12)
In category B1, the role of the lecturer advances to setting up communication spaces, such as discussion boards or contact email, mainly to receive questions about course contents or provide a space where students can answer each other’s questions. Although a communicative dimension is opened up, the focus is still mainly on what teachers do.

My role is setting up a web site for the unit using [LMS]…used for general information, for updating students…announcements, any changes to lecture formats…maybe a guest lecturer coming. I will use the announcements tool… is more about information clarification, about the content [through email or discussion boards]; it’s about updates, if we have an special guest lecturer… for example, I post that new in [LMS]. (I13)

Category B2 represents a shift in how teachers conceive their online role. Lecturers set up online discussions that support high level learning. They move from being focused on their own understanding to developing the students’ understanding through reflection and application of new concepts.

There are some tasks, some activities for students. The basic one is online discussions, they have to participate. There are some group activities online. So they are about 100 students, and they are assigned to small groups of 5 or 6 people and I give them a list of topics to discuss before, of course, they have to do readings and after that they are supposed to do…to meet online they can do it at the same time or posting messages asynchronously. (I11)

Finally, in category C, the role of the lecturer advances to setting up space for work groups to share and collaborate in knowledge-building; and to facilitate the process. Teachers see themselves as designers of the online environment and of activities for the students to work on.

For each tutorial group I provide [online] space for their projects. They are working in a project together and they have their space online to do that…these small groups have their own discussion boards and they can exchange information with each other. They are in small groups, and each small group has its own discussion board where they can exchange information to further their own projects and send emails to each other about different things. (I9)
4.2.2.2  Role of the students in the online environment

This second theme represents an expansion in focus from students as receivers of information to students as active creators of content and knowledge.

In category A, the students’ role is seen as that of passive recipients of the online materials provided.

All course materials are folded up there [on the web] for the students to download them if they want…they are encouraged to visit and websites: things like ATO website, taxation office rules. (I12)

In category B1 the students’ role is occasional communication over the units’ website, related to some questions or announcements.

…The discussion forum…so students can put questions there, now we tell them that it’s a discussion forum basically for them, but we monitor it. So if a student asks a question, another student may answer it but, or may not….and if the students want to ask a specific question to me, I would say they should e-mail me. (I6)

Category B2 represents a change of focus; the students’ role is engaging in online discussions with a view to promoting high level understanding.

Online discussions are very helpful because when it works well…by engaging in online discussions they start thinking more deeply about the information they have already got from the lecture, readings and face-to-face tutorials. (I18)

In the final category (C), the students’ role is engaging in knowledge building, sharing and collaborating in this with other course participants.

I’m finding that the web is particularly good for students…for their group projects and for cooperative learning because it provides a forum for them to work together… (I3)
4.2.2.3 Course participants interaction

This theme is represented by an expansion in focus from very little interaction (one way) in category A, to very high, multiple way, interaction, in category C.

In category A, the online environment is not seen as a space for interaction between course participants. Actually, almost no interaction is conceived. The online space is for provision of information only.

I give information about the unit…where the materials are, how I’m going to mark the assignments, when is the exam… I show them very basic websites as well, like the ATO website. But that’s all I do with the web. (I12)

In category B1, the unit website is seen as a space for interaction between course participants, but in a limited way. Posting announcements, asking questions and unstructured discussions are seen as the main activities through which participants may interact.

I think the online component is good for students to make questions to each other…that sort of interaction… (I15)

In category B2, the unit website is seen as a space for interaction related to engagement in structured online discussions promoting high level understanding.

It’s a way of analysing the complex challenge of people at work, which they are doing in pairs or sort of talk to each other about, and they have to go back and analyse that and then post something. So what they do is: they do a reading, they do an activity, they post a some hundred words related to that, and then the other students have to read all that postings and they have to comment on two of them, looking at similarities or differences. That’s how they engage in that sort of discussions. (I10)

Category C represents an understanding of the online environment as a space for having a large amount of interaction between course participants. Interaction is seen to occur in multiple ways: between students and between students and teachers; sharing ideas and information; co-creating reports or conceptual artefacts and other products of learning; discussing, etc.
The assignment was deliberatively structured in such a way that it had three… essentially three questions in it …and one did question one, one did questions two and one did question three, and one was the editor, who put all together to one piece. I think this person had actually the harder job. They had to put it together into one submission, and they share the mark. That has proved quite problematic with the students. (I3)

4.2.2.4 Perception of embeddedness with the face-to-face component

This dimension of variation represents a very important one, as it relates the online component of the units to the face-to-face component. It has an expanding focus from seeing the online component as something not integrated to the unit, to something which is a constitutive part of the learning and teaching experience.

Category A represents the understanding of the online environment as not integrated, with a very low level of embeddedness in the unit experience. It is seen as an extra, (a ‘bolt on’), something that could be used, or not, without adding value other than ‘convenience’.

For me the web is fantastic for putting extra information up and it does it very easy…that’s one thing that I like. Because I’ve done it before…give some information, put some extra things and people needed to photocopy it from the library. I had 3 or 4 copies of that…Now with the web you don’t need to do that and this is fantastic to me. All students can access those materials at the same time. I think in that sense is fantastic (I8)

In category B1, the online environment is understood as a ‘peripheral’ part of the course, having a low level of embeddedness. Although there is some interaction and communication, the web is still conceived as an extra, which could easily be given up without affecting the course experience.

…The discussion forum, so students can put questions there. Now, we tell them that it’s a discussion forum, basically for them, but we monitor it. So if a student asks a question, another student may answer it but, or may not. (I6)
In category B2, the online environment is seen as an essential part of the course. It has a high level of embeddedness. Online discussions are seen as key parts of the course. Students can reflect, engage in deep thinking and apply what is being learnt to their particular experiences.

Online discussions are really a continuation of face-to-face tutorials…and then for the next week they talk to the same people online. The aim is deepening what they are learning, reflecting about it and applying it to their personal experience. (I18)

Finally, category C represents an understanding of eLearning as a completely essential part of the unit, having a very high level of embeddedness with the face-to-face component. The online environment is seen as unique in providing opportunities for students to reflect, share, and collaborate in the building of knowledge. Using the unit’s website is seen as a way to support what students do face-to-face.

They have a private online discussion board where they can develop their ideas about this [different scenarios about possible complaints related to professional practice they are working in face-to-face sessions], store materials and develop their presentations for the rest of the class. Then, they provide a little presentation to the class…The students who present make five multiple choice questions for me based on the research and they go on to [LMS] and there is a database of questions on [LMS] that students will have to answer through quizzes during the course and they get a mark for that. In summary…we have the group discussions, all the groups’ presentations go up on the web, as well after the lecture, so they can share that and use it in online discussions during the week. The groups also produce summary sheets with the information, so I put that up on the web too. It’s relevant to everybody else, is a resource for preparing them for the quizzes because the multiple choice quizzes developed by the groups also go up in [LMS]. (I5)

Table 25 presents a summary of dimensions relating categories of description.
### Table 25: Dimensions relating categories of description of conceptions of eLearning

<table>
<thead>
<tr>
<th>Role of the lecturer</th>
<th>Providing information - content</th>
<th>Occasional online communication</th>
<th>Engaging in online discussions</th>
<th>Support knowledge building tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of the students</td>
<td>Passive recipients - individual learning activities</td>
<td>Provide info</td>
<td>Set up discussion boards – make announcements – answer occasional questions</td>
<td>Set up spaces for high level understanding tasks/guide discussions/promote understanding</td>
</tr>
<tr>
<td>Course participants interaction</td>
<td>One way (lecturer to student)</td>
<td>Set up discussion boards – make announcements – answer occasional questions</td>
<td>May ask questions through online discussions / answer occasional questions</td>
<td>Participate actively in online tasks (structured discussions)</td>
</tr>
<tr>
<td>Perception of embeddedness with F2F component</td>
<td>Very Low</td>
<td>Very Low</td>
<td>Very Low</td>
<td>High</td>
</tr>
</tbody>
</table>

### 4.2.3 Hierarchical relationship among conceptions of eLearning

Conceptions of teaching using eLearning described in this section are in a hierarchical relationship, from the highest - ‘eLearning to support knowledge building tasks’ to the lowest - ‘eLearning to provide information – content’.

‘eLearning to support knowledge building tasks’ is the highest category of description in this hierarchy. It implies the more inclusive and complex understanding of what eLearning is good for in teaching. It is the most inclusive, because eLearning is understood as a medium to support knowledge building tasks but, at the same time, as a space for engaging in online discussions, for occasional communication and for provision of information. Moreover, it is
more complex because it implies an awareness of more aspects of eLearning: simultaneously covering the informative, communicative and collaborative.

‘eLearning as a medium for engaging students in online discussions’ includes an understanding of eLearning for online discussions, occasional communication and information; but not to support knowledge-building tasks. There is not an awareness of eLearning as a medium for supporting knowledge-building.

‘eLearning for occasional online communication’ represents an even less inclusive conception, as it understands eLearning for occasional communication and for provision of information, but not for structured online discussions nor for supporting knowledge-building tasks. It represents a limited awareness. The capabilities of eLearning to support higher level tasks are not considered.

Finally, the conception ‘eLearning for providing information – content’ represents the most limited understanding of the web for teaching, as it shows no awareness of its communicative or collaborative possibilities at all.

The more complete conception, ‘eLearning to support knowledge-building tasks’, includes the other ones. The more limited conception, ‘eLearning for information – content’; does not include any of the higher ones. Inclusiveness runs only in one direction, reaffirming the hierarchical nature of the relationship among these categories of description. An example of how this hierarchy works, taken from the transcript of one lecturer situated at the highest conception, is presented in Table 26.
Table 26: Example of hierarchy of conceptions of eLearning

<table>
<thead>
<tr>
<th>Conception of eLearning</th>
<th>What is eLearning good for in your teaching? (I3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>eLearning as a medium for providing information-content</td>
<td>‘is a way of distributing things, materials… and is a way of making them aware of new developments’</td>
</tr>
<tr>
<td>eLearning as a medium for occasional communication</td>
<td>‘is a communication thing… for questions, for announcements’</td>
</tr>
<tr>
<td>eLearning as a medium for engaging online discussions</td>
<td>‘is good for online discussions, so students can talk about readings… reflecting about readings, sharing their thinking about content…’</td>
</tr>
<tr>
<td>eLearning as a medium for supporting knowledge building tasks</td>
<td>‘and it’s been used for them to prepare group assignments’</td>
</tr>
</tbody>
</table>

Relationships between referential and structural aspects of conceptions of eLearning, as well as the way in which higher level conceptions are inclusive of lower level conceptions, are presented in Table 27.

Table 27: Referential and structural aspects of conceptions of teaching using eLearning

<table>
<thead>
<tr>
<th>Referential (what)</th>
<th>Structural (how)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information perspective</td>
</tr>
<tr>
<td>Fragmented conceptions</td>
<td>Category A</td>
</tr>
<tr>
<td>(A) Providing information – content</td>
<td></td>
</tr>
<tr>
<td>(B) As in (A) and for occasional online communication</td>
<td></td>
</tr>
<tr>
<td>Cohesive conceptions</td>
<td>Category B2</td>
</tr>
<tr>
<td>(C) As in (B) and for engaging in students in online discussions</td>
<td></td>
</tr>
<tr>
<td>(D) As in (C) and to support knowledge building tasks</td>
<td></td>
</tr>
</tbody>
</table>
4.2.4 Section summary

In this section, the analysis of four categories of description representing conceptions of eLearning was presented. eLearning is seen as a medium:

A) To provide information-content.
B1) For occasional online communication.
B2) For engaging students in online discussions.
C) To support knowledge-building tasks.

Four key themes helped to define each conception more clearly. These were:

- Role of the lecturer, ranging from provider of information to facilitator.
- Role of students, ranging from passive to active.
- Online interaction, ranging from very low to very high.
- Relationship of online component with the face-to-face one, ranging from unrelated to completely embed.

Finally, a hierarchical relationship between conceptions was uncovered, where ‘eLearning to support knowledge-building tasks’ is the more complete and complex; and ‘eLearning to provide information’ is the less complete and complex.

4.3 Associations between conceptions of teaching and conceptions of teaching using eLearning

Conceptions of teaching and conceptions of teaching using eLearning were presented and described in the previous two sections. In this section, the association between these two sets of conceptions is explored. In order to do this, each of the eighteen university teachers interviewed was allocated to the highest conception of teaching and conception of eLearning they presented. Teachers were allocated after re-reading the interview transcripts, having in mind the conceptions developed. For the case of conceptions of teaching, it was not possible to allocate all the teachers to a particular category. I could not always be certain that the teacher concerned held a particular conception. In this situation, the teacher was allocated to
the combination that best represented their actual understanding of teaching. Table 28 presents how conceptions of teaching and conceptions of teaching using eLearning are associated.

Table 28: Associations between conceptions of teaching and conceptions of teaching using eLearning

<table>
<thead>
<tr>
<th>Conceptions of teaching</th>
<th>Conceptions of teaching using eLearning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fragmented conceptions (information focused)</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Fragmented conceptions (content focused)</td>
<td>A</td>
</tr>
<tr>
<td>Both content and learning focused</td>
<td>A/B-A/C</td>
</tr>
<tr>
<td>B/C</td>
<td>12</td>
</tr>
<tr>
<td>Cohesive conceptions (learning focused)</td>
<td>C</td>
</tr>
<tr>
<td>D</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 28 reveals three groups of teachers, highlighted in different shades of grey. The first group, in palest grey, is composed of teachers who hold fragmented (content-focused) conceptions of teaching and fragmented (information-focused) conceptions of teaching using eLearning. The second group, in mid-grey, represents those who describe their understanding of teaching as including elements of both content and learning focused conceptions; and who present conceptions of teaching using eLearning which may be fragmented or cohesive. The third group, represented in darker grey, is composed of those who hold cohesive (learning focused) conceptions of teaching and cohesive (communication/collaboration focused) conceptions of teaching using eLearning.

Conceptions of teaching. Teaching as:
A. Transmitting basic information of the discipline
B. Transmitting lecturers’ understanding
C. Developing students’ understanding
D. Changing students’ understanding – Developing critical thinking

Conceptions of teaching using eLearning. eLearning as a medium:
A. To provide information.
B1. For occasional communication.
B2. For online discussions.
C. To support knowledge building tasks
These associations suggest two things. Firstly, for teachers in groups one and three, eLearning would be conceived consonantly with their conceptions of teaching. Those in group one, who conceive teaching as transmission of information, would also conceive eLearning as a good medium to support transmission of information. On the other hand, teachers in group three, who conceive teaching as focusing on students’ learning, would conceive eLearning as a good medium for engaging students in tasks promoting learning. These results suggest that university teachers would ‘transfer’ their conceptions of teaching when thinking about what eLearning good for in their teaching. Their understanding of eLearning seems to be highly associated with what they conceive as good teaching. Thus, conceptions of teaching using eLearning seemed to mirror what they think about teaching. In contrast, teachers in group two, those who describe their conceptions of teaching dissonantly, would incorporate an understanding of teaching using eLearning without a clear pattern. Some of them understand eLearning emphasising fragmented (information focused) conceptions; while others emphasise cohesive (communication/collaboration focused) conceptions.

One way of thinking about conceptions of blended teaching is seen them as emerging, at a meta-level, from the associations between conceptions of teaching and conceptions of teaching using eLearning. In this way, it may be claimed that:

1. Fragmented (content focused) conceptions of teaching and fragmented (information focused) conceptions of teaching using eLearning would lead to a conception of blended teaching as a disintegrated way of supporting transmission of information.
2. The second conception would represent the case of teachers who conceive teaching holding elements of conceptions which may be content and learning focused; and conceptions of teaching using eLearning that may be fragmented or cohesive. This would lead to a conception of blended teaching as a dissonant way of combining face-to-face and online teaching without a clear pattern.
3. Cohesive (learning focused) conceptions of teaching and cohesive (communication/collaboration focused) conceptions of teaching using eLearning would lead to a conception of blended teaching as an embedded way of promoting students’ understanding.

These associations are summarized in Figure 12.
Therefore, conceptions of blended teaching can be described as follows:

1. Blended teaching as a disintegrated way of supporting transmission of information: this represents a fragmented understanding of the incorporation of eLearning into traditional face-to-face teaching. The online component would be understood merely as a way to improve distribution of materials, answer students’ occasional questions, and keep people informed about unit updates. At the same time, a limited relation only is foreseen between the online and face-to-face components: one in which the online side is just another way of providing information.

2. Blended teaching as a dissonant way of combining face-to-face and online teaching without a clear pattern. In this case, teachers may have conceptions of teaching which are unclear and dissonant combined with conceptions of teaching using eLearning.
which may be fragmented or cohesive. No clear pattern emerges from these associations.

3. **Blended teaching as an embedded way of promoting students’ understanding:** this represents a cohesive way of understanding how eLearning may be incorporated into ‘conventional’ face-to-face teaching. The online environment is seen as a space where learning can take place through discussions, supporting group work, etc. eLearning is embedded with the face-to-face component of the unit; and associated tasks are designed in this way. Teachers see the possibilities of eLearning as creating a space where learning may take place: continuing face-to-face discussions, supporting collaborative tasks, etc.

The analysis underlying the above-mentioned conceptions of blended teaching has presented them as emerging from associations between conceptions of teaching and eLearning. While blended teaching may be considered as a unified, seamless whole, I have preferred to explore both sides of the blended experience separately. Research on students’ learning has demonstrated that they do not experience blended learning as a seamless whole and it would be risky to assume teachers do.

Finally in this point, a dimension of variation defined as ‘perception of embeddedness with the face-to-face component’ was included when analysing conceptions of teaching using eLearning. This dimension of variation may be used here to represent how conceptions of teaching and teaching using eLearning are related in a way that leads to conceptions of blended teaching one and three. Embeddedness was seen as very little in conception one: an extra to provide information or a space for occasional questions, which were unrelated and peripheral to the core teaching. On the other hand, in conception three, the online component was seen as highly embedded. For example, online discussions were seen as a continuation of face-to-face discussions; or the online environment was understood a space to support group work tasks. A low level of embeddedness is associated with a fragmented understanding of blended teaching, while a high level of embeddedness is associated to a cohesive one.

### 4.4 Chapter summary

The analysis presented in this chapter has shown that there is variation in the way that university teachers conceive what good teaching is and how they see eLearning can be
incorporated into their established face-to-face teaching. Variation in conceptions of good teaching ranges from those focused mainly on transmission of information to those in which importance is given to developing student’s understanding. Variation in conceptions of teaching using eLearning ranges from those seeing it as medium to provide information to those seeing it as supporting high level understanding tasks. In addition, teachers who conceive teaching in a fragmented manner (content focused) also tend to conceive teaching using eLearning in a fragmented manner (information focused); and teachers who conceive teaching in a cohesive manner (learning focused) tend to conceive teaching using eLearning in a cohesive manner (communication/collaboration focused). In the case of teachers who do not conceive teaching clearly, eLearning may be conceived as either information or communication/collaboration focused. Finally, it was shown that associations between conceptions of teaching and teaching using eLearning may be interpreted, at a metal-level, as composing conceptions of blended teaching. Three conceptions of blended teaching were proposed: blended teaching as a disintegrated way of supporting transmission of information; blended teaching as dissonant way of combining face-to-face and online teaching; and blended teaching as an embedded way of promoting students’ understanding. The next chapter provides a complementary exploration of approaches to teaching, looking again at both face-to-face teaching and teaching using eLearning. The chapter reports on variations in approach, as well as associations between approaches.
Chapter 5: University Teachers’ Approaches to Teaching and Approaches to Teaching using eLearning

This chapter presents results of the analyses of approaches to teaching and approaches to teaching using eLearning, together with an analysis of the associations between approaches. The first and second sections of the chapter present results of the analysis of approaches to teaching and approaches to teaching using eLearning. As in Chapter 4, these sections have similar structures. Each contains five subsections, covering: strategies, intentions and approaches, categories of description, quality of approaches, hierarchical relationship between approaches and a summary. The third main section presents findings about the associations between approaches. Approaches to blended teaching are seen as emerging from these associations. The chapter ends with a summary of findings.

5.1 Approaches to teaching

Sections of interviews related to approaches to teaching face-to-face were analysed in terms of strategies used by teachers and intentions associated with these strategies. Data for this analysis came from questions: how do you approach teaching in the unit X? What do you do in your teaching? These two questions were related to strategies. And, why do you do it in that way? What do you want to achieve? These questions were related to intentions. Each of these initial questions were followed-up to explore further the answers provided (could you explain more? etc). The analysis is presented in the following order:

- Firstly, strategies and intentions emerging from the analysis as well as approaches derived are presented.
- Secondly, each approach to teaching is presented and described.
- Thirdly, approaches to teaching are analysed in terms of their quality.
- Then, a hierarchical relationship between approaches to teaching is identified.
- Finally, a summary of findings is offered.
5.1.1 Strategies, intentions and approaches

The interview transcripts were analysed in the manner described in chapters 3 and 4. Two strategies and three intentions emerged from the analysis. They are:

Strategies:

- Teacher/content focused.
- Student/learning focused.

Intentions:

- Providing knowledge of the discipline.
- Developing students’ understanding.
- Developing students’ critical thinking-world view and/or expanding their worldview.

Combinations of these two strategies and three intentions resulted in three approaches to teaching:

- A teacher/content focused strategy with the intention of providing knowledge of the discipline.
- A student/learning focused strategy with the intention of developing students understanding.
- A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview.

Table 29 presents how intentions and strategies are combined to generate approaches to teaching.
### Table 29: Relationship between intentions and strategies

<table>
<thead>
<tr>
<th>Intention (why?)</th>
<th>Strategy (how?)</th>
<th>Transmission focused</th>
<th>Understanding focused</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher/content focused approach</td>
<td>Providing knowledge of the discipline</td>
<td>Category A</td>
<td></td>
</tr>
<tr>
<td>Student/learning focused approaches</td>
<td>Developing students’ understanding</td>
<td>Category B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Developing students’ critical thinking and/or expanding their worldview</td>
<td>Category C</td>
<td></td>
</tr>
</tbody>
</table>

#### 5.1.2 Categories of description

##### 5.1.2.1 Category A: A teacher/content focused strategy with the intention of providing the students with the knowledge of the discipline

In this first approach, teachers adopt a teacher/content focused strategy with the intention of providing students with the knowledge of the discipline. A teacher/content focused strategy implies that university teachers give importance to what they themselves do and to the content they provide to students. The aim is providing students with the contents, concepts and knowledge they need to know.

A teacher/content focused strategy implies using methods which emphasize lecturing and the use of textbooks. The expectation placed on students is that they will be able to reproduce what is being taught.

In the lectures we work based on the textbook, and the unit is about the textbook… it is a good one, but is hard, hard for students…. That’s what we do…and there are the concepts and illustrations, simple illustrations…The textbook is a very hard level, and it uses language that students find very difficult, so, many students were unable to read and understand it….. I’ve got three instructors to help me in this unit and there is a three hours class seminar, within the three hours class they [instructors] present things,
they introduce the concepts, explain the methods, we go straight to the methods in the classroom...so trying to make easier for them to get the concepts they need to know. (I2)

Sometimes I describe the case, and present the principles that establish it. But if I have found a good case in the area because it sets the precedent for the next sixty years...I lecture them about this case, to make clear they get what they need to know. So put up...outline factual scenarios’...that sort of things. (I12)

In this approach, the intention is to provide students with the knowledge of the discipline taught. Students need to get this knowledge as it will be needed for future units.

Oh, well this is a preparing unit because this people need to know about these topics. You know, this is the people who is using X ray, photographs...they give X rays, they cure tumours, all that stuff...or radioactive materials...so they have to really know what they are dealing with, so what we are doing...just the basic things here, the first step. Then, in the second year, they are going to the next class...they are specialized and they are looking at the X ray machines in more detail or therapy machine, that sort of things. It is really for them to have an overview of the basics, to know the land, what are they dealing with... (I8)

Also, some teachers who have the intention of providing the knowledge of the discipline, want to do it as students will need it in their practice, once they are working as professionals.

The basic outcome I expect to achieve for students...they...first of all, they are health professionals so in the future they will be working with clients and patients in general health care. It could be a hospital, clinic, physio office, etc. It could be different settings. So, generally speaking, they are going to work with patients and of course a lot of health issues affect sexual functioning. So my aim is that they are prepared in the future to work with a client who can be experiencing sexual problems, so they know at least the basics about what to do and what to say or what to avoid .... So the main idea is to prepare them to feel confident and comfortable just talking about sex, giving them the needed knowledge to know what to do. (I11)

Let’s see, in general terms I guess that...why I do it this way is...because I want them to get an understanding of the texts they’ve read [the course textbook], so that when they graduate they can use the knowledge they’ve got... (I2)

In this approach, what comes to the foreground is the teacher is providing the content that students need to be ‘filled with’. These contents are provided using traditional methods, such as lecturing and using a textbook. The role of the lecturer is providing the information, the
knowledge of the discipline taught. Students have a passive role: as recipients of the knowledge provided. No active learning is sought, nor are students encouraged to engage in activities such as reflecting, criticizing, collaborating or developing their own understanding about the content being taught.

5.1.2.2 Category B: A student/learning focused strategy with the intention of developing students’ understanding

This approach represents a shift in strategy and intention. Teachers adopt an intention of developing students’ understanding and an associated student/learning focused strategy. A student focused strategy means that the focus changes from the information or content that teachers provide, to what students do for their learning. So, for example, instead of just lecturing and providing readings, teachers use or add methods such as engaging students in discussions, problem solving or preparing presentations to their peers.

We quite often do cases, do role play…discussions are better than themselves understanding themselves. We get quite personal… and well, that’s why I like face-to-face. I think it is very important. That’s where they begin to think about the…understanding things that then they try it out…this is what we did, the case study, discussion or role play so they give feedback, they know they are on track. So I wouldn’t do without that. (I18)

What we do is we present them with a problem, and that problem is presented as a trigger. They are put in a scenario in which they are in a pharmacy. And, there is a patient coming and who has, you know…just as in a pharmacy…you have people coming in….with a problem so they need medication…So, students start working backwards from that presented trigger…they have a whole list of readings that, they are not limited to one body system, they may be…it could be diabetes, it could be higher glycaemia, also could have anaemia… and they think about all these reasons and they generate a list of questions that they think they should ask to that patient. They ask the tutor and the tutor gives them further information about the case; that the person has diabetes …and then they get the list of the patient’s medication, patient’s social history, medical history and then they start to put things together to see what was happening, why that patient came to the pharmacy. And they do a medication review, and they also try to solve that patient’s problem. So after three sessions with this patient and the information they ask, because they only receive the information they ask…then they present a solution for the patient’s problem. The role of the teacher…is actually a facilitator, so as facilitator, never give up any answer; and we have found that lots of these problems really don’t have an answer. They are open ended problems. Any amount of possible solution may generate some other problems…so it is a very different approach to teaching than lectures. (I17)
I actually try to get the students to do most of the teaching…I suppose. So they are broken up into groups of about ten students and they are given usually three clinical scenarios, vet clinical scenarios that lead to pieces of legislation so one of the acts, for example, we cover with the…the vet practitioners’ act and then complains about vets. So an example may be that you receive a complaint against you or that someone is threatening to complain…so that’s the scenario and then the students need to go and investigate the act…and then they provide a little presentation to the rest of the class on the scenario. So, they often like to role play and that…make it a bit fun and they then address the questions associated with the scenario, that’s given to their peers and normally a person from the outside who is, for example, a person of the practitioners board who is coming…or a lawyer who provides some additional information and discussion with students; and obviously I make sure that the students have presented the correct information to the class. I think it helps in a very dry topic, but if you put in a scenario which is clinically based you create a format which is reasonably entertaining and gets the students involved…and then I think it is more of an opportunity to have fun and be more motivated to learn and get something out of that…by making a presentation like that you don’t only achieve the outcomes related to the topic, but you get broader generic outcomes about communication, presentation skills and research skills because they have to research and so on. (I5)

An intention aimed at developing students’ understanding implies that lecturers want them to be able to go beyond the content itself, as something external that needs to be transmitted and received. There is a focus on students’ own sense-making with respect to that knowledge. In this way, it is expected that they are able to see the meaning of what they are learning in broader contexts.

It’s mainly from my goal…is getting them able to apply theory. So it is not enough just the theoretical information they keep, but to learn to apply to their own life and to apply to the future profession, so all the discussions are related to application of the theory. So, it is making theory to come alive. And, make sure that at the end they have some internal understanding of things rather than saying I know that theory. (I18)

I think the intention is getting them out from the traditional classroom situation…not only picking up a problem from the text book and do it…I think if you teach the traditional therapeutics…I think it’s not grounded and won’t be completed. I want them to be more curious about…if you are coming to my pharmacy requesting for some help with medication….I’m not just giving you that medicament but I’m going to look inquiry with that person. (I17)

I suppose my intentions…I could argue they are related to learning outcomes. But I suppose it is a general intention, as I said at the beginning, my intention is to trying to motive them, to interest them in
the subject in the first place... but from a more general perspective to be able to research and acquire the information that they need by themselves... whether be in this case legal information or in some cases it may be... it could be applied to clinical practice, medicine, surgery, etc; so it’s just about learn how to deal with situations... 'I’m presented with a problem... I need to find out the answers to the problem, how can I do that, how can I search through the web specific databases, I can go to books, I can ask experts in the field, I can ask to colleagues’... that’s pretty much the broad approach, but there are more specific learning outcomes, if you like, which are related to specific pieces of legislation, if you like... so, understanding the role of the vet in situation X...(I5)

In this approach, in contrast to Category A, importance is placed on what the students learn instead of what the teachers teach. Methods in which active participation of students is encouraged are sought, such as discussions, problem solving, presentations, etc. The role of the teacher is one of facilitating the learning process. Students being active in their learning and going further than just repetition of contents is the aim of lecturers adopting this approach.

5.1.2.3 Category C: A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview.

The last approach emerging from the transcript analysis also comprises a student/learning focused strategy and an intention of developing students’ critical thinking and expanding their worldview. This intention implies that students are expected to learn how to be critical about materials or contents they are exposed, and to examine carefully how arguments are made and what supports them.

What I want to do is to teach them how to think critically. One thing I want them to get from the unit is... for example... what I want is that they are able to look at something and say... rather than just take it as a fact... being able to say: is this true? How can I understand whether this is true or not? What sort of framework can I apply to make sure it’s true, and also if it is something that is a bit incomprehensible to me... so I want to teach them critical thinking... specifically from the side of science. (I4)

At the same time, lecturers adopting this intention aim to expand the world view of students. In order to do that, students are given tasks that imply analysing, reflecting and criticizing realities other than their everyday ones.
I’m trying to expose them to other environments, other cultures and think about it…Australia is pretty isolated from the rest of the world, a lot of our students are internationals, a lot of people have absolutely no idea what may be like in Africa…and of course, the general aim of the subject is being exposed to a subject they haven’t been exposed to before, because even a science student thinks and learns about the facts, but it is more than that, how things are exercised… (I16)

Important for lecturers approaching teaching in this way, is the intention of developing critical thinking skills, such as being able to think independently or search for and select information on their own initiative.

I do want them to learn independently and I do want them to develop critical skills and tie that into the assessment of the course they have been enrolled as well; and tie it into the papers they are given to read…. So findings abstracts relevant to a topic and doing a critique of a paper…so an idea is that it is something that they can practice very early and to give help as they go…. so yeah that kind of skills, I want to give them. And, other sources are activities so start them to think critically into things…research kind of ways about how…what other information they may need to know about a particular topic; and how they go and find that information, selecting that data and making some conclusions from that. (I15)

Strategies used are student/ learning focused. Methods used include interactive techniques.

I use…in lectures, I use interactive lecture techniques so I’ve got, for example, small groups, small team work. I may lecture for about 15 minutes and then the class breaks into small team work or I give them, say, I mean in a paper just saying their own group…you know, what was the last concept we talked about, put that in your own words. Or I may give a quiz, true false or name the theory…. So, what I do at the end of every section in the lecture is go back and make sure that the students have actually learnt that section, before I go on. So, my lecture is very interactive…I do informal assessment by contests in the classes, true-false quizzes, name the theorists, you know, right or wrong. Or, I may ask the students, for example, to make up their own, in groups of three or four, to make up their own multiple choose questions, and so I get the students...they can actually make the questions and then I give those questions to the class. So I use many techniques to get that feedback back to me, about how the learning is going, during the lecture and the tutorial. (I14)

So it’s actually making them into real problems and understanding what may be like to be in a particular situation in the land of the practice…judgment that they have to make. So is …cases scenarios and things…getting them…putting them in that position, taking them away from this pure conceptual understanding, to looking at to what you may be doing faced with the reality of a practical situation in front of you…and how are you going to deal with that, so they practice things before they go out and actually start doing it, you know. (I10)
This final approach represents the most advanced one found in the analysis of the interviews. What comes to the foreground here is the students developing their critical thinking skills and expanding their world view. The role of the teacher is facilitating these processes, helping students to develop their skills by engaging them in learning activities, which encourage them to reflect and think critically. Active learning is sought. Students are encouraged to reflect, criticize and participate in interactive sessions.

A summary of the referential (intention) and structural (strategy) aspects of each approach is presented in Table 30.

<table>
<thead>
<tr>
<th>Approach</th>
<th>Intention</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>A teacher/content focused strategy with the intention of providing knowledge of the discipline</td>
<td>The aim is that students get the concepts of the discipline</td>
<td>The focus is on what the lecturers do and the content he provides</td>
</tr>
<tr>
<td>A student/learning focused strategy with the intention of developing students’ understanding</td>
<td>The aim is developing students’ understanding of a particular area of knowledge</td>
<td>The focus is on what the students do for their learning</td>
</tr>
<tr>
<td>A student/learning focused strategy with the intention of developing students’ critical thinking – world view</td>
<td>The aim is that students become critical thinkers who reflect and analyse different aspects of reality, developing new ways of seeing the world</td>
<td>The focus is on what the students do for their learning</td>
</tr>
</tbody>
</table>

5.1.3 Hierarchical relationship among approaches to teaching

The hierarchical relationship among approaches to teaching claimed at this point is in relation to strategies. Intention was not found to fit a hierarchical pattern; rather, teachers adopting one intention thereby excluded other intentions. This is explained as follows.

Approach C would be the more advanced category in the hierarchy. Teachers who hold this approach express an intention to develop students’ critical thinking and expand their
worldview. Regarding strategy, they are clearly leaning towards a student/learning focus, but they may also include elements of teacher/content focused strategy. For example, they still conduct lectures, provide readings, etc. However, their strategies do not stop here and they include more advanced or sophisticated strategies, which seem better aligned with their intention. Lower level strategies are use as a step towards accomplishing the intended student/learning focused approach.

A similar situation is found with Approach B. This approach is composed of an intention to develop students’ understanding and a strategy focusing on what students do in their learning. As in the more advanced approach, described above, university teachers holding this approach may use student/learning focused strategies, such as discussions, etc, but they may also include more teacher/content focused ones, such as standard lectures. However, as what they want to achieve is developing students’ understanding, the lower level strategies are used in the context of a more advanced intention.

In contrast with the previous two approaches, teachers who hold the Approach A do not advance towards student/learning centred strategies, but use those which are related to their intention of providing knowledge, (e.g. lecturing and providing notes and readings). Therefore, in this approach teacher/content focused strategies would be in place only. Table 31 presents an example of the hierarchy of approaches to teaching proposed in this section, based on one teacher holding the highest level approach.

<table>
<thead>
<tr>
<th>Approach (I9)</th>
<th>Intention (quotation)</th>
<th>Strategy (quotation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A student/learning focused strategy with the intention of developing students’ critical thinking – worldview</td>
<td>Developing students’ critical thinking and/or expanding their worldview: 'My aim is developing a critical appreciation about policing in contemporary Australia, to enhance research skills, to enhance team work; especially in a policy related environment…'</td>
<td>Teacher/content centred: ‘The lecture is very traditional….with a mixture of spoken presentation using power point and different forms of media, videos, radio programs’</td>
</tr>
</tbody>
</table>

(Continued on next page)
Approach (I9)  Intention (quotation)  Strategy (quotation)

Student/learning centred:
‘We do workshop based activities. People have to make presentations related to a text and then we have a debate...and then in small groups they work together looking, for example, at media representations of policing, what sort of images are presented and then talk about that together’

Figure 13 represents associations between intentions and strategies, considering the hierarchical relationship between strategies.

**Figure 13: Hierarchical relationships between approaches to teaching**

<table>
<thead>
<tr>
<th>Intentions</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing knowledge of the discipline</td>
<td>Teacher/content focused</td>
</tr>
<tr>
<td>Developing students’ understanding</td>
<td>Student/learning focused</td>
</tr>
<tr>
<td>Developing students’ critical thinking and/or expanding their world view.</td>
<td></td>
</tr>
</tbody>
</table>

Higher level approaches may include lower level strategies; but the lower level approach does not include higher level strategies.

### 5.1.4 Section summary

Three approaches to teaching, resulting from the combination of three intentions and three strategies, were described in this section. They are:
Category A: A teacher/content focused strategy with the intention of providing knowledge of the discipline.

Category B: A student/learning focused strategy with the intention of developing students' understanding.

Category C: A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview.

Approach A was identified as being of lesser quality, as it was transmission-focused. Approaches B and C appeared to be of better quality, as they were understanding-focused.

The relationship between approaches to teaching can also be seen as hierarchical, with Approach C being the highest and Approach A the lowest. This hierarchy is based on strategies rather than intentions. Teachers adopted one or another intention; but those who held higher level ones reported, also used strategies which may be considered as teacher/content centred. These strategies, however, were used as steps towards realising their higher level intentions.

5.2 Approaches to teaching using eLearning

In a similar way to the analysis of approaches to teaching, the sections of the interviews related to approaches to teaching using eLearning were analysed in an attempt to discern the strategies used and the associated intentions. Data for this analysis came from the questions: how do you approach eLearning in your teaching in the unit X? What do you do with eLearning? These two questions were related to strategies. And, why do you use eLearning in that way? What do you want to achieve? These questions were related to intentions. These questions were followed-up by others used to explore the initial answers provided (could you tell me more? etc). The analysis is presented as follows:

- First, strategies and intentions are presented, as well as approaches emerging from the analysis.
- Second, approaches to eLearning are described.
- Third, the quality of the different approaches to eLearning is assessed (in relation to students’ learning).
- Fourth, a hierarchical relationship between approaches to eLearning is described.
- Finally, a summary of findings is offered.

5.2.1 Strategies, intentions and approaches

Three strategies and five intentions emerged from the transcript analysis. They are:

Strategies:
- Information focused.
- Communication focused.
- Collaboration focused.

Intentions:
- Providing easy access to course materials.
- Providing access to up-to-date/quality materials.
- Having a space for asking questions-making announcements-keeping in touch.
- Engaging students in deep thinking through online discussions.
- Providing an online space for building knowledge.

Combinations of these strategies and intentions resulted in five qualitatively different approaches to teaching using eLearning:

- An information focused strategy with the intention of providing easy access to course materials-administrative information.
- An information focused strategy with the intention of providing access to up-to-date/quality materials.
- A communication focused strategy with the intention of having a space for asking questions - making announcements-keeping in touch.
- A communication focused strategy with the intention of engaging students in deep thinking through online discussions.
A collaborative learning strategy with the intention of providing an online space for knowledge building.

Table 32 presents how intentions and strategies are combined to generate approaches to eLearning.

<table>
<thead>
<tr>
<th>Intention (why?)</th>
<th>Strategy (how?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information focused</td>
<td>Communication focused</td>
</tr>
<tr>
<td>Teacher/content focused approaches</td>
<td>Collaboration focused</td>
</tr>
<tr>
<td>Easy access to course materials</td>
<td>Category A</td>
</tr>
<tr>
<td>Access to up-to-date/quality materials</td>
<td>Category B</td>
</tr>
<tr>
<td>Having a space to ask questions</td>
<td>Category C</td>
</tr>
<tr>
<td>making announcements-keeping in touch</td>
<td></td>
</tr>
<tr>
<td>Student/learning focused approaches</td>
<td>Category D</td>
</tr>
<tr>
<td>Engaging students in deep thinking</td>
<td></td>
</tr>
<tr>
<td>through online discussions</td>
<td></td>
</tr>
<tr>
<td>Providing an online space for</td>
<td></td>
</tr>
<tr>
<td>knowledge building</td>
<td></td>
</tr>
</tbody>
</table>

### 5.2.2 Categories of description

#### 5.2.2.1 Category A: An information focused strategy with the intention of providing easy access to course materials-administrative information

In this approach, an information focused strategy with the intention of providing students with easy access to course materials and/or administrative information is adopted. An information focused strategy means that teachers highlight the importance of the content provided to students through the web. This content may be of an academic nature: lecture
notes, web sites, links to readings, etc. One of the most typical uses is uploading lecture notes or other documents developed by the lecturer.

We use it as a repository for lecture notes. We put the lectures notes up a couple of days before the lecture so they are expected to download and bring them to lectures. (I7)

I provide lecture notes, and this is something that no matter what I’m doing, every course I teach has this. I use the course schedule which shows people what we are doing each week. Resources, so programming notes, programming C and then is the lectures, so they can click on that and access the lectures. So I use it as a way of providing lecture notes and some other documents, sample programs…etc. (I4)

External resources with materials relevant for the course may also be added

I provide them some content, some readings, links to articles, required readings, recommended readings…some links to websites, because there is some very good educational stuff available online so…look, sometimes it is like…much easier to offer students a link with a really good site which has really good knowledge about some issues. (I11)

[The unit’s web site] has links to external materials related to the different diseases, videos, written materials …how health workers are working in the field or news reports from around the time, newspapers, and links to sources and also there are web links for more information. (I16)

Information provided may also be of an administrative nature. For example, the web is used to inform students about marks, marking criteria, unit outline, etc.

We use it to provide information about assignments…things like that. Online we’ve got the course outline, the assignment details, the marking criteria for the assignments. For example, I put up a list of the students and then allocated readings for them to do prior the following week. So, it is purely a way of administering the course. (I7)

The intention is to make it easier for students to get access to these materials. The aim may be to have resources more widely available, or to make it easier to understand the material presented in lectures, as students can obtain lecture notes in advance.
I like the easiness of access to resources, so you can post them quick and you can give students quick access to resources. You don’t have to go through the bureaucracy to get your stuff into the library, that’s really really good. (I9)

I provide lecture notes, electronic lecture notes before and it’s available, so they can print those off. So, it is possible for them to have read the notes. I then give a lecture that is expanding on the material it’s been given to them. (I6)

In this approach, what comes to the fore is the easiness of using the web to provide information to students. Unit-related materials can be easily uploaded to make them widely available to students. Information provided about administrative issues is easily uploaded to inform students about marking criteria, assignments, dates and so on. The teacher’s role is as provider of information, and students have the relatively passive role of downloading notes or papers or accessing recommended websites. No communication, interaction or any active learning tasks are sought through this use of eLearning.

5.2.2.2 Category B: An information focused strategy with the intention of providing up-to-date/quality materials

As in the previous approach, teachers adopt an information focused strategy. The intention, however, changes. In this approach, the intention is providing up-to-date/quality materials. It takes different forms. For example, teachers upload to the unit’s website materials that emerge during the semester and which are relevant for the topic they are teaching, such as new information, recent papers, etc.

I can put a decision from the high court up on the web within sort of three hours after it’s been handed down, and that’s is really good. (I12)

At the same time the strategy can be related to new knowledge emerging in the area, e.g. with uploading newly published papers.

If I find an interesting new article during the semester, I’ll put it up… (I18)

Other teachers find that materials developed through the semester increase the quality of the content provided.
Before we gave a manual to students at the beginning of the semester, and I have found that sometimes... when you are writing big manuals is plenty of activities; you are in a hurry not thinking very well. Sometimes you think of what other colleagues are doing in other units and we can get ideas, but it is too late then to put it during the semester. With the web you can put things up week by week. What is needed for next week, you can put it up this week, if you want. And, this way you have more freedom to change things, to improve things. Yes, being able to do it week by week rather than needing to have it all set at the beginning of the semester…. I think is a bit more…it offers more flexibility in the way you teach and allows you improving the materials provided. This is how I do it now. I offer the manual week by week and it is an improved version… (I17)

This approach still has a focus on the content. Information provision is still the strategy’s focus. However, the aim is providing content which is up-to-date and of good quality. The teacher’s role is still providing information. But there is an awareness that eLearning allows them to provide better quality, more timely, information. The students still have a rather passive role and no active learning activities are encouraged through the online component of the course.

5.2.2.3 Category C: A communication focused strategy with the intention of providing a space for asking questions – making announcements – keeping in touch

The third approach emerging from the analysis of interviews represents a change in strategy and intention. A communication focused strategy implies that discussions boards and/or email are used. However, this approach is limited by the intentions of the lecturer. The intention here is providing a space for asking questions, making announcements and keeping in touch with students. Therefore, in practice, the use of the communicative capabilities of eLearning is rather restricted.

Questions may be posted by students. Two types of arrangements for asking questions were found in the interview transcripts. In the first, the teacher answers. In this case, the focus is on revealing the teacher’s understanding and no further online activities or interactions are expected. The answer provided by the teacher does not lead to a discussion or other online activities.
Students can ask questions about the content if they want ....and I answer the questions in the discussion board and everyone else benefits, because maybe other students had the same question. (I17)

In the second type of arrangement, other students answer. As before, no further interaction is expected. Lecturers may intervene if the answers are not correct but, again, this is not part of a larger or more structured or planned online task.

They have a space [online] for them to talk about the content. They will go and they will help each other, and they will respond each others’ questions using the discussion board. (I15)

In relation to making announcements and keeping in touch, the intention is giving students information about possible changes occurring during the semester, advice about invited lecturers, reminders of exam dates, etc.

We do use the unit’s website for announcements and we tell them to look because occasionally somebody can be sick, and a lecture may have to be changed or a lecture theatre room may be adjusted because somebody needs to, so we say them that they should be looking for announcements. (I6)

I use it as a way of contact, because the undergraduate course group is quite large. So, it is a way of keeping in touch with them, giving the information about the unit or if they need to tell me something they can email me (I15)

The web is used for announcements, particularly those that you need to make between classes. (I2)

Although communication through the web is used, still the focus is on what lecturers provide and on content. Questions are to clarify the established content of the course rather than to develop students’ understanding in more emergent or open-ended ways. Making announcements and keeping in touch is aimed at keeping students informed about issues which are mostly ‘administrative’. No further engagement in discussions or other online tasks is sought.
5.2.2.4 **Category D: A communication focused strategy with the intention of engaging students in deep thinking through online discussions**

In this approach, a communication focused strategy is adopted. Discussion boards are the main online tool used. The intention, however, is very different from that associated with the previous approach (Approach C). It goes beyond providing a space for asking questions or making announcements. The intention here is to engage students in deep thinking. The aim of lecturers is that students develop their understanding by being exposed to new ideas and other material, relating this to their experiences, reflecting and then communicating their reflections to their peers.

You do your reading and then you explore the ideas, let’s apply those ideas so you can apply them to your experience…knowledge application, so reflection. So that’s what we are trying to achieve in online forums. (I7)

So what they do is…they do a reading, they do an activity, they post some hundred words related to that and then the other students have to read all that postings and they have to comment on two of them, looking at similarities or differences. That’s how they engage in that sort of discussions. …I provide some feedback and some discussion on my own about what…the key issues they are posting, so I’m engaging a little bit in the discussion about that particular topic as well. (I10)

This fourth category represents a shift in how university teachers approach teaching using eLearning. It moves from an emphasis on the content transmitted, towards students’ learning; in this case, in the form of engaging them in deep thinking. Also, it represents a shift in the importance and embeddedness of the online component with the unit as a whole. It means that the online component becomes an important part of the course, in which learning tasks, which are core for the unit, are undertaken. Moreover, in contrast with the previously described approaches, there are planned tasks which are pedagogically designed. They are developed and implemented with the aim of generating deep learning in students. The online component of the unit becomes a key aspect of the students’ learning tasks. Rather than focusing on providing information, the focus in this approach is on students’ learning through engaging them in online tasks which promote deep thinking.
5.2.2.5 Category E: A collaborative learning focused strategy with the intention of providing an online space for building knowledge

This approach is one in which the teacher adopts a collaborative learning strategy with the intention of building knowledge. A collaborative learning strategy uses eLearning for providing online spaces for the students to work together and set up tasks focused on sharing information, creating content, developing reports, etc. The intention is promoting a community of learning which works collaboratively and builds knowledge, in the belief that better learning outcomes can be achieved in this manner.

One activity in which students may be engaged is developing reports, with the support of the online component of the unit. In this case, the teacher sets up spaces for collaboration such as discussion boards and online spaces for storing drafts and other materials students may be using.

They are also assessed on their presentation skills, so that is just about group…there is also a piece of assessment…because there is a lot of working in groups…there is also a piece of assessment in which they reflect about their learning in a group situation…and, any particular aspect of that group and trying to look for theories to improve the way they will manage that in the future, so they present…then they can research for theories on communication, conflict…which will then…give them the tools to address that better next time in a group…and if they think things went very well, or they think their level of motivation or their capacity to work in a group could be improved they can…if things went well they can try to analyse why went well, and what’s set it up for success and how they can continue that success in the future. Each of the groups has a group discussion board in [LMS] so they can participate, they can share and store their materials also. Each group has allocated its space to do that. (15)

Engaging students in creating content is a central activity used in this approach. Besides, the content created by students is used to generate other activities, such as comments, discussions or answering quizzes.

The thing they do is interesting; over tutorial groups they prepare an e-poster. As a tutorial group they are given essentially a webpage where they can upload material, and they are given the task of preparing a poster which has to be online, and then they have to present their poster to the rest of the groups with the assignment they have done. So, it’s pretty much like they write they lab report as a poster, similar to what you do for a conference…but the point is that they all have access to that so they all can add and remove, and format and contribute to different parts… (116)
The students who present [in class face-to-face] made five multiple choice questions for me based on the research, and they go on to [LMS] and there is a database of questions on [LMS] that students will have to answer through quizzes during the course and they get a mark. (I5)

One student writes a blog of, say 500 words, they post the blog, then other students can read, because there is an HTML link; or reading the paper that the student is talking about, and the other students can read that paper and then write a comment of 250 words on that first posting. Then, so what I am getting is one blog of 500 words, a second blog of 250 and a third blog of 250 words. I had some very interesting results… you know….In practical terms, there will be the initial blog written by me, for example, then you have your own initial blog, but you may read my blog entry and want to comment on the same paper. So, you read the paper that I researched, and then comment on that, and then someone after you will do the same, so every blog should have two comments at least; and it’s really an interesting process for me …. Students are saying what they think to other students in their working groups, before the assessment is due, things like ‘you covered it so much comprehensively that I did’. I mean, these are revelation they’re actually thinking about the work that they’ve done, rather that ‘Oh, I shouldn’t have said that because I haven’t got the final mark yet’. They are good indications for me, that they are doing deep learning and that they are motivated. (I14)

This last category of description represents the most advanced approach found in the transcript analysis. It focuses on students’ learning through participation in collaborative – networked activities. Central to this approach are activities in which students create something: a report, an e-poster, questions for online quizzes, a blog, etc. Emphasis is placed on collaboration. Students are engaged in commenting on other students’ work, sharing what they have found, etc. The online component of the unit is highly embedded, and web based tasks are central and core to the learning process. Clear links between the online and face-to-face components are found in this approach. However, the web is used also to provide information, communicating and engaging in online discussions, although the main focus is on collaboration and creation of knowledge.

A summary of the referential (intention) and structural (strategy) aspects of each approach are presented in Table 33.
Table 33: Intentions and strategies conforming approaches to eLearning

<table>
<thead>
<tr>
<th>Approach</th>
<th>Intention</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>An information focused strategy with the intention of providing easy access to course materials – administrative information</td>
<td>Giving students access to content related to the course easily. The content may be of academic or administrative nature</td>
<td>The focus is on the information provided to students: lecture notes, websites, readings, marking criteria, course outline, etc.</td>
</tr>
<tr>
<td>An information focused strategy with the intention of providing access to up-to-date/ quality materials</td>
<td>Giving students the last/best quality content available.</td>
<td>The focus is on the information provided to students: lecture notes, websites, readings, marking criteria, course outline, etc.</td>
</tr>
<tr>
<td>A communication focused strategy with the intention of having a space for asking questions-making announcements-keeping in touch</td>
<td>Having an online space in which students may ask questions about the content or keep informed about the unit updates</td>
<td>The focus is in communicative tools of the web: discussion boards, email, etc.</td>
</tr>
<tr>
<td>A communication focused strategy with the intention of engaging students in deep thinking through online discussions</td>
<td>Making students thinking deeply about what is being presented, relating it to their own experiences and communicate to peers</td>
<td>The focus is in communicative tools of the web: discussion boards.</td>
</tr>
<tr>
<td>A collaborative learning strategy with the intention of providing an online space for building knowledge</td>
<td>Engaging students in online group activities in which they can collaborate, share information and build knowledge</td>
<td>The focus is on providing spaces for online sharing, collaboration and interaction.</td>
</tr>
</tbody>
</table>

5.2.3 Hierarchical relationship among approaches to teaching using eLearning

A hierarchical relationship can be seen to exist among approaches to teaching using eLearning. As with approaches to teaching (described earlier in the chapter), the hierarchy is based on strategy rather than intention. This is explained below, for each of the approaches to teaching using eLearning.

Approach E is the most advanced found in the analysis presented above. Teachers who held this approach expressed the intention of providing online space for building knowledge and described a strategy which was focussed on collaborative learning. While these teachers clearly stated their intention, they also provided materials (information focused strategy), answered occasional questions and engaged students in online discussions (communication...
focused strategy). What makes the difference is their intention of providing the online space for the students to engage in building their own knowledge. Strategies were used as a medium to achieve the intention these teachers had in mind. In that sense, they used not only the more advanced (collaboration focused) but also less advanced strategies (communication and information focused) as ways of realising their intention.

In the case of the approach D, the main strategy in use to accomplish what teachers want to achieve is online discussions. However, they also provided lecture notes online, information about suitable websites, etc; including elements of the information focused strategy. At the same time, they did not go as far as using a collaboration focused strategy. Therefore, teachers adopting this approach mainly use a strategy coherent with their intention of engaging students in deep thinking; but they also incorporated the information focused strategy as a way of accomplishing their intention.

Approach C represents one very indicative of the importance of the intention teachers have about incorporating eLearning in their teaching. In this approach, although teachers do use a communication focused strategy, it is the intention which renders it a lower level approach. Their intention is associated with occasional communication only and their strategy employs the communicative capability of the LMS accordingly. No structured tasks leading to higher level thinking are provided or promoted by the teacher. Besides using eLearning for occasional communication, they also provide lecture materials, notes, information about relevant websites, etc.

The last two approaches, A and B, provide further evidence of the hierarchical relationship found among strategies. In the case of these approaches, teachers use the information focused strategy only. They do not go as far as employing a communication or collaboration focused strategy, as their intentions are restricted to the provision of information.

Therefore, findings on approaches to teaching using eLearning (and also previous findings on approaches to teaching) suggest that what makes the difference in approaches is the intention. Strategies are employed in a hierarchical manner: the collaboration focused strategy incorporates communication and information focused strategies; the communication focused strategy incorporates the information focused strategy; and the information focused strategy, being at the lowest level, does not incorporate any of the others. An example of the proposed
hierarchical relationships among approaches to eLearning is illustrated in Table 34, using quotations from one teacher allocated to the highest approach to eLearning.

**Table 34: Example of hierarchy of approaches to eLearning**

<table>
<thead>
<tr>
<th>Approach (I16)</th>
<th>Intention (quotation)</th>
<th>Strategy (quotation)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A collaborative learning strategy with the intention of providing an online space for building knowledge</td>
<td>Providing online space for building knowledge: 'I provide an online space where they can share, store materials, talk among themselves...what they have found, and in this way advance their projects. It is pretty much like that... Giving a space for them to develop their projects’</td>
<td>Information focused: the website has a link to the lab manual, there are links to sites that talk about lab techniques, so information based...related to the unit...information on the unit itself, the program, dates...things like that...yeah…” ‘if a I find a new paper or website relevant for what they are doing I’ll put it up as well”</td>
</tr>
<tr>
<td>Communication focused:</td>
<td>'they talk about as a group (using online discussion boards), what things worked, what things didn’t work, as each individual has done a slightly different technique and then they do a bit of discussion about it…for the work, things that they have had problems with, what can they improve, things like that…they all have posted in the internet, and they get marked for their [LMS] discussions’</td>
<td>‘The thing they do is interesting; over tutorial groups they prepare an e-poster. As a tutorial group they are given essentially a webpage where they can upload material, and they are given the task of preparing a poster which has to be online, and then they have to present their poster to the rest of the groups with the assignment they have done. So, it’s pretty much like they write they lab report as a poster, similar to what you do for a conference…but the point is that they all have access to that so they all can add and remove, and format and contribute to different parts…”</td>
</tr>
</tbody>
</table>
Hierarchical relationships among approaches to eLearning are represented in Figure 14.

**Figure 14: Hierarchical relationships between approaches to eLearning**

![Diagram showing hierarchical relationships between approaches to eLearning]

Higher level approaches may include lower level strategies; but lower level approaches do not incorporate higher level strategies.

### 5.2.4 Section summary

Five approaches to teaching using eLearning, resulting from the combination of five intentions and three strategies, were presented in this section. They are:

- **Category A**: An information focused strategy with the intention of providing easy access to course materials.
- **Category B**: An information focused strategy with the intention of providing access to up-to-date/quality materials.
- **Category C**: A communication focused strategy with the intention of having a space for asking questions – making announcements – keeping in touch.
- **Category D**: A communication focused strategy with the intention of engaging students in deep thinking through online discussions.
- **Category E**: A collaborative learning strategy with the intention of providing an online space for building knowledge.
Approaches A, B and C were claimed to be of lesser quality approaches; while approaches D and E were claimed to be of better quality, as they are student/learning centred. A hierarchical relationship among approaches was found as well, where approach E is at the higher level; and approach A at the lower. The hierarchy claimed to exist is based on strategies as they are in an inclusive relationship. This is not the case for intentions which are exclusive of each other.

5.3 Associations between approaches to teaching and approaches to teaching using eLearning

Approaches to teaching and teaching using eLearning were presented and described in the last two sections. In this section, I explore their associations. After a careful re-reading of the transcripts, each teacher was allocated to the highest approach to teaching and approach to eLearning that could be claimed for them, on the basis of what they said about their teaching. Particularly in the case of approaches to teaching, there were some teachers who were difficult to allocate to one particular approach. In their description they included elements of more than one approach. This is reflected in approach A/B: one in which teachers described both elements of teacher/content focused and student/learning focused approaches. Table 35 shows how approaches to teaching and approaches to teaching using eLearning are associated.

Inspection of Table 35 reveals three groups of teachers. The first group, highlighted in palest grey, shows teachers holding approaches to teaching which are ‘teacher/content focused’ and approaches to teaching using eLearning which are ‘information focused’. The second group, in mid-grey, represents dissonant associations between approaches to teaching and teaching using eLearning; or dissonant descriptions of approaches to teaching associated with approaches to teaching using eLearning that may be ‘information’ or ‘communication/collaboration focused’. The third group, highlighted in darker grey, shows teachers with ‘student/learning focused’ approaches to teaching and ‘communication/collaboration focused’ approaches to eLearning.
Table 35: Associations between approaches to teaching and approaches to teaching using eLearning

<table>
<thead>
<tr>
<th>Approaches to teaching</th>
<th>Approaches to teaching using eLearning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information focused approaches</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Teacher/ content focused approaches</td>
<td>A</td>
</tr>
<tr>
<td>Both teacher/content and student/learning focused approaches</td>
<td>A/B</td>
</tr>
<tr>
<td>Student/ learning focused approaches</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>C</td>
</tr>
</tbody>
</table>

Approaches to teaching:
A. A teacher/content focused strategy with the intention of providing knowledge of the discipline.
B. A student/learning focused strategy with the intention of developing students’ understanding.
C. A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview.

Approaches to teaching using eLearning:
A. An information focused strategy with the intention of providing easy access to course materials.
B. An information focused strategy with the intention of providing access to up-to-date/quality materials.
C. A communication focused strategy with the intention of having a space for asking questions – making announcements – keep in touch.
D. A communication focused strategy with the intention of engaging students in deep thinking through online discussions.
E. A collaborative learning strategy with the intention of providing an online space for building knowledge.

Teachers in groups one and three would be consonant in their approaches to teaching and teaching using eLearning. Those in group one, who approach teaching in a ‘teacher/content focused’ manner, held an ‘information focused’ approach to teaching using eLearning. On the other hand, teachers in group three approached teaching in a ‘student/learning focused’ manner and their approaches to teaching using eLearning were ‘communication/collaboration focused’. However, there is a different situation for teachers in the second group. In this case, dissonant associations emerged. These are of two types. In the first case, dissonant associations were detected when describing approaches to teaching, combined with approaches to teaching using eLearning that may be ‘information’ or ‘communication/collaboration focused’. In the second case there are dissonant associations.
between approaches to teaching and teaching using eLearning; for example, a ‘student/learning focused’ approach to teaching associated with an ‘information focused’ approach to eLearning.

As with conceptions of blended teaching (discussed in chapter 4), one way of thinking about approaches to blended teaching may be seen them as emerging from associations between approaches to teaching in face-to-face settings and when using eLearning. Approaches to blended teaching would emerge at a meta-level, as a result of associations previously described. In this way, three approaches to blended teaching can be identified:

1. ‘Teacher/content focused’ approaches to teaching and ‘information focused’ approaches to teaching using eLearning would lead to ‘disintegrated/information focused’ approaches to blended teaching.

2. Dissonant combinations of approaches to teaching and teaching using eLearning would lead to ‘dissonant’ approaches to blended teaching.

3. ‘Student/learning focused’ approaches to teaching and ‘communication/collaboration focused’ approaches to eLearning would lead to ‘embedded/learning focused’ approaches to blended teaching.

These associations are summarized in Figure 15:
Further descriptions of approaches to blended teaching are as follows:

1. ‘Disintegrated/ information focused’ approach: this represents a limited but consonant way of incorporating eLearning into established ways of face-to-face teaching. The
online component of the unit would be used only for providing information and to have a space for occasional communication. It is mainly used as a distribution channel or for keeping students informed. eLearning is included in the units as a ‘peripheral’ element, which is not a core component of the learning and teaching experience. This approach can be interpreted as consonant: teaching both in face-to-face and online settings is aimed at transmission of information. At the same time, it may be characterised as disintegrated, in the sense that there is no synergy or clear connection between the online and face-to-face components. The online components could be abandoned without altering substantially the students’ experience of the unit. In practice, a unit in which this approach is implemented would look like a combination of lectures, tutorials and eLearning, where lectures are largely used for providing information, in a traditional format; tutorials are a continuation of lectures, where still the main focus is on providing information to students, and the online component is used to provide lecture notes, handouts, etc, as well as to keep students informed about administrative issues or answer their occasional questions.

2. Dissonant approach: This represents, in the forms found in this study, combinations of face-to-face and online teaching which were unexpected. Three forms of this approach were found in this study. The first is where the approach to teaching is aimed at promoting students’ understanding and critical thinking, but the online component is used for providing materials or for occasional communication only. The second is where the online component is used mainly for providing materials or for occasional communication and approaches to teaching appear to be dissonant, including elements of both ‘teacher/content’ and ‘student/learning focused’ approaches. The third is an approach to teaching face-to-face which includes elements of both ‘teacher/content’ and ‘student/learning focused’ approaches and uses eLearning for collaboration, providing spaces for knowledge building. In the following chapters, I explore the question of why these dissonant associations are adopted. For now, it is possible to suggest that this seems to be related to the perception of the teaching situation and/or teachers’ characteristics: when lecturers perceive negative conditions for incorporating eLearning in a more meaningful way (for example, lack of time or lack of support), and/or they present particular characteristics (for example, if they are new to teaching), they tend to adopt dissonant approaches to blended teaching.
3. Embedded/learning focused approach: This represents the more complete and consonant way of incorporating eLearning. Teaching both at the face-to-face and online sides would be aimed at supporting students’ learning. The online component would be used to engage students in tasks for promoting understanding and higher level thinking, such as structured online discussions, creation of online content, etc. But, it also makes good use of lower level strategies such as provision of information. eLearning would be an ‘embedded’ element, in which learning tasks take place. The face-to-face and online sides of teaching have a clear connection, creating synergy and supporting students’ learning. In practice, a unit in which this approach is implemented would most likely involve a combination of lectures, tutorials and eLearning, where lectures can be used for providing information or to promote more student centred activities, such as face-to-face discussions, or engaging in problem solving. Tutorials are almost entirely used for student centred type activities, such as face-to-face discussions. Students’ presentations, etc, and eLearning are used with the aim of engaging students in tasks such as structured discussions, collaborative activities or creation of online content.

5.4 Chapter summary

This chapter has suggested that there is variation in how university teachers approach their teaching when eLearning is incorporated. Variation in approaches to teaching ranges from those which are ‘teacher/content focused’, where the focus is on what the lecturer does and on the content transmitted, to those which are ‘student/learning focused’, where the focus is on students and their learning. Variation in approaches to eLearning ranges from ‘information focused’ approaches to ‘communication/collaboration focused’ ones. In the first type, eLearning is mainly for providing information and/or for occasional communication, while in the second type, it is for engaging students in deep thinking and/or collaborative tasks. Finally, it was proposed that approaches to blended teaching may be seen, at a meta-level, as emerging from associations between approaches to teaching and teaching using eLearning. Three approaches to blended teaching were distinguished: a ‘disintegrated/information focused’ approach, a ‘dissonant’ approach and an ‘embedded/learning focused’ approach. The next chapter explores factors that university teachers perceive as relevant in relation to the incorporation of eLearning and the approaches to teaching they adopt.
Chapter 6: Perceptions of the Teaching Situation

An analysis of factors influencing teachers’ incorporation of eLearning and their approaches to teaching is presented in this chapter. The first section presents elements influencing the incorporation of eLearning into teaching. Seven themes emerged: control of teaching, institutional strategy, technical support, pedagogical support, amount of time needed, teacher’s skills for eLearning and students’ ability and willingness to use eLearning. The second section presents results about factors influencing approaches to teaching. Three elements emerged: control of teaching, institutional support and students’ characteristics. The third section of the chapter maps individual perceptions of the teaching situation, held by the interviewed teachers, in relation to both eLearning and approaches to teaching. A summary of findings is offered at the end of the chapter.

6.1 Factors university teachers perceive that influence their approaches to teaching using eLearning

Data used in this section come from the question: what factors influence how you adopt and use eLearning in your teaching? This question was followed-up by others designed to explore the issue further. The following factors emerged from analysis of the transcripts:

- Control of teaching.
- Institutional strategy.
- Technical support.
- Pedagogical support.
- Amount of time needed.
- Teacher’s skills for eLearning.
- Students’ ability and willingness to use eLearning.

Each of these factors is now described in turn.
6.1.1 Control of teaching

This factor refers to how the control that teachers perceive they have over teaching influences their approaches to teaching using eLearning. Analysis of transcripts suggested that when there is a perception of a highly constrained situation, the teacher would stick to the basic or minimum amount of content required to be learnt, as prescribed by a tight curriculum. She/he will not be willing to try significant uses of eLearning, but the focus will be on meeting the requirements of the curriculum.

For different subjects, not the one that I am talking to you about, but subjects where there’s less constraint, which are less curriculum constrained, I think the web could be used very well for group work. We are very constrained with the subjects we are teaching, and there is a minimum amount of content in them because the whole focus is knowledge that a safe practitioner must have when they graduate, and that defines everything single unit, so there isn’t any flexibility, no space in the curriculum to do something interesting. There is no space for doing more innovative learning things…maybe in a few other subjects that I’ve got, a bit less involved into that sort of Health Science degree, where there is not a registration board to be satisfied… (I6)

This theme suggests that when teachers perceive being highly constrained in their teaching they will not assume the risk of incorporating eLearning in a way that exploits its potential.

6.1.2 Institutional strategy

Institutional strategy is an important theme emerging from the analysis of the interviews. Decisions and actions taken at different institutional levels (School, Faculty or university wide) can have an impact on the way teachers approach eLearning.

A decision to embrace eLearning at the level of the teacher’s Faculty or School can encourage the incorporation of eLearning in teaching.

Some years ago we made the decision as a group that we were going to embrace eLearning as part of our teaching model. So then, we hired an instructional designer with responsibility for eLearning, that person helped…but he has also promoted eLearning in the face-to-face environment. It seemed that the face-to-face environment was not really ideal for eLearning. Having said that, there are some
colleagues who did use eLearning [in the face-to-face teaching] and I have witnessed a website run by a colleague of amazingly high quality. So I started to do that in my classes. (I3)

On the other hand, some high level decisions can provoke reservations about the use of eLearning. One example is where teachers are concerned that eLearning is being introduced to save on face-to-face teaching costs.

The university is absolutely encouraging more and more online learning...I think, I have to say, is cheaper for them than paying us for face-to-face. (I16)

Also, a positive perception of institutional support may be diminished in specific situations. This is the case reported by some of the interviewed teachers who were using one version of the LMS available in their university, but who experienced troubles when it was upgraded.

We have changed [a different version of the LMS]. This version has more central control. We would have 12 hours training for everyone without exception...[but] the courses were very hard to book in. So the last two years it’s been complicated. It takes a long time to get my tutors access to the website. It’s really bad. They went from a very supportive approach to one in which you have very little and everyone needs to do their courses. So if you don’t do your course properly you won’t have access, so it’s bad. I haven’t being able to do the training...this is a requirement for accessing the new edition. The other problem is that there was no information on how to take your course from [one version of the LMS] to [another version of the LMS]. So all academics in the university had to develop their courses again and I actually found a way to do it but I’m pretty good with computers, but there are other people who don’t know. So if they would have given a bit of support to migrate from one version to another...Besides, I can’t give access to other people to be tutors, etc; this ability has been taking away from me. Some people can’t even put lecture notes up. So, it’s been really bad. (I4)

This suggests that when teachers perceive that there is a clear and widely supported strategy for embracing eLearning they will be willing to incorporate it into their teaching. On the other hand, a perception of lack of clarity about contractual and other matters may lead to reservations about incorporating eLearning. In addition, particular situations, such as the one mentioned above when a university upgraded its LMS, may lead to a difficult situation in which even teachers who are keen to use eLearning start using less worthwhile combinations of face-to-face and online teaching.
6.1.3 Technical support

This theme makes reference to support provided to teachers in the form of training on how to use the LMS, for setting up their websites and for troubleshooting. This support is highly regarded.

I went to learn [LMS] between two semesters and created a website. Then, in second semester it was up and running. Support is terrific, because they are always at the other end of the phone if I have any trouble. (I18)

Support for designing units with an eLearning component is highly valued as well.

I did [the design] mostly myself but we do have someone…people here helping; we have an educational designer and a design artist...which is really helpful. (I5)

The learning design of the online side of my courses was a different stage and I worked with a colleague from the Institute of Teaching Learning, who helped me to develop my own components of one of the courses. (I1)

We had an Educational Technology Development unit. Somebody from there has helped me to develop the courses. It came out from a scheme set up by the Vice-Chancellor, in which academics could be out of teaching for 6 months to develop a course. So there was a ‘learning and teaching’ unit, related to educational theory and it has a technology development unit. I didn’t do one of those but I did something else. I applied for a grant to have postdoctoral fellows to help me with my research to leave time for course development. That was actually more than I wanted so that’s was how I got in contact with this people. So I started to use it because the university provided a lot of support. (I4)

These results would suggest that teachers who perceive they have support available will be in a better position, and will be more willing to, incorporate eLearning.

6.1.4 Pedagogical support

The fourth factor emerging from the analysis of interviews is pedagogical support. It was reported that, while technical support may be good, there is lack of pedagogical training on how to use the LMS and/or other online tools and resources that may enhance learning and
teaching. Training is perceived to be related to the technical side of using eLearning only. How to deal with pedagogical issues is not covered.

We did training. Actually, you don’t get access to [LMS] until you have done training. So this is a requirement to teach online, so I had to sit for a couple of days to learn all the features of the program. Now I think they can’t just do online tutorials and short quizzes to make sure you understood how it works and that’s enough. We weren’t taught how to teach online or how to deal with students. It was completely related to the technological side of the online learning. Pretty much how to use the technology online. (I9)

And then in a daily basis some people don’t feel OK with [new version of LMS]. In terms of the training we received…it wasn’t very good either, particularly for learning how to teach online; not only the technological aspects. (I7)

Results in this area suggest that those teachers who perceive they do not have proper pedagogical expertise for incorporating eLearning will be prevented from using it in a more significant way.

6.1.5 Amount of time needed

A huge concern for most of the teachers interviewed is the perception that eLearning increases significantly the amount of time they need to spend in teaching. It is perceived that using eLearning properly demands an enormous amount of time: especially to participate in online discussions and to take proper care of online interactions. The design of the online side of their units is seen as very time consuming as well.

I really like online teaching. From my side is good but is time consuming. For them is very convenient, fast and easy. Very easy to access a lot of information and they can choose their time, is very flexible, so flexibility is an advantage. These advantages…but from my side is very time consuming. You have to spend time preparing…now I have to email back every email. This is very time consuming. It is hard to keep track…imagine some mornings I receive 30 or 40 emails. I understand that they want answers but it’s just too much. This is the problem with online learning. (I11)

Some teachers have developed strategies to deal with pressures on their time: trying to organise spots where students will make comments, being aware that it is not possible to answer everything, and so on.
We haven’t responded to everything, because, you know, with 350 people in the course...a couple of times they deal with each other problems...it doesn’t mean that...it drives me crazy anyway. So we’ll try to structure... is a challenge to structure discussion board in such a way that the students actually post relevant information at the right spot, so their questions are answered the way that they want to be answered, and so that all the students can find their information or work being posted as well. So it’s an evolving process. We have students that just post anything anywhere, but there is nothing I can do about that. (I15)

Another reaction is just to give up online discussions because of the time involved.

We are expected to log in a couple of times a week and to take part in the discussion. Last session I tried an experiment because it takes a huge amount of time to get into everybody contributions. We ask them 250 words per contribution, but even when you are running classes of 25 you can spend a lot of time doing it. And so what I did last year was enforcing this idea that they have not only to respond to the question, but to respond to other people in the discussion as a way of trying to go back on my own involvement. So I used to go every couple of days but I wouldn’t necessarily respond to each individual…and when they got students’ evaluations at the end there were a couple of comments from students saying that the teacher wasn’t engaged in the discussion. So we preferred just stop using online discussions. (I7)

Finally, on this point, for some teachers, what is perceived as possible to achieve through teaching online does not compensate for the time/effort teachers need to put into developing and maintaining a unit website.

Oh definitely it is more workload, and some of that can be delegated, but you still have to work on that to make it all nice…and I think, you know, that the benefits [of eLearning] are quite limited. It is good for certain tools or certain activities, but for other activities, [LMS] is not good...just not needed for all the activities. (I2)

Results for this theme suggest that time is a very sensitive issue. Most teachers perceive eLearning as time consuming. Some of them tried to address the issues by generating some strategies for dealing with the increasing time needed. Some of them just dropped eLearning to avoid problems and reduce their workload in a particular unit.
6.1.6 Teacher's skills for eLearning

This theme is related to teachers’ self perception of their computer skills. Teachers who perceived themselves as competent computer users felt more confident about eLearning.

I wasn’t an IT professional but I’ve worked with IT professionals before I started my academic career and I’ve done it for a long time. And so I’m usually OK with technology, so in that sense I’m confident with using [LMS] and related online tools and technologies. (I7)

No, in my case it’s my research field, so I actually have been changing that …..I have been learning how to do the teaching aspect because I’ll be doing what I do for a long time, and I’ve even been working as a consultant in a company that sold eLearning systems… (I1)

In contrast, those teachers who lacked confidence in using technology reported limited incorporation of eLearning in their unit.

I’m a bit hopeless online…I don’t have a mechanical gene; I’m not good with new appliances in the kitchen…I’m not good on the computer….to get your computers skills up you really need to have time. As a working mother and a job with homework…you are coming home with a pile of assignments to mark, you do not have time to spend one hour with the computer. I can do basics. I’m still learning some basic stuff. I’m not anti technology. I think is wonderful but personally I don’t like it. I’ve got bad eyes and bad back so I really don’t want to spend hours on the computer. I’m a paper based person. I always print everything. (I12)

No. I’m not really good with [LMS]. I did what I could do. (I8)

These results suggest that teachers who perceive themselves as having good computer skills would be more willing to incorporate eLearning in their units. On the other hand, teachers who feel they do not have appropriate computer skills would be more reluctant to embrace eLearning in a significant way.

6.1.7 Students’ ability and willingness to use eLearning

The last theme presented in this section is students’ ability and willingness to use eLearning. Students are generally perceived as having good skills for using eLearning and as pressing for further use of it.
[eLearning] works better for undergraduates because they… I just think that they are more used to having to use it… and they have a tendency to be full time students, they also tend to be younger, just more used to using computers. They expect you to have some online stuff for them. (115)

This suggests that teachers who perceive their students as having the right skills and/or being enthusiastic about eLearning are more inclined to incorporate eLearning in a significant way.

In summary, findings in relation to factors influencing adoption of, and approaches to, eLearning suggest that university teachers would be more likely to incorporate eLearning in their teaching if:

- They have adequate control over what they teach, allowing them space for experimenting with new ways of using eLearning.
- There is a clear and agreed institutional strategy which supports and promotes the uptake of eLearning.
- There is proper technical support.
- There is proper pedagogical support.
- There is enough time allocated for teaching using eLearning; or there are proper strategies for dealing with the increasing time pressures.
- They perceive they have good technical skills.
- They perceive their students as having the appropriate skills and/or as pressing for greater use of eLearning.

### 6.2 Factors university teachers perceive that influence their approaches to teaching

For this analysis, the data considered come from the question: What influences how you teach? As with questions about eLearning, this question was followed-up by others in order to explore the initial answers in more depth. Analysis yielded three themes:

- Control of teaching.
- Institutional support.
- Students’ characteristics.

6.2.1 Control of teaching

Teachers who reported having little control over their teaching perceived constraints in the curriculum taught, coming from external accreditation bodies and from pressures to prepare students for the workforce. In the first case, teachers talked about constraints on what they taught, coming from external accreditation bodies. Such bodies are seen as prescribing contents that must be incorporated into the curriculum for training future practitioners. What these teachers teach needs to be aligned tightly with the prescribed contents.

That’s a very tight constraint [pressures from accreditation bodies]…all the way from the top down. So, it says what I need to know if I want to be registered as a physio, what a registered nurse needs to know, and so on.… they [accreditation bodies] will look at the manuals, what the students are given, what are the objectives of the course…It’s a huge constraint in what you can do. I mean, it is a sensible approach, because if you go to a physio or a doctor, you are trusting they have certain basic skills, they will not ruin your shoulder or something. That is a very big constrain on what you are doing. (I6)

There are other pressures on teaching which come from external forces concerned with improving the employability of students and increasing the skills which are needed in the workforce.

You know this is the person who is using X ray, photographs…they give X rays, they cure tumours all that stuff or radioactive materials…so they have to really know what they are dealing with, so what we are doing…just the basic things here, the first step. (I8)

On the other hand, teachers who perceived themselves as being in charge of what they taught felt more freedom to select what they wanted to include in their units. These teachers did not feel the need to adhere to a prescribed set of content and did feel they had space to explore, depending on how a particular unit was developing. Curriculum appears to be more flexible in such cases.

I actually don’t know where it will end up, we may get half way through the notes…the content I thought we were going to see…it is important what they learn…not really if we cover everything. (I14)
Therefore, teachers’ perceptions of control over what they teach ranges from those who felt highly constrained to those who felt free to explore and accommodate the contents to the particular situation found during the teaching of their units. In the first case, the analysis suggested that lack of control over teaching affects how these teachers teach. They would feel pressured to stick to the basics. In the case of those teachers who had more freedom over what they teach, the analysis suggested that they do not stick to basic content but explore, extend and/or accommodate contents depending on the situation.

6.2.2 Institutional support for teaching

Teachers valued positively institutional support in the form of opportunities to attend courses on university teaching. This seems to have an important impact in how they see and approach their teaching.

Yes, actually I took a course, a graduate certificate in Higher Education. One of the teachers told us that there was something called SOLO taxonomy. In that taxonomy…it is stated it is important to really to structure and align everything together. So how are you going to assess your students, what are you going to teach, what are your tutorial activities and what are your learning objectives at the start…I use that in my teaching practice. One of my teaching mentors also told me that it’s good to draw the SOLO taxonomy, and show it to the students at the beginning of the semester, and tell them this is what I think is my structure for this course, and so they can see how everything is organized and do their assignments and get marks. And I find this useful…I think pharmacists are very structured people, they are taught never to make a mistake…check everything you know. So this structure probably satisfies my own personality. To be aligned and structured. (I17)

I’ve been using teams in teaching and assessments for a number of years. In fact, when I did my graduate certificate in higher education studies, team work was one of my specialties, the other specialties was peer assessment. So I apply this knowledge to my unit. (I14)

Teachers who perceived being part of a culture which fosters high quality learning experiences report giving importance to the development of learning environments which are in line with this culture.

The PBL [problem based learning] side has been used for five or more years. There was a colleague doing it before and I just put it forward but what I did was I re wrote the cases…they needed to be more contemporary. The decisions that it has to be cardiovascular or infectious is disciplinary….I have
another colleague who is American, and she introduced reflective diaries and previously because of the independent and the clinical placement was independent. My role has been to put all together. (I17)

Therefore, these results suggest that teachers who perceived institutional support for teaching would approach teaching in a way that supports quality learning experiences.

6.2.3 Students’ characteristics

Some teachers talked about their students in negative terms. They talked about three sets of student characteristics that affected their teaching: differences in background knowledge, problems with language and commitments outside the university.

Regarding differences in background knowledge, it was said that this makes teaching more difficult. Students were perceived as coming with different levels of knowledge about the topics taught. This was particularly relevant in relation to first year students, but also in relation to international students.

Well that’s a trouble [students with different levels of knowledge]. Some of them have done physics at High School, some haven’t. Maybe a half of them have done physics before, and that’s affects what I can teach them and the time I’ll need to do it. (I8)

We always have the problem with these diversity, the different levels [of understanding about the subject] when they come in and I have always been thinking on how to deal with that? So we all have been always been thinking how to deal with that. And, so we can have a whole lot of tutorials and you know that students who know it all can do number 1, while they were watching TV at night, and they’ve got it, the students who don’t have this background they have to work at it. (I6)

The increasing number of international students appears to be problematic for some teachers as well. The lack of English language skills and the students’ perceived preference for content centred teaching would affect how teachers approach their teaching.

We now have lots of full fee paying international students. I’ve been able to run it in a more interactive way but it takes a little while. They are more interest in being told than forced to think… I think with the number of overseas full fee paying students it has become more about transmission of knowledge. That’s what the students want I think, which I don’t wholly approve but it’s a reality. (I12)
Teaching is tougher when people in my groups particularly don’t have very strong English skills…it is much harder to teach. (I16)

Some of the teachers interviewed refer to a situation in which an increasing number of students are engaged in paid work, so they have commitments outside the university. This is perceived as another feature affecting negatively what teachers can do in their teaching. Students who work are less able to attend classes.

There has been an incremental change, students are working, and they start to skip classes. That is a problem…people not attending and falling behind... (I6)

Teachers who commented positively on their students’ characteristics highlighted their commitment to study and the value of having mature age students in their classes.

Some teachers, who had a positive perception of their students, saw them as focused on their careers. It was said, that a key way to engage students in learning was showing them how what was being taught was relevant for them as practitioners in the future.

They are quite focused on their professional degree obviously. They are quite focused on becoming members of the profession…working as vets so the key seems to be the relevance from their perspective anyway…how these subjects will be relevant for them in the future, when they’ll graduate. (I5)

Also, teachers tended to have a good perception of mature students and students who had been at university for some time. These students are seen as more committed than first year or second year students.

There will be some, maybe 10 or 15% who are mature age so they would be more ready and more able to internalizing and understanding materials; others are quite young so they have only two years after school. (I18)

Related to the perception of ‘maturity’ and how it impacts teaching, one of the interviewed teachers stated that she varies her teaches depending on the stage of the students’ university career.
I teach them different depending on what stage of the degree they are. Students in first year tend to be more supportive, much more providing them with guidelines, helping them along the way. They are coming straight from the school, so is a very strange learning environment for them. I provide lots of information...in the tutorial we negotiate how to use the library, how to look for research, how to reference...like introducing them to university. But at a level 3 course they tend to be much more self reliant and responsible. They tend to do their work and I tend to expect quite more from their activities, their research. (19)

I suppose I try to be reasonable traditional in the first year or so...only because I found when you frightened them out in first year they are not very happy, because they expect it will be like school and mature age are a bit different. Ultimately my opinion will be you are training her as a professional to continue to develop and learn; and that will be up to them when they’ll get out of here...yeah...we try to do that. (15)

This would suggest that perception of negative characteristics would discourage teachers from adopting more 'student/learning focused' approaches to teaching. On the other hand, perception of positive characteristics would encourage teachers to adopt more 'student/learning focused' approaches to teaching.

Therefore, results suggest that teachers will be more likely to teach in a student/learning focused manner if they:

- Perceive they have control over what they teach.
- Perceive there is institutional support for their teaching.
- Have positive perceptions about their students.

6.3 Teachers’ perception of the teaching situation

Teachers were allocated to categories based on whether they perceived their teaching situation as mostly adequate or mostly inadequate, both in general and specifically in relation to eLearning. A third category, unclear, was included when, after reading the transcript many times, it was not possible to allocate the teacher to one or the other category. It is important to say that teachers were not allocated by using some ‘average’ perception, but by trying to understand the overall perception they had. In some cases, they presented positive or negative perceptions in all the dimensions considered; making their overall orientation very clear.
However, in other cases their orientation was unclear. Besides, not all the dimensions considered emerged in each interview. In some other cases, while they had a very good perception of the overall situation in relation to eLearning, for example, one specific dimension appeared to be the most influential with respect to how they finally approached eLearning. In these cases, the decision to allocate them to one of the categories was made taking into account the most influential dimension. Finally, it is important to say that allocating them to a ‘mostly adequate’ category does not mean they do not have reservations at all, in relation to factors influencing approaches to teaching or incorporation of eLearning. For example, they may be allocated to a ‘mostly adequate’ perception of the teaching situation in relation to eLearning, but still have reservations in terms of time needed to approach it properly (this was actually the case for most teachers). Table 36 shows how the interviewed teachers were allocated in relation to their perceptions of the teaching situation.

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From the Table, it is possible to see four groups of teachers, based on their perceptions of their teaching situation:

- One group that perceive the situation as mostly adequate both for teaching in general and with respect to eLearning (n=8, interviewees 1, 3, 5, 9, 10, 14, 17 and 18).
- One group that perceive the situation as mostly inadequate both for teaching in general and with respect to eLearning (n=3, interviewees 2, 6 and 8).
- One group that perceive the situation as mostly adequate for the face-to-face teaching and inadequate for teaching using eLearning (n=2, interviewees 4 and 11)
- One group that perceive the situation in a mix of unclear adequate and inadequate perceptions (n=5, interviewees 7, 12, 13, 15, 16)

6.4 Chapter Summary

This chapter presented factors influencing how university teachers incorporate and approach eLearning in their teaching, and factors influencing approaches to teaching more generally. Seven themes influencing how teachers incorporate eLearning in their face-to-face teaching emerged:

- Control of teaching.
- Institutional strategy.
- Technical support.
- Pedagogical support.
- Amount of time needed.
- Teacher’s skills for eLearning.
- Students’ ability and willingness to using eLearning.

Also, three themes related to teaching in general emerged in this study as well:

- Control of teaching.
- Students’ characteristics.
- Institutional support for teaching.
Teachers were then allocated to perceptions of the teaching situation in relation to teaching and eLearning as ‘mostly adequate’, ‘mostly inadequate’ or ‘unclear’. The next chapter reports the analysis of associations between conceptions, approaches and perceptions, for both face-to-face teaching and using eLearning.
Chapter 7: Associations between Conceptions, Approaches, Perceptions and Teachers’ Characteristics

This chapter advances the analysis conducted so far by investigating how conceptions, approaches, perceptions of the teaching situation and teachers’ characteristics are associated. In order to do that, I use elements from the analysis presented in chapter 4 (conceptions), 5 (approaches) and 6 (perception of the teaching situation), plus characteristics of university teachers interviewed described in chapter 3 (methods chapter). In the first section of this chapter, I explore how conceptions and approaches to teaching, face-to-face and online, are associated. In the second section, I explore how conceptions and approaches to blended teaching, as emerging from analyses conducted in chapters 4 and 5, are associated. In section three, blended teaching profiles are presented, based on associations described in the previous sections. Teaching profiles are understood as combinations of conceptions and approaches to teaching (face-to-face and/or online), which may be consonant or dissonant. In section four, I incorporate the perception of the teaching situation and teachers’ characteristics to explore how they are associated with blended teaching profiles. Finally, in section five, the results from the previous sections will be organised under the concept of ‘teaching orchestrations’.

7.1 Associations between conceptions of, and approaches to, teaching (both face-to-face and using eLearning)

In previous chapters, conceptions of, and approaches to, teaching face-to-face and using eLearning were presented and described. Associations between conceptions of teaching and conceptions of teaching using eLearning; and approaches to teaching and teaching using eLearning were presented as well. In this section, associations between conceptions of, and approaches to, teaching face-to-face and using eLearning are presented. Interviewees have been allocated to the highest conceptions and approaches they held, as found in the analysis carried out in previous chapters.

Regarding teaching face-to-face, Table 37 shows how conceptions of, and approaches to, teaching are associated.
Table 37: Associations between conceptions and approaches to teaching

<table>
<thead>
<tr>
<th>Conceptions of teaching</th>
<th>Approaches to teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher/content focused</td>
<td>Both content and learning focused</td>
</tr>
<tr>
<td>A</td>
<td>A/B</td>
</tr>
<tr>
<td>8, 6</td>
<td>16</td>
</tr>
<tr>
<td>11, 12, 13</td>
<td>15</td>
</tr>
<tr>
<td>17, 18</td>
<td>3, 7, 10, 14</td>
</tr>
</tbody>
</table>

Table 38 shows associations between conceptions of, and approaches to, teaching using eLearning.

Table 37 reveals three groups of teachers. The first group, which is highlighted in palest grey, conceives teaching in a ‘content focused’ way and approach it consonantly. The second group, in mid grey, presents dissonant associations between conceptions of and approaches to teaching. This group also presents dissonant descriptions of conceptions and/or dissonant descriptions of approaches. The third group, in darker grey, conceives and approaches teaching in a consonantly ‘learning focused’ manner. Groups one and three represent consonant associations between conceptions and approaches to teaching; while the second group represents dissonant associations.

Conceptions of teaching. Teaching as:
A. Transmitting basic information of the discipline
B. Transmitting lecturers’ understanding
C. Developing students’ understanding
D. Changing students’ understanding – Developing critical thinking

Approaches to teaching:
A. A teacher/content focused strategy with the intention of providing knowledge of the discipline.
B. A student/learning focused strategy with the intention of developing students’ understanding.
C. A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview.
### Table 38: Associations between conceptions and approaches to teaching using eLearning

<table>
<thead>
<tr>
<th>Conceptions of teaching using eLearning</th>
<th>Approaches to teaching using eLearning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information focused</td>
</tr>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Fragmented conceptions (content focused)</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>B1</td>
</tr>
<tr>
<td>Cohesive conceptions (learning focused)</td>
<td>B2</td>
</tr>
<tr>
<td></td>
<td>C</td>
</tr>
</tbody>
</table>

Conceptions of teaching using e-learning. E-learning as a medium:
- A. To provide information.
- B1. For occasional communication.
- B2. For online discussions.
- C. To support knowledge building tasks

Approaches to teaching using e-learning:
- A. An information focused strategy with the intention of providing easy access to course materials.
- B. An information focused strategy with the intention of providing access to up-to-date/quality materials.
- C. A communication focused strategy with the intention of having a space for asking questions – making announcements – keeping in touch.
- D. A communication focused strategy with the intention of engaging students in deep thinking through online discussions.
- E. A collaboration focused strategy with the intention of providing an online space for building knowledge.

Table 38 also reveals three groups of teachers. The first group, highlighted in palest grey, conceives and approaches teaching using eLearning in a consonantly ‘information focused’ manner. The second group, in mid grey, represents dissonant association between conceptions and approaches using eLearning. The third group, in darker grey, conceives and approaches teaching in a consonantly communication - collaboration focused manner. Groups one and three represent consonant associations between conceptions and approaches to teaching using eLearning, while the second group represents dissonant associations.

Therefore, associations between conceptions and approaches to teaching face-to-face and using eLearning have been revealed as consonant (‘learning focused’ or ‘content focused’) or dissonant. This analysis suggests that associations between conceptions and approaches would be mostly congruent. However, the data also reveal that associations which do not fit
with the theory or which seem incongruent can also be expected. The next section advances the analysis by investigating these associations at the meta-level of blended teaching.

7.2 Associations between conceptions of, and approaches to, blended teaching

The analysis presented in this section is aimed at investigating associations between conceptions of, and approaches to, blended teaching. In order to present this analysis, it is important to recall findings from chapter 4 and 5, which will be used here. In chapter 4, it was proposed that conceptions of blended teaching may be seen, at a meta-level, as emerging from associations between conceptions of teaching and conceptions of teaching using eLearning. Three conceptions of blended teaching were proposed in this form:

1. Blended teaching as a *disintegrated* way of supporting transmission of information.
2. Blended teaching as *dissonant* way of combining face-to-face and online teaching.
3. Blended teaching as an *embedded* way of promoting students’ understanding.

In chapter 5, it was proposed that associations found between approaches to teaching and approaches to teaching using eLearning would lead, at a meta-level, to three approaches to blended teaching:

1. A disintegrated/information focused approach to blended teaching.
2. A dissonant approach to blended teaching.
3. An embedded/learning focused approach to blended teaching.

In this analysis, interviewees have been allocated to conceptions of, and approaches to, blended teaching which emerged from the analysis carried out in previous chapters. The result is presented in Table 39.
Table 39: Associations between conceptions of and approaches to blended teaching

<table>
<thead>
<tr>
<th>Conceptions of blended teaching</th>
<th>Approaches to blended teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Disintegrated/information focused</td>
</tr>
<tr>
<td>Fragmented conception (content focused)</td>
<td>A 8, 6</td>
</tr>
<tr>
<td>Both information and learning focused</td>
<td>A 2</td>
</tr>
<tr>
<td>Cohesive conception (learning focused)</td>
<td>A</td>
</tr>
</tbody>
</table>

Conceptions of blended teaching. Blended teaching as:

A. A disintegrated way of supporting transmission of information
B. A dissonant way of combining face-to-face and online teaching
C. An embedded way of promoting students’ understanding

Approaches to blended teaching:

A. A disintegrated/information focused approach to blended teaching.
B. A dissonant approach to blended teaching.
C. An embedded/learning focused approach to blended teaching.

Table 39 reveals three groups. In the first one, highlighted in palest grey, conceptions of blended teaching which are focused on transmission of information are consonantly associated with approaches to blended teaching which are also focused on transmission of information. The second group, in mid grey, shows dissonant associations. These can be divided in three sub-categories. First, the conception of blended teaching described as dissonant is associated with an approach to blended teaching which is ‘information focused’. Second, the dissonant conception of blended teaching is associated with a dissonant approach to blended teaching. Third, the conception of blended teaching which is focused on learning is associated with a dissonant approach to blended teaching. This suggests different ‘sources’ of dissonance. I will refer to the ‘sources’ of dissonance in the next section. The third group, highlighted in darker grey, represents a group of teachers who hold a learning focused conception of blended teaching and a consonant approach. Table 39 also shows that individual teachers who appeared previously (Tables 37 and 38) as having dissonant associations in face-to-face and/or online teaching are the ones who presented dissonant blended teaching profiles. This highlights the fact that blended teaching associations are built upon previous analyses on face-to-face and online settings.
In summary, university teachers present associations between conceptions and approaches to blended teaching that may be consonantly information focused, dissonant, or consonantly learning focused. These associations may be seen as blended teaching profiles and are described in the next section.

7.3 **Blended teaching profiles**

Three profiles emerged from associations found between conceptions and approaches to blended teaching: systematically information focused, dissonant; and systematically learning focused. They are described next.

7.3.1 **Profile 1: Systematically information focused**

A ‘systematically information focused’ profile represents consonant associations between conceptions and approaches, both teaching face-to-face and using eLearning, which are focused on content and transmission of information. Teaching is conceived as transmission of the discipline or of the lecturer’s knowledge, and eLearning is, congruently, seen as a medium for delivering of information. Consonantly, approaches to teaching face-to-face and using eLearning are focused on transmission of information. This profile is consonantly ‘information focused’, considering teaching face-to-face and using eLearning separately; and at a meta-level: when combining conceptions of teaching and teaching using eLearning and/or approaches to teaching and teaching using eLearning. It was held by two teachers (teachers 6 and 8).

7.3.2 **Profile 2: Dissonant**

Five dissonant profiles emerged from associations between conceptions and approaches analysed previously. This profile is held by 8 teachers (2, 4, 7, 11, 12, 13, 15 and 16). Each profile is described below.
7.3.2.1 Dissonant profile A (n=1; teacher 2)

This sub-profile represents a teacher whose conception of teaching involves elements of fragmented (content focused) and cohesive (learning focused) conceptions; combined with approaches to teaching (face-to-face and online), and conceptions of teaching using eLearning which are focused on transmission of information. In this case, the ‘source’ of dissonance is conceiving teaching in face-to-face settings including elements of both content and learning focused conceptions. This first dissonant blended teaching profile can be described overall as towards a ‘content-information focused’ description of teaching.

7.3.2.2 Dissonant profile B (n=3; teachers 11, 12 & 13)

This sub-profile represents teachers who conceive of and approach teaching face-to-face in a dissonant manner. They conceive teaching in a way that combines elements of fragmented (content focused) and cohesive (learning focused) conceptions and they describe their approaches to teaching as being focused both on content and learning. At the same time, they hold consonantly ‘information focused’ conceptions and approaches to teaching using eLearning. In this case, the ‘source’ of dissonance is in teaching face-to-face. In this profile, it seems that teachers are unclear regarding what they think of, and how they approach, their teaching in face-to-face settings; and when coming to eLearning they just decide use it in a mainly ‘informative’ manner. It is unclear whether this profile would be towards ‘information’ or ‘learning focused’. Therefore, this profile can be described as a genuinely dissonant one.

7.3.2.3 Dissonant profile C (n=1; teacher 15)

This sub-profile represents one university teacher who conceives teaching by combining elements of fragmented (content focused) and cohesive (learning focused) conceptions, and who describes approaches to teaching focused both on content and learning. eLearning is conceived in a ‘communication/collaboration’ focused manner but the approach adopted is an ‘information focused’ one. In this case, teaching face-to-face and using eLearning become ‘sources’ of dissonance. As in the case of profile B, it is unclear whether this profile would be
towards ‘information’ or ‘learning focused’. Therefore, this profile can also be described as a genuinely dissonant one.

7.3.2.4  **Dissonant profile D (n=1; teacher 16)**

This sub-profile represents one teacher who conceives teaching as involving elements of fragmented (content focused) and cohesive (learning focused) conceptions, and who describes approaches to teaching focused both on content and learning. However, eLearning is deployed in a consonantly ‘learning focused’ manner. The ‘source’ of dissonance in this case is in teaching face-to-face. As in the case of the previous two profiles, it is also difficult to see if this one may be classified as being closer to an ‘information’ or ‘learning focused’ profile. Therefore, it is considered as genuinely dissonant.

7.3.2.5  **Dissonant profile E (n=2; teachers 4 and 7)**

This sub-profile represents consonant associations between conceptions and approaches to teaching face-to-face, but dissonant associations between conceptions and approaches in teaching via eLearning. Teaching is conceived as facilitating understanding and the approach adopted is congruent. However, eLearning is conceived in a ‘learning focused’ way but the approach adopted is ‘information focused’. The ‘source’ of dissonance is the eLearning teaching. Consonant associations in face-to-face teaching, and the understanding of eLearning for promoting students’ learning, would lead one to think that the obvious approach to teaching using eLearning would be focused on learning. However, the situation described in the interviews presents a different picture and leads to a categorisation of dissonance. This dissonant blended teaching profile can be described overall as towards a ‘learning focused’ position.

7.3.3  **Profile 3: Systematically learning focused**

‘Systematically learning focused’ profiles represent associations between conceptions and approaches, both in teaching face-to-face and using eLearning, which are focused on learning and on developing students’ understanding. Teaching is conceived as facilitation of students’ learning, and eLearning, congruently, is seen as a medium for engaging students in tasks
which promote deep learning. Consonantly, approaches to both face-to-face and online teaching are focused on developing understanding and on learning facilitation. This profile is consonantly ‘learning focused’ when combining conceptions and approaches to teaching, and when combining conceptions of, and approaches to, teaching using eLearning. It is also consonantly ‘learning focused’ at a meta-level: when combining conceptions of teaching and teaching using eLearning and/or approaches to teaching and teaching using eLearning.

There is, however, one difference in these profiles that needs to be accounted for. It is not related to how they combine conceptions and approaches at a single and/or meta-levels, but is related to the level of reflection they represent with respect to their teaching. The first group (profile B; teachers 3, 14 and 17) represents teachers who think and approach their teaching in a reflective manner. They had a clear understanding of the theoretical basis of their teaching and had spent time attending seminars, workshops, systematically sharing ideas with colleagues and even undertaking degrees in the area of university teaching. The second group (profile A; teachers 1, 5, 9, 10 and 18) represented a ‘consonantly learning focused’ profile also, but the reflective feature did not emerge in the interviews. Systematically learning focused profiles were held by 8 teachers (1, 3, 5, 9, 10, 14, 17 and 18). In Table 40, a summary of profiles described in this section is presented. It also helps with visualising how the profiles in the extremes are consonant as well as the ‘source’ of dissonance for dissonant profiles.

### Table 40: Summary of blended teaching profiles

<table>
<thead>
<tr>
<th>Profile</th>
<th>Face-to-face</th>
<th>E-learning</th>
<th>Meta level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematically information focused</td>
<td>Consonant (IF)</td>
<td>Consonant (IF)</td>
<td>Consonant (IF)</td>
</tr>
<tr>
<td>Dissonant A</td>
<td>Dissonant (IF/LF)</td>
<td>Consonant (IF)</td>
<td>Dissonant (IF/LF)</td>
</tr>
<tr>
<td>Dissonant B</td>
<td>Dissonant (IF/LF)</td>
<td>Consonant (IF)</td>
<td>Dissonant (IF/LF)</td>
</tr>
<tr>
<td>Dissonant C</td>
<td>Dissonant (IF/LF)</td>
<td>Dissonant (IF/LF)</td>
<td>Dissonant (IF/LF)</td>
</tr>
<tr>
<td>Dissonant D</td>
<td>Dissonant (IF/LF)</td>
<td>Consonant (IF/LF)</td>
<td>Dissonant (IF/LF)</td>
</tr>
<tr>
<td>Dissonant E</td>
<td>Consonant (LF)</td>
<td>Dissonant (IF/LF)</td>
<td>Dissonant (IF/LF)</td>
</tr>
<tr>
<td>Systematically learning focused A</td>
<td>Consonant (LF)</td>
<td>Consonant (LF)</td>
<td>Consonant (LF)</td>
</tr>
<tr>
<td>Systematically learning focused B</td>
<td>Consonant (LF)</td>
<td>Consonant (LF)</td>
<td>Consonant (LF)</td>
</tr>
</tbody>
</table>

IF: information focused.
LF: learning focused
In summary, teachers hold blended teaching profiles which may be ‘systematically information focused’, ‘dissonant’ (with 5 possible types) and ‘systematically learning focused’ (with 2 possible types). The next step examines how these profiles are associated with the perception of the teaching situation.

7.4 Associations between blended teaching profiles, perceptions of the teaching situation and teachers’ characteristics

In this section, I explore associations between blended teaching profiles, perceptions of the teaching situation and teachers’ characteristics. Results from previous analyses and information gathered have been crosstabulated and presented in Table 43. Blended teaching profiles emerged from the analysis presented in the previous section. The perception of the teaching situation, both in general and specifically related to eLearning, was analysed in chapter 6 and teachers were allocated to categories which represent a ‘mostly adequate’, ‘unclear’ or ‘mostly inadequate’ perception of their context for teaching. Information on teachers’ characteristics was previously presented in chapter 3, when describing the qualitative sample.

In relation to blended teaching profiles and perceptions of the teaching situation, Table 43 suggests a clear picture:

1. ‘Systematically information focused’ profiles are associated with ‘mostly inadequate’ perceptions of the teaching situation, in relation to both face-to-face teaching and using eLearning.
2. ‘Dissonant’ profiles are associated with perceptions of the teaching situation which combine ‘mostly adequate’, ‘unclear’ and ‘mostly inadequate’ perceptions, without a clear pattern.
3. ‘Systematically learning focused’ profiles are associate with ‘mostly adequate’ perceptions of the teaching situation, in relation to both face-to-face teaching and using eLearning.

Table 41 also reveals that, in relation to teachers’ characteristics:
1. ‘Systematically information focused’ profiles are associated with teachers from ‘hard’ disciplines and with longer term experience of teaching.

2. Half of the ‘dissonant’ profiles are associated with teachers who are mostly new to teaching (less than five years experience and in lower level academic positions). The other half of teachers with ‘dissonant’ profiles have more than ten years of experience and come mainly from ‘applied soft’ disciplines.

3. ‘Systematically learning focused’ profiles are associated with teachers from ‘applied soft’ disciplines and with more than five years of teaching experience.
### Table 41: Blended teaching profiles, perceptions of the teaching situation, and teachers’ characteristics

<table>
<thead>
<tr>
<th>Profiles</th>
<th>Perception of the teaching situation</th>
<th>Perception of the teaching situation (eLearning)</th>
<th>Teachers’ characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mostly adequate</td>
<td>Unclear</td>
<td>Mostly inadequate</td>
</tr>
<tr>
<td>A</td>
<td>6</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>B</td>
<td>2</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>C</td>
<td>12</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>D</td>
<td>14</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>A</td>
<td>1</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>B</td>
<td>3</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>
Table 42 presents a summary of the main issues that led to the classification of perceptions of the teaching situation as ‘mostly adequate’, ‘unclear’ or ‘mostly inadequate’.

Table 42: Teaching profiles and perceptions of the teaching situation

<table>
<thead>
<tr>
<th>Perception of the teaching situation</th>
<th>Perception of the teaching situation (eLearning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systematically information focused profiles</td>
<td>- Lack of control over their teaching due to external pressures (accreditation bodies, fixed curriculum). - Lack of Faculty commitment: teaching hours cut.</td>
</tr>
<tr>
<td>Dissonant profile A</td>
<td>- Students with very diverse academic and language backgrounds</td>
</tr>
<tr>
<td>Dissonant profile B</td>
<td>- Students with very diverse academic and language backgrounds - Students perceived as passive</td>
</tr>
<tr>
<td>Dissonant profile C</td>
<td>- Good Faculty support for teaching. - Students perceived positively</td>
</tr>
<tr>
<td>Dissonant profile D</td>
<td>- Students perceived working towards ‘minimum effort’.</td>
</tr>
<tr>
<td>Dissonant profile E</td>
<td>- Institutional commitment with good teaching. - Good Faculty support for engaging in meaningful teaching (training, recognition, time allocation).</td>
</tr>
<tr>
<td>Systematically learning focused profiles</td>
<td>- Institutional commitment with good teaching. - Good Faculty support for engaging in meaningful teaching (training, recognition, time allocation).</td>
</tr>
</tbody>
</table>

In conclusion, the perception of the teaching situation seems to be associated with blended teaching profiles held by university teachers. Those presenting ‘systematically information focused’ profiles had negative perceptions of their teaching situation; while those presenting ‘systematically learning focused’ profiles tended to present positive perceptions. Teachers who held dissonant profiles tended to present a wider variety of perceptions of their teaching
situation. However, this seemed to affect specific aspects of their teaching experience, triggering dissonance. At the same time, teachers’ characteristics seemed to be associated with teaching profiles. ‘Information focused’ ones seemed to be more related to ‘hard’ disciplines and teachers with long term experience, while ‘learning focused’ profiles seemed to be related to ‘applied soft’ disciplines and teachers with a medium to long teaching experience. ‘Dissonant’ profiles seemed to be related to newer teachers. However, this was not the case for half of the teachers with ‘dissonant’ profiles and, probably, there are other elements which may explain dissonance better in the case of these teachers: for example, teachers in ‘dissonant’ profile E. In this case, specific situations (upgrade of the LMS, bad previous experiences with online discussions) led to dissonance. The next section will combine the elements analysed so far, under the concept of ‘teaching orchestrations’.

### 7.5 Teaching orchestrations in blended learning environments

In this chapter, blended teaching profiles emerged from the analysis of associations between conceptions and approaches to teaching face-to-face and using eLearning. Consonant and dissonant profiles were described depending on the associations found between these elements. The perception of the teaching situation and teachers’ characteristics were then associated with profiles. Results suggested that perceptions of the teaching situation and teachers’ characteristics were associated with teaching profiles. In this section, these elements are analysed again using the concept of ‘teaching orchestration’. This refers to how university teachers ‘orchestrate’ their teaching given their conceptions, approaches, perceptions and, in the case of this analysis, their characteristics. The analysis previously conducted suggests three ‘teaching orchestrations’:

- A consonant (information focused) and coherent orchestration of teaching in blended learning environments.
- A dissonant and coherent orchestration of teaching in blended learning environments.
- A consonant (learning focused) and coherent orchestration of teaching in blended learning environments.

These are described below.
7.5.1.1 **Consonant (information focused) and coherent teaching orchestration in blended learning environments**

This represents an orchestration composed by a ‘systematically information focused’ profile and a negative perception of the teaching situation. Conceptions and approaches to teaching face-to-face and using eLearning are focused on transmission of information. The teaching situation is perceived as affording transmission and it is, therefore, coherent with the teaching profile. Teachers’ characteristics also seem to influence how teachers approach teaching. Both teachers were teaching ‘hard’ disciplines and had been university teachers for a long time. In practical terms, this orchestration would look like the following: teachers who think of their teaching in terms of transmission of the knowledge of their discipline and see eLearning as a medium for information delivery. They approach teaching consonantly; focusing on the content needed to be taught and providing students with the information they need to be ‘filled’ with. eLearning is used as a delivery medium where lecture notes are uploaded to the unit’s website and links to external websites may be provided. How they approach teaching is coherent with their perception of the teaching situation. They tend to have a negative perception. They perceive lack of control over teaching as they need to follow strict curriculum guidelines. Also, lack of institutional support is perceived; decreasing hours for teaching is seen as making it a problem for them to cover the prescribed curriculum. Students are seen as coming from different academic backgrounds which make teaching more difficult, since some of the students do not have relevant prior knowledge. In relation to eLearning, these teachers perceive their context as not providing support for embracing a meaningful use of learning technologies. Finally, it is important to mention that these teachers were teaching in ‘hard’ pure disciplines, which have traditionally been associated with information focused forms of teaching (Becher & Trowler, 2001; Lindblom-Ylänne, 2006).

7.5.1.2 **Dissonant and coherent teaching orchestration in blended learning environments**

This represents an orchestration composed by ‘dissonant’ profiles which may represent dissonant associations between conceptions of, and approaches to, teaching face-to-face or using eLearning; or at the meta-level (dissonant combinations of teaching face-to-face and using eLearning). Conceptions and/or approaches to teaching face-to-face may be focused at
the same time on transmission of information and developing understanding; and conceptions and/or approaches to teaching using eLearning may be focused at the same time on information transmission or communication/collaboration. These dissonant associations were previously analysed and led to five ‘dissonant’ blended teaching profiles. The perception of the teaching situation was negative in at least one key aspect, which analyses of transcripts suggested led to dissonance. Teacher characteristics also seemed to be associated, since half of the teachers were young, and newer to teaching. How this orchestration would look in practice is illustrated next, using three examples:

1. Teachers who think of their teaching both in terms of transmission of knowledge and developing students’ understanding, but when approaching teaching they do it focusing on transmission only. The analysis suggests that the perception that students do not have enough background knowledge or sufficient language skills, (a significant number being of international or immigrant origin), to engage in higher level understanding would prevent deploying a more sophisticated approach to teaching. At the same time, eLearning is not conceived as having sufficient value for it to make sense to deploy online activities aimed at fostering learning. Therefore, an ‘information focused’ approach is adopted. This is an orchestration that may be classified as approximating a ‘content-information focused’.

2. Teachers who think of their teaching as combining elements of transmission of knowledge and developing students’ learning; and who may also approach teaching by combining elements of transmission and developing students understanding. This position may be represented by teachers who want to change students’ understanding about what is being taught, but think this may be realised by transmitting information; or teachers who have the intention of approaching teaching in a more ‘learning focused’ manner, but whose perceptions of students working with ‘the minimum possible effort’ led them to focus mainly on ‘information transmission’. In relation to eLearning, there were different uses, in some cases in an ‘information focused’ manner and in others in a ‘communication-collaboration focused’ way. Negative perceptions of the situation for eLearning were mostly present. Teachers’ characteristics seem to be important in this type of orchestration. Teachers were very new to teaching or had many years of teaching experience. This may suggest that they are trying to adapt to changing demands for teaching and, in doing so, they develop dissonant orchestrations.
3. Teachers who think of their teaching in terms of developing students’ understanding and approach it congruently, also thinking that eLearning may help them in developing students’ understanding. However, the approach to eLearning these teachers adopt is ‘information focused’. These teachers also have a positive perception of the general context for teaching; but the analysis suggests that specific contextual issues related with eLearning, such as technical problems or previous bad experiences, led them to avoid more advanced approaches and to use learning technologies merely for provision of information. This is an orchestration that may be classified as ‘learning focused’.

7.5.1.3 **Consonant (learning focused) and coherent teaching orchestration in blended learning environments**

This represents an orchestration composed by a ‘systematically learning focused’ profile and a positive perception of the teaching situation. Conceptions of, and approaches to, teaching face-to-face and using eLearning are focused on students’ learning. The teaching situation is perceived as affording the promotion of learning, so it is coherent with the teaching profile. Teachers’ characteristics seem to be associated, as most of the teachers here were teaching ‘soft’ disciplines. In practice, this orchestration would be one in which teachers think of their teaching as facilitation of learning and also see eLearning as a medium to support learning. They approach teaching consonantly, focusing on developing understanding and facilitating the process of learning. eLearning is used as a medium for learning-related communication and/or for engaging in collaborative tasks which lead to the creation of something: reports, blogs, e-posters, etc. Their approaches to teaching are coherent with how they perceive their teaching situation. They perceive institutional commitment to good teaching and support for engagement in fostering quality learning experiences. In relation to eLearning, they also have positive perceptions. They reported clear and agreed institutional strategies and high quality support for exploring and incorporating eLearning in their teaching.

In summary, three ‘teaching orchestrations in blended learning environments’ were identified in this section. These emerged from analysis of associations between conceptions, approaches, perceptions of the teaching situation, and teachers’ characteristics. These orchestrations were ‘consonantly information focused’, ‘dissonant’ or ‘consonantly learning
focused’. None of the three presented an incoherent relation between approaches and the perception of the teaching situation. It is important to mention that teaching orchestrations proposed here are conceived to represent how the elements of the experience of teaching articulate in very specific contexts and at an individual level. They may change if some element is changed. For example, it would be possible to conjecture that a dissonant orchestration may become a consonant one if elements hindering a ‘communication/collaboration focused’ approach are changed (e.g. making smoother the upgrade of the LMS or showing how a teacher can make online discussions less time consuming).

7.6 Chapter summary

In this chapter, I explored associations between the elements of the teaching experience: conceptions, approaches, perception of the teaching situation and teachers’ characteristics. It was found that associations between conceptions of, and approaches to, teaching and teaching using eLearning may be ‘information focused’, ‘dissonant’ or ‘learning focused’. Three blended teaching profiles were proposed: ‘systematically content focused’, ‘dissonant’ (with five variants) and ‘systematically learning focused’ (with two variants). Analysis of the perception of the teaching situation and teachers’ characteristics suggested that they were associated with teaching profiles. The analysis of teaching profiles, perceptions and teachers’ characteristics led to the identification of three ‘teaching orchestrations’ deployed by the teachers when teaching in blended learning environments. These can be described as:

- ‘Consonant (content focused) and coherent orchestration’.
- ‘Dissonant and coherent orchestration’.
- ‘Consonant (learning focused) and coherent orchestration to teaching in blended learning environments.'
Chapter 8: Development of an ‘approaches to teaching using eLearning’ questionnaire

This chapter describes the development of the ‘approaches to teaching using eLearning’ questionnaire. It focuses on explaining why this questionnaire was needed and establishing the validity and reliability of the novel scales. Four sections are included. In the first section, the background to the development of the questionnaire is presented. In the second, the face validity analysis conducted is described. In the third section, results of unidimensionality analyses, conducted at the level of items and scales and using principal components and maximum likelihood factor analysis are presented. In section four, reliability analysis of scales, conducted using Cronbach’s alpha is presented. The chapter ends with a summary of the main findings.

8.1 Background

The aim of developing this questionnaire was to explore how approaches to teaching using eLearning were associated with approaches to teaching and perceptions of the teaching situation. It was conjectured that:

- Teachers adopting ‘information focused’ approaches in their face-to-face teaching would tend to approach teaching using eLearning consonantly; and would have a negative perception of their teaching situation.
- Teachers adopting ‘learning focused’ approaches to their face-to-face teaching would tend to approach teaching using eLearning consonantly; and would have a positive perception of their teaching situation.
- There may be some level of dissonance and/or incoherence in how teachers approach teaching and perceive their teaching situation.

The basis for developing the questionnaire was the outcomes of the qualitative study conducted previously on experiences of teaching in blended learning environments. Particularly relevant was the outcome space discovered when conducting the analysis on
approaches to teaching using eLearning. Through this analysis, three strategies and five intentions emerged. Strategies were: ‘information focused’, ‘communication focused’ and ‘collaboration focused’. Intentions were: ‘providing easy access to course materials’, ‘providing access to up-to-date/quality materials’, ‘having a space for asking questions - making announcements - keeping in touch’, ‘engaging students in deep thinking through online discussions’ and ‘providing online spaces for building knowledge’. Combinations of strategies and intentions generated five approaches to teaching using eLearning. Approaches to teaching using eLearning were grouped and called ‘information focused’ and ‘communication/collaboration focused’ approaches when conducting qualitative analyses on associations between conceptions, approaches and perceptions. The first approach used eLearning for transmission of information while the second focussed on supporting learning.

Having the above-mentioned results as the basis for developing the questionnaire, the first step was to create a pool of items reflecting intentions and strategies. It is important to mention that, at this stage, I decided to combine the intentions ‘providing easy access to course materials’ and ‘providing access to up-to-date/quality materials’; as they represented very similar intentions and, when asking people to answer the questionnaire, this may have led to confusion. As described in Chapter 3, a set of 70 items was developed, representing three strategies and the four intentions (including the combined ones).

8.2 Face validity analysis

The pool of 70 items was sent to a group of 6 experts in the area of eLearning and university learning and teaching. They were asked to grade each item in terms of high, moderate or low relevance for what they were intended to measure. They were also asked for comments in relation to wording and complexity at the level of each item as well as comments on the strategy – intention structure. This step produced three outcomes:

- Deletion of items seen as irrelevant (rated mostly low) or problematic (comments highlighting inconsistencies or problems). Thirty-four items were deleted after careful evaluation of comments and ratings.
- Rewording of 10 items, again based on consideration of the comments received.
- Deletion of the scale for the intention of ‘having a space for asking questions - making announcements - keeping in touch’. This was decided after consideration of comments from two of the reviewers. For them, this scale was unclear and seemed to contain elements from the ‘providing easy access to materials’ intention scale and the ‘engaging students in deep thinking’ scale. The 6 items which composed this scale were deleted.

The outcome of this stage was positive as it yielded a shorter (30 item) and more compact instrument with six clear scales representing three intentions and three strategies. In total 40 items were deleted and 10 were reworded.

The remaining items were then sent to the teachers who had been interviewed for the qualitative stage of the research (n=18). The aim of this step was to have an initial trial of the questionnaire. Also, it was used to check if scores in the scales reflected the descriptions they had previously provided regarding their approaches to teaching using eLearning. At the same time, they were asked for suggestions about the items-scales. Seven lecturers completed the questionnaires. Table 43 shows the scores they got on each of the scales. Approaches to teaching using eLearning and their corresponding scales will be called: ‘information focused’ (scales: ‘information intention’ and ‘information strategy’); ‘communication focused’ (scales: ‘communication intention’ and ‘communication strategy’); and ‘collaboration focused’ (scales: ‘collaboration intention’ and ‘collaboration strategy’).

<table>
<thead>
<tr>
<th>Interviewee</th>
<th>In qualitative study allocated as:</th>
<th>II</th>
<th>IS</th>
<th>CI</th>
<th>CS</th>
<th>CoI</th>
<th>CoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Com-Coll focused approach</td>
<td>2.8</td>
<td>5</td>
<td>2.6</td>
<td>2.8</td>
<td>4.6</td>
<td>4.3</td>
</tr>
<tr>
<td>3</td>
<td>Com-Coll focused approach</td>
<td>4</td>
<td>5</td>
<td>2.4</td>
<td>2.2</td>
<td>3.4</td>
<td>1.3</td>
</tr>
<tr>
<td>5</td>
<td>Com-Coll focused approach</td>
<td>5</td>
<td>5</td>
<td>4.2</td>
<td>3.8</td>
<td>5</td>
<td>3.8</td>
</tr>
<tr>
<td>10</td>
<td>Com-Coll focused approach</td>
<td>3</td>
<td>4</td>
<td>3.8</td>
<td>3.7</td>
<td>2.2</td>
<td>3.3</td>
</tr>
<tr>
<td>18</td>
<td>Com-Coll focused approach</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>4.5</td>
<td>3.8</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Information focused approach</td>
<td>4.5</td>
<td>5</td>
<td>1.4</td>
<td>1.3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>Information focused approach</td>
<td>5</td>
<td>5</td>
<td>3</td>
<td>1.8</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

II=information intention; IS=information strategy
CI=communication intention; CS=communication strategy
CoI=collaboration intention; CoS=collaboration strategy
In chapter 5, it was stated that there was a hierarchy in strategies but the interviewed university teachers adopted one or another intention. For example, a teacher who held an intention of providing an online space for knowledge building would present a ‘collaboration focused’ strategy; but also elements of ‘communication’ and ‘information focused’, as she/he would provide materials online and make use of discussion boards. Therefore, what rules is the intention of the teacher in using eLearning. Table 45 shows that interviewees 1 and 5, who previously were allocated to the approach ‘a collaborative learning strategy with the intention of providing an online space for building knowledge’, turn out to have the higher scores on the ‘collaboration intention’ scale. Interviewees 10 and 11, who were previously allocated to the approach labelled ‘a communication focused strategy with the intention of engaging students in deep thinking’ have high scores on the ‘communication intention scale’. Interviewees 8 and 12 who were allocated to the approaches labelled ‘an information focused strategy with the intention of providing easy access to course materials’ and ‘an information focused strategy with the intention of providing access to up-to-date/ quality materials’ respectively, appear with high scores on the ‘information intention’ scale. Interviewee 3 who was allocated previously to the approach labelled ‘a collaborative learning strategy with the intention of providing an online space for building knowledge’, has the highest score on the ‘information intention’ scale. These results, with the exception of interviewee 3, suggest that there is an appropriate level of agreement between the approaches to which these teachers were previously allocated and their responses to the ‘approaches to teaching using eLearning’ questionnaire.

A further expert judgement was sought. On this occasion I wanted to ensure that the structure of the questionnaire was clear and understandable. Three experts were asked to allocate the items to the ‘information’, ‘communication’ or ‘collaboration’ approach; and then to one intention or strategy. Allocations made by this group of experts suggested that the structure of the questionnaire, in terms of reflecting three approaches to teaching using eLearning, was clear. Comments were also provided which led to the deletion of one item and rewording of another five. A list of the original items, including those deleted or reworded, as well as the final list of items sent to the intended population, is presented as an appendix.

The remaining items were sent out, together with the ‘approaches to teaching’ inventory and the ‘perception of the teaching situation’ questionnaire (see Chapter 3). Eighty-six university teachers answered.
8.3 Unidimensionality analysis

A unidimensionality analysis was conducted both at the level of the individual items of each scale and with the summated scales as variables. At the level of items, the aim was to explore whether they conformed to single factors. At the level of the scales, the aim was to explore if they grouped together coherently with the structure of intentions and strategies that emerged from the qualitative analysis. These analyses are presented next.

8.3.1 Analysis at the level of items composing single scales

8.3.1.1 ‘Information intention’ scale

The correlation matrix showed medium positive associations between all the items. Both principal components analysis and maximum likelihood analysis indicated the unidimensionality of the scale. Loadings were high when principal components analysis was used (all four items with loadings over .7); and less high but still at a good level if employing maximum likelihood analysis (ranging from .57 to .63). The sampling adequacy turned out to be good (KMO=.73). Most communalities were over .5 when principal components analysis was used; but decreased to lower levels (.4 or below) when employing maximum likelihood factor analysis. These results are presented in Tables 44, 45 and 46.
Table 44: Correlation matrix (‘information intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I1 I think WebCT provides an opportunity for making academic resources widely available, such as lecture notes, readings, handouts, etc.

I2 WebCT, and/or other online tools or resources, allows me to keep students updated about things happening during the semester: changing times or rooms, invited speakers, future activities, etc.

I3 I think WebCT makes providing administrative information to students easier

I4 I think WebCT, and/or other online tools or resources, is good to upload resources as they are developed or become available during the semester

*p<.05; **p<.01

Table 45: Principal components factor analysis (‘information intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I1 I think WebCT provides an opportunity for making academic resources widely available, such as lecture notes, readings, handouts, etc.

I2 WebCT, and/or other online tools or resources, allows me to keep students updated about things happening during the semester: changing times or rooms, invited speakers, future activities, etc.

I3 I think WebCT makes providing administrative information to students easier

I4 I think WebCT, and/or other online tools or resources, is good to upload resources as they are developed or become available during the semester

KMO = .73. Eigen values over 1, 52% variance explained, n = 86
Table 46: Maximum likelihood factor analysis (‘information intention’ scale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I think WebCT provides an opportunity for making academic resources widely available, such as lecture notes, readings, handouts, etc.</td>
<td>.57</td>
<td>.32</td>
</tr>
<tr>
<td>I2 WebCT, and/or other online tools or resources, allows me to keep students updated about things happening during the semester: changing times or rooms, invited speakers, future activities, etc.</td>
<td>.63</td>
<td>.40</td>
</tr>
<tr>
<td>I3 I think WebCT makes providing administrative information to students easier</td>
<td>.61</td>
<td>.38</td>
</tr>
<tr>
<td>I4 I think WebCT, and/or other online tools or resources, is good to upload resources as they are developed or become available during the semester</td>
<td>.59</td>
<td>.34</td>
</tr>
</tbody>
</table>

No rotation as one factor only formed. KMO = .73
Eigen values over 1, 52% variance explained, n = 86

8.3.1.2 ‘Information strategy’ scale

The correlation matrix showed low to medium positive associations between items I1, I4 and I5. Items I2 and I3 did not present any correlation. Using both principal components and maximum likelihood analyses, a two factor structure emerged. Principal components showed: items I1, I4 and I5 loading on factor one; and items I2 and I3 loading on factor 2. Maximum likelihood factor analysis showed: items I1, I4 and I5 loading on factor 1; and item I3 loading on factor 2. It is important to notice that in the maximum likelihood factor analysis communalities are too low. These results are presented in Tables 47, 48 and 49.
Table 47: Correlation matrix (‘information strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
<th>I5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 Information about important unit dates, such as, assignments deadlines, exam dates, etc; is available in WebCT</td>
<td>.074</td>
<td>.008</td>
<td>.246*</td>
<td>.259*</td>
<td></td>
</tr>
<tr>
<td>I2 Students are directed to external websites containing information for this unit</td>
<td>.143</td>
<td>.066</td>
<td>-.041</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3 My lecture notes are online for the students to access them</td>
<td>.129</td>
<td>.014</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4 In this unit, handouts, tutorial guides and/or other academic materials are uploaded to WebCT, and/or to other online tools</td>
<td></td>
<td></td>
<td></td>
<td>.366**</td>
<td></td>
</tr>
<tr>
<td>I5 The unit’s outline is available online for students</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

Table 48: Principal components factor analysis (‘information strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 Information about important unit dates, such as, assignments deadlines, exam dates, etc; is available in WebCT</td>
<td>.65</td>
<td>.42</td>
<td></td>
</tr>
<tr>
<td>I2 Students are directed to external websites containing information for this unit</td>
<td></td>
<td>.75</td>
<td>.56</td>
</tr>
<tr>
<td>I3 My lecture notes are online for the students to access them</td>
<td></td>
<td>.75</td>
<td>.56</td>
</tr>
<tr>
<td>I4 In this unit, handouts, tutorial guides and/or other academic materials are uploaded to WebCT, and or other online tools</td>
<td>.74</td>
<td></td>
<td>.59</td>
</tr>
<tr>
<td>I5 The unit’s outline is available online for students</td>
<td>.78</td>
<td></td>
<td>.62</td>
</tr>
</tbody>
</table>

Loadings less than .5 were omitted.
Varimax Rotation. KMO = .58
Eigen values over 1, 55.2% variance explained, n = 86
Table 49: Maximum likelihood factor analysis (‘information strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 Information about important unit dates, such as, assignments deadlines, exam dates, etc; is available in WebCT</td>
<td>.40</td>
<td></td>
<td>.16</td>
</tr>
<tr>
<td>I2 Students are directed to external websites containing information for this unit</td>
<td></td>
<td></td>
<td>.10</td>
</tr>
<tr>
<td>I3 My lecture notes are online for the students to access them</td>
<td></td>
<td>.45</td>
<td>.20</td>
</tr>
<tr>
<td>I4 In this unit, handouts, tutorial guides and/or other academic materials are uploaded to WebCT, and or other online tools</td>
<td>.61</td>
<td></td>
<td>.41</td>
</tr>
<tr>
<td>I5 The unit’s outline is available online for students</td>
<td></td>
<td>.64</td>
<td>.43</td>
</tr>
</tbody>
</table>

Loadings less than .4 were omitted.
Promax Rotation. KMO = .58
Eigen values over 1, 55.2% variance explained, n = 86

Items not loading on factor one were eliminated and principal components and maximum likelihood analyses were run again with the three remaining items. This led to a reduction in the number of items from five to three. Results of principal components analysis showed quite heavy loadings (ranging from .66 to .76); while results from the maximum likelihood analysis were less strong (ranging from .42 to .62). Also, it should be noticed that communalities were too low on the maximum likelihood analysis.

Table 50: Principal components factor analysis of the remaining items (‘information strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 Information about important unit dates, such as, assignments deadlines, exam dates, etc; is available in WebCT</td>
<td>.66</td>
<td>.43</td>
</tr>
<tr>
<td>I4 In this unit, handouts, tutorial guides and/or other academic materials are uploaded to WebCT, and or other online tools</td>
<td>.76</td>
<td>.57</td>
</tr>
<tr>
<td>I5 The unit’s outline is available online for students</td>
<td>.76</td>
<td>.58</td>
</tr>
</tbody>
</table>

KMO = .61
Eigen values over 1, 52.8% variance explained, n = 86
### Table 51: Maximum likelihood analysis of the remaining items (‘information strategy’ scale)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 Information about important unit dates, such as, assignments deadlines, exam</td>
<td>.42</td>
<td>.17</td>
</tr>
<tr>
<td>dates, etc; is available in WebCT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4 In this unit, handouts, tutorial guides and/or other academic materials are</td>
<td>.59</td>
<td>.35</td>
</tr>
<tr>
<td>uploaded to WebCT, and or other online tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I5 The unit’s outline is available online for students</td>
<td>.62</td>
<td>.39</td>
</tr>
</tbody>
</table>

KMO = .61  
Eigen values over 1, 52.8% variance explained, n = 86

### 8.3.1.3 ‘Communication intention’ scale

The correlation matrix showed high positive associations between all the items. Both principal components and maximum likelihood analysis indicated the unidimensionality of the scale. In both analyses, the items formed one factor only. Loadings were very high when conducting principal components analysis (all above .78) and high when employing maximum likelihood analysis (all items over .68). Sampling adequacy was good (KMO=.85). Communalities were quite high on the principal components analysis (all above .61) and high on the maximum likelihood analysis (all but item 5 above .5). These results are presented in Tables 52, 53 and 54.
### Table 52: Correlation matrix (‘communication intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
<th>I5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>I feel online discussions may help students debate and exchange ideas</td>
<td>0.656**</td>
<td>0.560**</td>
<td>0.664**</td>
<td>0.622**</td>
</tr>
<tr>
<td>I2</td>
<td>I think one should encourage active student participation in online discussions because they promote deep thinking</td>
<td>0.791**</td>
<td>0.856**</td>
<td>0.618**</td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td>I think students may deepen their understanding of the subject through participating in online discussions</td>
<td>0.715**</td>
<td>0.539**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td>I included online discussions with the aim of encouraging students to share reflection and thinking about what they are learning with their peers</td>
<td></td>
<td></td>
<td>0.614**</td>
<td></td>
</tr>
<tr>
<td>I5</td>
<td>I feel my role in online discussions should focus on facilitating the process rather than providing the answers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < .05; **p < .01

### Table 53: Principal components factor analysis (‘communication intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I feel online discussions may help students debate and exchange ideas</td>
<td>.81</td>
<td>.67</td>
</tr>
<tr>
<td>I2 I think one should encourage active student participation in online discussions because they promote deep thinking</td>
<td>.92</td>
<td>.85</td>
</tr>
<tr>
<td>I3 I think students may deepen their understanding of the subject through participating in online discussions</td>
<td>.85</td>
<td>.72</td>
</tr>
<tr>
<td>I4 I included online discussions with the aim of encouraging students to share reflection and thinking about what they are learning with their peers</td>
<td>.91</td>
<td>.82</td>
</tr>
<tr>
<td>I5 I feel my role in online discussions should focus on facilitating the process rather than providing the answers</td>
<td>.78</td>
<td>.61</td>
</tr>
</tbody>
</table>

KMO = .85
Eigen values over 1, 73.4% variance explained, n = 86

251
Table 54: Maximum likelihood factor analysis (‘communication intention’ scale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I feel online discussions may help students debate and exchange ideas</td>
<td>.72</td>
<td>.52</td>
</tr>
<tr>
<td>I2 I think one should encourage active student participation in online discussions because they promote deep thinking</td>
<td>.94</td>
<td>.88</td>
</tr>
<tr>
<td>I3 I think students may deepen their understanding of the subject through participating in online discussions</td>
<td>.82</td>
<td>.67</td>
</tr>
<tr>
<td>I4 I included online discussions with the aim of encouraging students to share reflection and thinking about what they are learning with their peers</td>
<td>.90</td>
<td>.82</td>
</tr>
<tr>
<td>I5 I feel my role in online discussions should focus on facilitating the process rather than providing the answers</td>
<td>.68</td>
<td>.46</td>
</tr>
</tbody>
</table>

KMO = .85
Eigen values over 1, 73.4% variance explained, n = 86

8.3.1.4 ‘Communication strategy’ scale

The correlation matrix presented positive associations ranging from low to high. Loadings were from .57 and above when principal components analysis was conducted, and above .43 when using maximum likelihood analysis. Sampling adequacy was very good (KMO=.79). Communalities were, in principal components analysis, reasonably high for all items except 3 and 5 and decreased in maximum likelihood analysis. In this case, items 3 and 5 presented very low communalities. These results are in Tables 55, 56, and 57.
Table 55: Correlation matrix (‘communication strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
<th>I5</th>
<th>I6</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this unit, online discussions are part of structured tasks given to students</td>
<td>.534**</td>
<td>.312**</td>
<td>.644**</td>
<td>.299**</td>
<td>.375**</td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I designed this unit, I included online discussions for the students to engage in asking, debating and sharing content understanding</td>
<td>.449**</td>
<td>.718**</td>
<td>.379**</td>
<td>.572**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online discussions are used in this unit as follow-up tutorials</td>
<td>.389**</td>
<td>.427**</td>
<td>.338**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>In online discussions students are encouraged to reflect and apply what they are learning to their own experiences</td>
<td>.224*</td>
<td>.540**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students in this unit have access to online discussion boards to communicate with each other during the semester</td>
<td>.228*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use online discussions to provoke debate, so students can practice developing and supporting arguments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

Table 56: Principal components factor analysis (‘communication strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In this unit, online discussions are part of structured tasks given to students</td>
<td>.74</td>
<td>.55</td>
</tr>
<tr>
<td>I2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>When I designed this unit, I included online discussions for the students to engage in asking, debating and sharing content understanding</td>
<td>.86</td>
<td>.73</td>
</tr>
<tr>
<td>I3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online discussions are used in this unit as follow-up tutorials</td>
<td>.63</td>
<td>.39</td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>In online discussions students are encouraged to reflect and apply what they are learning to their own experiences</td>
<td>.83</td>
<td>.69</td>
</tr>
<tr>
<td>I5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students in this unit have access to online discussion boards to communicate with each other during the semester</td>
<td>.57</td>
<td>.33</td>
</tr>
<tr>
<td>I6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I use online discussions to provoke debate, so students can practice developing and supporting arguments</td>
<td>.70</td>
<td>.49</td>
</tr>
</tbody>
</table>

KMO = .79
Eigen values over 1, 53% variance explained, n = 86
### Table 57: Maximum likelihood factor analysis (‘communication strategy’ scale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 In this unit, online discussions are part of structured tasks given to students</td>
<td>.68</td>
<td>.46</td>
</tr>
<tr>
<td>I2 When I designed this unit, I included online discussions for the students to engage in asking, debating and sharing content understanding</td>
<td>.85</td>
<td>.72</td>
</tr>
<tr>
<td>I3 Online discussions are used in this unit as follow-up tutorials</td>
<td>.49</td>
<td>.24</td>
</tr>
<tr>
<td>I4 In online discussions students are encouraged to reflect and apply what they are learning to their own experiences</td>
<td>.84</td>
<td>.70</td>
</tr>
<tr>
<td>I5 Students in this unit have access to online discussion boards to communicate with each other during the semester</td>
<td>.43</td>
<td>.19</td>
</tr>
<tr>
<td>I6 I use online discussions to provoke debate, so students can practice developing and supporting arguments</td>
<td>.63</td>
<td>.39</td>
</tr>
</tbody>
</table>

KMO = .79  
Eigen values over 1, 53% variance explained, n = 86

---

### 8.3.1.5 ‘Collaboration intention’ scale

The correlation matrix showed positive significant associations between all the items. These ranged from medium to high. Both principal components analysis and maximum likelihood analysis indicate the unidimensionality of the scale. Loadings were very high when principal components analysis was used (all four items with loadings over .72); and quite high also when employing maximum likelihood analysis (ranging from .62 to .93). The sampling adequacy turned out to be good (KMO=.84). All communalities were over .52 when principal components analysis was used. They tended to decrease when maximum likelihood analysis was conducted, but still some of the items (e.g. 3 and 4) had high communalities. Results are shown in Tables 58, 59 and 60.
Table 58: Correlation matrix (‘collaboration intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
<th>I5</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* I1 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to support their group work

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>I2 I see my role, in the online side of this unit, as providing students with online spaces for sharing, collaboration and building content knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to collaboratively develop their group projects</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4 I think WebCT, and/or other online tools or resources, is good for fostering group work; as it gives students a space to keep track of project advances, search and store materials, and communicate in relation with their projects.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I5 The aim of using WebCT, and/or other online tool or resources, is that students create something: a collaboratively written report, an e-poster, a blog, a wiki, etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01

Table 59: Principal components factor analysis (‘collaboration intention’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to support their group work</td>
<td></td>
<td>.75</td>
</tr>
<tr>
<td>I2 I see my role, in the online side of this unit, as providing students with online spaces for sharing, collaboration and building content knowledge</td>
<td></td>
<td>.72</td>
</tr>
<tr>
<td>I3 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to collaboratively develop their group projects</td>
<td></td>
<td>.90</td>
</tr>
<tr>
<td>I4 I think WebCT, and/or other online tools or resources, is good for fostering group work; as it gives students a space to keep track of project advances, search and store materials, and communicate in relation with their projects.</td>
<td>.86</td>
<td>.74</td>
</tr>
<tr>
<td>I5 The aim of using WebCT, and/or other online tool or resources, is that students create something: a collaboratively written report, an e-poster, a blog, a wiki, etc</td>
<td></td>
<td>.78</td>
</tr>
</tbody>
</table>

KMO = .84

Eigen values over 1, 64.8% variance explained, n = 86
Table 60: Maximum likelihood factor analysis (‘collaboration intention’ scale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to support their group work</td>
<td>.66</td>
<td>.43</td>
</tr>
<tr>
<td>I2 I see my role, in the online side of this unit, as providing students with online spaces for sharing, collaboration and building content knowledge</td>
<td>.62</td>
<td>.39</td>
</tr>
<tr>
<td>I3 I use WebCT, and/or other online tools of resources, because I want to provide students with a medium to collaboratively develop their group projects</td>
<td>.93</td>
<td>.86</td>
</tr>
<tr>
<td>I4 I think WebCT, and/or other online tools or resources, is good for fostering group work; as it gives students a space to keep track of project advances, search and store materials, and communicate in relation with their projects.</td>
<td>.83</td>
<td>.69</td>
</tr>
<tr>
<td>I5 The aim of using WebCT, and/or other online tool or resources, is that students create something: a collaboratively written report, an e-poster, a blog, a wiki, etc</td>
<td>.70</td>
<td>.49</td>
</tr>
</tbody>
</table>

KMO = .84
Eigen values over 1, 64.8% variance explained, n = 86

8.3.1.6 ‘Collaboration strategy’ scale

The correlation matrix showed positive associations between all the items, ranging from moderate to high. Both principal components analysis and maximum likelihood analysis indicated the unidimensionality of the scale. Loadings were very high when a principal components analysis was carried out (all above .69) and high when the maximum likelihood factor analysis was conducted (all above .56). Sampling adequacy was good (KMO=.76). Most communalities were over .5 when principal components analysis was used (all but item 4); but decreased when employing maximum likelihood factor analysis. These results are presented in Tables 61, 62 and 63.
Table 61: Correlation matrix (‘collaboration strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>I1</th>
<th>I2</th>
<th>I3</th>
<th>I4</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>.613**</td>
<td>.531**</td>
<td>.281**</td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td>.722**</td>
<td>.498**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td>.503**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I1 I design tasks for students in which they have to create online content associated with this unit, such as quiz questions, handouts for their peers, slideshows, etc

I2 In this unit, students’ group make their projects available online so they can learn from each other

I3 I give the students the task of collaboratively creating online content, such as blogs or wikis, etc

I4 In this unit, students have online space for storing drafts, papers, resources that they are using in their group work

*p<.05; **p<.01

Table 62: Principal components factor analysis (‘collaboration strategy’ scale)

<table>
<thead>
<tr>
<th></th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>.76</td>
<td>.57</td>
</tr>
<tr>
<td>I2</td>
<td>.90</td>
<td>.80</td>
</tr>
<tr>
<td>I3</td>
<td>.87</td>
<td>.76</td>
</tr>
<tr>
<td>I4</td>
<td>.69</td>
<td>.48</td>
</tr>
</tbody>
</table>

KMO = .76
Eigen values over 1, 65.1% variance explained, n = 86
Table 63: Maximum likelihood factor analysis (‘collaboration strategy’ scale)

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1 I design tasks for students in which they have to create online content associated with this unit, such as quiz questions, handouts for their peers, slideshows, etc</td>
<td>.66</td>
<td>.41</td>
</tr>
<tr>
<td>I2 In this unit, students’ group make their projects available online so they can learn from each other</td>
<td>.90</td>
<td>.81</td>
</tr>
<tr>
<td>I3 I give the students the task of creating online content, such as blogs or wikis, etc</td>
<td>.80</td>
<td>.65</td>
</tr>
<tr>
<td>I4 In this unit, students have online space for storing drafts, papers, resources that they are using in their group work</td>
<td>.56</td>
<td>.31</td>
</tr>
</tbody>
</table>

KMO = .76
Eigen values over 1, 65.1% variance explained, n = 86

8.3.2 Analysis at the level of summated scales

The analysis was also carried out at the level of scales. Correlation, principal components and maximum likelihood analyses were employed. For each scale, items were summed and divided by the number of items in that particular scale; and then the afore-mentioned analyses were conducted with the summated scales. Correlation analysis suggested that intention and strategy scales were effectively associated as conjectured (intention and strategy scales associated to one approach).

- There was a positive moderate association between the information intention and strategy scales ($r = .443$, $p < .01$).
- A very high positive association between the communication intention and strategy scales ($r = .907$, $p < .05$).
- And a high positive association between the collaboration intention and strategy scales ($r = .610$, $p < .05$).

The correlation matrix also presented a low positive correlation between the information intention and the collaboration strategy. This finding was not coherent with the expected associations. Also, positive associations, ranging from low to moderate, were found between communication intention and strategy scales and collaboration intention and strategy scales. Results were further explored through factor analysis, using both principal components and
maximum likelihood variants. Results of both principal components and maximum likelihood analysis are encouraging. They suggest that the hypothesised structure of the variables representing intentions and strategies seems to have support in the data. Principal components factor analysis suggests the existence of three factors. In factor one, ‘communication intention’ and ‘communication strategy’ loaded heavily (.96 and .95 respectively); indicating a factor that may represent a ‘communication focused’ approach to teaching using eLearning. In factor two, ‘collaboration intention’ and ‘collaboration strategy’ scales loaded heavily, indicating a factor that may represent a ‘collaboration focused’ approach (.76 and .92 respectively). In factor three, ‘information intention’ and ‘information strategy’ scales loaded heavily (.84 and .86 respectively) suggesting a factor representing an ‘information focused’ approach. It is also worth noting the very high communalities obtained (all above .78). Maximum likelihood factor analysis suggested very similar results. In factor one, ‘communication intention’ and ‘communication strategy’ scales loaded heavily (.96 and .96 respectively); in factor two, ‘collaboration intention’ and ‘collaboration strategy’ scales loaded heavily (.69 and .85 respectively); and in factor three, ‘information intention’ and ‘information strategy’ scales loaded heavily (.69 and .69 respectively). Communalities were high, although rather less than the ones from the principal components factor analysis. These results are presented in Tables 64, 65 and 66.

Table 64: Correlation matrix (summated scales)

<table>
<thead>
<tr>
<th></th>
<th>II</th>
<th>IS</th>
<th>CI</th>
<th>CS</th>
<th>Col</th>
<th>CoS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information intention</td>
<td></td>
<td>.443**</td>
<td>.051</td>
<td>.153</td>
<td>.108</td>
<td>.228*</td>
</tr>
<tr>
<td>Information strategy</td>
<td>-0.09</td>
<td>.073</td>
<td></td>
<td>-0.146</td>
<td>-0.055</td>
<td></td>
</tr>
<tr>
<td>Communication intention</td>
<td></td>
<td></td>
<td></td>
<td>.907**</td>
<td>.513**</td>
<td>.251**</td>
</tr>
<tr>
<td>Communication strategy</td>
<td></td>
<td></td>
<td></td>
<td>.548**</td>
<td>.306**</td>
<td></td>
</tr>
<tr>
<td>Collaboration intention</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.610**</td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05; **p<.01
Table 65: Principal components analysis (summated scales)

<table>
<thead>
<tr>
<th>Factors</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information intention</td>
<td></td>
<td>.84</td>
<td>.78</td>
<td></td>
</tr>
<tr>
<td>Information strategy</td>
<td></td>
<td>.86</td>
<td>.79</td>
<td></td>
</tr>
<tr>
<td>Communication intention</td>
<td>.96</td>
<td></td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>Communication strategy</td>
<td>.95</td>
<td></td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>Collaboration intention</td>
<td></td>
<td>.76</td>
<td>.80</td>
<td></td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td>.92</td>
<td></td>
<td>.86</td>
<td></td>
</tr>
</tbody>
</table>

Loadings of less than .5 were omitted
Varimax Rotation, KMO = .61
Eigen values over 1, 85.3% variance explained, n = 86

Table 66: Maximum likelihood analysis (summated scales)

<table>
<thead>
<tr>
<th>Factors</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information intention</td>
<td></td>
<td>.69</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Information strategy</td>
<td></td>
<td>.69</td>
<td>.49</td>
<td></td>
</tr>
<tr>
<td>Communication intention</td>
<td>.96</td>
<td></td>
<td>.89</td>
<td></td>
</tr>
<tr>
<td>Communication strategy</td>
<td>.96</td>
<td></td>
<td>.95</td>
<td></td>
</tr>
<tr>
<td>Collaboration intention</td>
<td></td>
<td>.69</td>
<td>.69</td>
<td></td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td>.85</td>
<td></td>
<td>.65</td>
<td></td>
</tr>
</tbody>
</table>

Loadings of less than .5 were omitted
Promax Rotation, KMO = .61
Eigen values over 1, 85.3% variance explained, n = 86

8.4 Reliability analysis

In this section, the reliability analysis is presented. It was conducted using Cronbach’s alpha for each of the scales resulting from the unidimensionality analysis previously conducted. Results are presented in Table 67.
Table 67: Cronbach’s alpha for scales of the ‘approaches to teaching using eLearning’ questionnaire

<table>
<thead>
<tr>
<th>Scales</th>
<th>Cronbach’s alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information intention</td>
<td>.68</td>
</tr>
<tr>
<td>(4 items)</td>
<td></td>
</tr>
<tr>
<td>Information strategy</td>
<td>.46</td>
</tr>
<tr>
<td>(3 items)</td>
<td></td>
</tr>
<tr>
<td>Communication intention</td>
<td>.91</td>
</tr>
<tr>
<td>(5 items)</td>
<td></td>
</tr>
<tr>
<td>Communication strategy</td>
<td>.81</td>
</tr>
<tr>
<td>(6 items)</td>
<td></td>
</tr>
<tr>
<td>Collaboration intention</td>
<td>.86</td>
</tr>
<tr>
<td>(4 items)</td>
<td></td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td>.81</td>
</tr>
<tr>
<td>(4 items)</td>
<td></td>
</tr>
</tbody>
</table>

Following DeVellis (2003) guidelines, the ‘communication intention’ scale turned out to be of excellent reliability; and the ‘communication strategy’, ‘collaboration intention’ and ‘collaboration strategy’ scales turned out to be very good. The ‘information intention’ scale presented a Cronbach’s alpha around the ‘acceptable’ level, and the ‘information strategy’ scale fell below acceptable levels, although it needs to be acknowledged that it was the shortest scale. It is important to note that the scales revealing lower levels of internal consistency are the ones which already presented some problems in the evaluation of their unidimensionality: information intention and information strategy. These scales will be used in the analysis presented in the next chapter for theoretical reasons (one of the objectives of that analysis is to explore associations between approaches to teaching and approaches to teaching using eLearning), but I am aware that they will probably need further work in the future.

8.5 Chapter summary

In summary, face validity, unidimensionality and reliability analyses were carried out as part of the development of the ‘approaches to teaching using eLearning’ questionnaire. Face
validity was conducted through expert judgment complemented with answers to the questionnaire from the original interviewees. Outcomes of the expert judgment round were that 10 items were reworded, and the questionnaire was reduced to six scales containing 29 items in total. Results of the seven teachers’ individual responses to the questionnaire suggested that there was coherence between the qualitative phase allocations to approaches to teaching using eLearning and the scores obtained by the original interviewees. In addition, a second round of expert judgement tended to confirm the structure of the questionnaires in terms of reflecting the three approaches to teaching using eLearning: information focused, communication focused and collaboration focused. When conducting the unidimensionality analysis, using both principal components and maximum likelihood analyses, five scales formed one factor; one (information strategy) formed two. In this case, items loading in the second factor were deleted and the analyses were carried out again without them. Following this procedure, the items loaded on one factor only. In general, both principal components and maximum likelihood analyses showed similar results, although the latter tended to present lower communalities on some items. In terms of the overall individual scale evaluation, results suggested that scales associated with the ‘information focused’ approach (‘information intention’ and ‘information strategy’) were the weaker ones. They tended to present lower loadings and communalities were poor, particularly when using maximum likelihood analysis. In addition, the ‘information strategy’ scale was the only one not grouping all its items in one factor. On the other hand, scales associated with ‘communication focused’ and ‘collaboration focused’ approaches tended to be more robust. In order to test the structure of intentions and strategies, all the scales were submitted to factor analysis at the level of scales. Results suggested that the hypothesised structure of intentions and strategies was supported by the data. Intentions and strategies loaded on factors representing ‘communication’, ‘collaboration’ and ‘information focused’ approaches. Results were similar using both principal components and maximum likelihood analyses. Also, communalities were very good in both analyses, suggesting that associations among variables are considerable. Also, as two items were deleted in this stage, the questionnaire was reduced to 27 items in total. In relation to the reliability analysis, scales associated with the ‘communication focused’ approach were of excellent or very good reliability; scales associated with the ‘collaboration focused’ approach were of very good reliability; and scales associated with the ‘information focused’ approach slipped towards acceptable or fell below acceptable levels (information strategy). Overall, results suggested that scales associated with the ‘information focused’ approach need to be considered with due caution. In the next
chapter, results of correlation, factor and cluster analysis exploring associations between the scales of the ‘approaches to teaching’ inventory and ‘approaches to teaching using eLearning’ and ‘perception of the teaching situation’ questionnaire are presented.
Chapter 9: Associations between approaches to teaching, approaches to teaching using eLearning and perception of the teaching situation

In this chapter, associations between approaches to teaching, approaches to teaching using eLearning and perception of the teaching situation are explored. This exploration uses data derived from the questionnaire whose development and testing was described in the previous chapter. The exploration also uses data gathered using the ‘approaches to teaching’ inventory and the ‘perception of the teaching situation’ questionnaire. (These instruments were described in chapter 3.) The current chapter starts with a brief recap on the questionnaires used and presents some data from a reliability analysis (using Cronbach’s alpha). To help the reader get a better idea of the content of the questionnaires, some defining items are also presented. In later sections of the chapter, results of correlation, principal components factor analysis and cluster analysis are presented. The chapter finishes with a summary of its main findings.

9.1 Questionnaires

Three questionnaires were used for gathering data on approaches to and perceptions of teaching in blended learning environments. These are the ‘approaches to teaching’ inventory; the ‘perception of the teaching situation’ questionnaire and the new ‘approaches to teaching using eLearning’ questionnaire. The latter was developed for this particular study. Characteristics of the two previously developed questionnaires, as well as procedures for sampling and data collection were described in chapter 3. Three conjectures (presented in the previous chapter) guided this inquiry:

- Teachers adopting ‘information focused’ approaches to face-to-face teaching would tend to approach teaching using eLearning consonantly; and would have a negative perception of their teaching situation.
- Teachers adopting ‘learning focused’ approaches to face-to-face teaching would tend to approach teaching using eLearning consonantly; and would have a positive perception of their teaching situation.
- There may be some level of dissonance and/or incoherence in how teachers approach teaching (both in face-to-face teaching and when using eLearning) and perceive their teaching situation.

In this chapter, results of the analyses conducted are presented. Data was analysed using: correlation analysis, to explore associations between pairs of variables; factor analysis, to explore associations between groups of variables; and cluster analysis, to explore experiences of teaching in blended learning environments at the level of the individual teacher. Table 68 summarises the scales from the questionnaires used, and presents defining items and values of Cronbach’s alpha for each of these scales.

**Table 68: Scales of questionnaires used in this study, defining items and internal consistency reliabilities**

<table>
<thead>
<tr>
<th>Scales</th>
<th>Defining items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approaches to teaching</td>
<td></td>
</tr>
<tr>
<td>Information transfer/teacher focused (ITTF)</td>
<td>In this subject my teaching focuses on the good presentation of information to students.</td>
</tr>
<tr>
<td>(11 items, α=.81)</td>
<td>I present material to enable students to build up an information based in this subject</td>
</tr>
<tr>
<td>Conceptual change/student focused (CCSF)</td>
<td>In teaching sessions, I deliberatively provoke debate and discussion.</td>
</tr>
<tr>
<td>(11 items, α=.79)</td>
<td>I encourage students to restructure their existing knowledge in terms of the new way of thinking about the subject that they will develop.</td>
</tr>
<tr>
<td>Approaches to teaching using eLearning</td>
<td></td>
</tr>
<tr>
<td>Information intention (II)</td>
<td>I think (LMS) provides an opportunity for making academic resources widely available, such as lecture notes, readings, handouts, etc.</td>
</tr>
<tr>
<td>(4 items, α=.68)</td>
<td></td>
</tr>
<tr>
<td>Information strategy (IS)</td>
<td>Information about important unit dates, such as, assignments deadlines, exam dates, etc; is available in (LMS)</td>
</tr>
<tr>
<td>(3 items, α=.46)</td>
<td></td>
</tr>
<tr>
<td>Communication intention (CI)</td>
<td>I included online discussions with the aim of encouraging students to share reflection and thinking about what they are learning with their peers.</td>
</tr>
<tr>
<td>(5 items, α=.91)</td>
<td></td>
</tr>
<tr>
<td>Communication strategy (CS)</td>
<td>In online discussions, students are encouraged to reflect and apply what they are learning to their own experiences.</td>
</tr>
<tr>
<td>(6 items, α=.81)</td>
<td></td>
</tr>
</tbody>
</table>

(Continued on next page)
<table>
<thead>
<tr>
<th>Scales</th>
<th>Defining items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration intention (CoI)</td>
<td>I use (LMS), and/or other online tools or resources, because I want to provide students with a medium to collaboratively develop their group projects.</td>
</tr>
<tr>
<td>(5 items, $\alpha=0.86$)</td>
<td></td>
</tr>
<tr>
<td>Collaboration strategy (CoS)</td>
<td>I give the students the task of collaboratively creating online content, such as blogs or wikis, etc.</td>
</tr>
<tr>
<td>(4 items, $\alpha=0.81$)</td>
<td></td>
</tr>
<tr>
<td><strong>Perception of the teaching situation</strong></td>
<td></td>
</tr>
<tr>
<td>Teaching control (TC)</td>
<td>I feel lack of control over what I teach in this topic.</td>
</tr>
<tr>
<td>(8 items, $\alpha=0.61$)</td>
<td></td>
</tr>
<tr>
<td>Class size (CSi)</td>
<td>In large classes, I try to avoid questions from students (-).</td>
</tr>
<tr>
<td>(7 items, $\alpha=0.76$)</td>
<td></td>
</tr>
<tr>
<td>St. characteristics (SC)</td>
<td>Students in this topic are often intolerant of anything outside the syllabus (-).</td>
</tr>
<tr>
<td>(6 items, $\alpha=0.75$)</td>
<td></td>
</tr>
<tr>
<td>Dept. support for teaching (DT)</td>
<td>My department’s dedication to improving teaching makes it easier for me to plan and conduct this topic.</td>
</tr>
<tr>
<td>(8 items, $\alpha=0.76$)</td>
<td></td>
</tr>
<tr>
<td>Time pressure (TP)</td>
<td>Increasing workload makes it difficult for me to maintain my enthusiasm for teaching this topic (-).</td>
</tr>
<tr>
<td>(6 items, $\alpha=0.69$)</td>
<td></td>
</tr>
</tbody>
</table>

It is important to mention that the scale ‘teaching control’ presented a very low alpha ($\alpha=0.4$) on the initial reliability analysis. I deleted one item and this increased the alpha to .61. The summated scale for ‘teaching control’ was calculated without including the deleted item.

### 9.2 Sample

86 university teachers answered the questionnaires. Characteristics of this sample are as follows:

- 44 females (51.2%) and 42 males (48.8%).
- 26 from ‘hard pure’ disciplines (30.2%), 29 from ‘hard applied’ (33.7%), 11 from ‘soft pure’ (12.8%) and 20 from ‘soft applied’ (23.3%).
- 8 had less than five years in teaching (9.3%), 14 between 6 and 10 years (16.3%), 30 between 11 and 20 years (34.9%) and 24 more than 20 years (39.5%).
- 1 was a tutor (1.2%), 6 were associated lecturers (7.0%), 30 were lecturers (34.9%),
25 were senior lecturers (29.1%), 16 were associated professors (18.6%) and 8 were
(full) professors (9.3%).

9.3 Correlation analysis

Correlation analysis is presented in this section. Table 69 presents results of this analysis.

The results suggest that significant associations are in accordance with the hypothesised
relations between the variables. The ‘conceptual change/student focused’ variable presented a
low positive association with the ‘communication strategy’ variable ($r = .231, p< .05$), and a
moderate low positive association with the ‘collaboration intention’ variable ($r = .283, p<
.01$). Besides, the ‘communication intention’ scale presented a low negative association with
the ‘information transfer/teacher focused’ variable ($r = -.236, p< .05$).

Results also showed significant associations between all variables related to the perception of
the teaching situation, which suggests that teachers’ perceptions are reasonably coherent as
they tend to see all the aspects positively or negatively.

The other result worthy of being highlighted is that all the scales representing approaches to
teaching using eLearning, with the exception of ‘collaboration intention’, presented negative
associations with some aspects of the perception of the teaching situation. Significant
negative associations were:

- Association between ‘information intention’ and ‘students’ characteristics’ ($r = -.269,
p< .05$).
- Association between ‘information strategy’ and ‘students’ characteristics’ ($r = -.239,
p< .05$).
- Association between ‘communication intention’ and ‘time pressure’ ($r = -.281, p<
.05$).
- Association between ‘communication strategy’ and ‘students’ characteristics’ and
‘time pressure’ ($r = -.263, p< .05$ and $r = -.282, p< .01$ respectively).
Table 69: Correlations between subscale scores of the questionnaires on approaches to teaching (face-to-face and using eLearning) and perceptions of the teaching situation

<table>
<thead>
<tr>
<th></th>
<th>ITTF</th>
<th>CCSF</th>
<th>II</th>
<th>IS</th>
<th>CI</th>
<th>CS</th>
<th>CoI</th>
<th>CoS</th>
<th>TC</th>
<th>CSi</th>
<th>SC</th>
<th>DT</th>
<th>TP</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approaches to teaching</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Info. transfer/T. focused (ITTF)</td>
<td>.101</td>
<td>.194</td>
<td>.188</td>
<td>-.236*</td>
<td>-.152</td>
<td>.002</td>
<td>.021</td>
<td>-.105</td>
<td>-.195</td>
<td>-.093</td>
<td>-.112</td>
<td>.007</td>
<td></td>
</tr>
<tr>
<td>Con. change/S. focused (CCSF)</td>
<td>.176</td>
<td>-.021</td>
<td>.204</td>
<td>.231*</td>
<td>.283**</td>
<td>.120</td>
<td>.195</td>
<td>.119</td>
<td>.013</td>
<td>.047</td>
<td>-.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Approaches to teaching using eLearning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Intention (II)</td>
<td>.443**</td>
<td>.051</td>
<td>.153</td>
<td>.108</td>
<td>.228*</td>
<td>-.136</td>
<td>-.137</td>
<td>-.269*</td>
<td>-.149</td>
<td>-.187</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information Strategy (IS)</td>
<td>-0.09</td>
<td>.073</td>
<td>-.146</td>
<td>-.055</td>
<td>-.180</td>
<td>-.125</td>
<td>-.239*</td>
<td>-.068</td>
<td>-.235*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm. Intention (CI)</td>
<td>.907*</td>
<td>.513*</td>
<td>.251*</td>
<td>-.107</td>
<td>-.106</td>
<td>-.204</td>
<td>-.117</td>
<td>-.281*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comm. Strategy (CS)</td>
<td>.548**</td>
<td>.306**</td>
<td>-.151</td>
<td>-.145</td>
<td>-.263*</td>
<td>-.136</td>
<td>-.282*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coll. Intention (CoI)</td>
<td></td>
<td></td>
<td>.610**</td>
<td>-.003</td>
<td>-.194</td>
<td>-.191</td>
<td>-.088</td>
<td>-.056</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coll. Strategy (CoS)</td>
<td></td>
<td></td>
<td></td>
<td>-.070</td>
<td>-.265*</td>
<td>-.279**</td>
<td>-.238*</td>
<td>-.102</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perception of the teaching situation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching control (TC)</td>
<td>.596**</td>
<td>.713**</td>
<td>.296**</td>
<td>.355**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class size (CSi)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.683**</td>
<td>.501**</td>
<td>.337**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. characteristics (SC)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.262*</td>
<td>.325**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dept. support for teaching (DT)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.462**</td>
<td></td>
</tr>
</tbody>
</table>

* p<.05; ** p<.01
- Association between ‘collaboration strategy’ and ‘class size’, ‘students’ characteristics’ and ‘departmental support for teaching’ ($r = -.265$, $p < .05$; $r = -.279$, $p < .01$ and $r = -.238$, $p < .05$ respectively).

Although negative associations were low, these findings suggest that embracing eLearning may appear as an element to complex to handle due to ‘time pressure’ and ‘students characteristics’. This would suggest that the incorporation of eLearning increases the time needed for teaching, and students would be perceived not responding as expected. Also, when teachers tend to adopt a higher level approach to eLearning, such as the ‘collaboration focused’ approach, it seems they perceive that the environment does not support them. Negative perceptions about ‘class size’, ‘students’ characteristics’ and ‘departmental support’ suggest teachers were trying to incorporate eLearning but perceived negatively the response from their students and departments.

### 9.4 Principal components factor analysis

Principal components factor analysis is used here to explore structural relationships between variables concerned with the experience of teaching in blended learning environments. In this way, it is possible see what variables group together and identify those which are not part of the group. Principal components factor analysis with varimax rotation was performed. The rule of eigenvalues over 1 was followed to extract factors, and those variables with loadings over .3 were retained. The sampling adequacy turned out to be good (almost .7). Also, most communalities were over .5. Only two variables had communalities below that level (conceptual change/student focused and department support for teaching). Table 70 shows the result of the analysis.
Table 70: Principal components factor analysis of approaches to teaching, approaches to teaching using eLearning and perception of the teaching situation variables

<table>
<thead>
<tr>
<th></th>
<th>Factors</th>
<th></th>
<th></th>
<th>Communalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td><strong>Approaches to teaching</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Info. transfer/T. focused</td>
<td>-0.56</td>
<td>0.39</td>
<td>0.55</td>
<td></td>
</tr>
<tr>
<td>Con. change/S. focused</td>
<td>0.31</td>
<td>0.49</td>
<td>0.35</td>
<td>0.47</td>
</tr>
<tr>
<td><strong>Approaches to teaching using eLearning</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information intention</td>
<td></td>
<td>0.78</td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td>Information strategy</td>
<td></td>
<td>0.79</td>
<td>0.72</td>
<td></td>
</tr>
<tr>
<td>Communication intention</td>
<td>0.88</td>
<td>0.33</td>
<td>0.88</td>
<td></td>
</tr>
<tr>
<td>Communication strategy</td>
<td>0.83</td>
<td>0.38</td>
<td>0.87</td>
<td></td>
</tr>
<tr>
<td>Collaboration intention</td>
<td>0.32</td>
<td>0.83</td>
<td>0.80</td>
<td></td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td>0.77</td>
<td></td>
<td>0.66</td>
<td></td>
</tr>
<tr>
<td><strong>Perception of the teaching situation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teaching control</td>
<td>0.82</td>
<td></td>
<td></td>
<td>0.70</td>
</tr>
<tr>
<td>Class size</td>
<td>0.86</td>
<td></td>
<td></td>
<td>0.78</td>
</tr>
<tr>
<td>St. characteristics</td>
<td>0.79</td>
<td></td>
<td></td>
<td>0.69</td>
</tr>
<tr>
<td>Dept. support for teaching</td>
<td>0.61</td>
<td></td>
<td></td>
<td>0.39</td>
</tr>
<tr>
<td>Time pressure</td>
<td>0.52</td>
<td>-0.39</td>
<td></td>
<td>0.51</td>
</tr>
</tbody>
</table>

Loadings of less than .3 were omitted
Varimax Rotation, KMO = .69
Eigen values over 1, 66.8% variance explained, n = 86

Factor 1 reveals that the score in the ‘conceptual change/student focused’ variable (.31) is associated with high scores on all the five variables which represent the perception of the teaching situation (teaching control .82; class size .86; student characteristics .79; department support for teaching .61; time pressure .52). Factor 2 reveals that a high positive score on the ‘communication intention’ variable (.88) is associated with a high positive score in the ‘communication strategy’ variable (.83) and a positive score in the ‘collaboration intention’ variable (.32). Negative scores in the ‘information transfer/teacher focused’ variable (-.56) and ‘time pressure’ (-.39) were also found on this factor. Factor 3 reveals that the ‘conceptual change/student focused’ variable (.49) is associated with variables ‘communication intention’ (.33), ‘communication strategy’ (.38), ‘collaboration strategy’ (.83) and ‘collaboration intention’ (.77). Finally, factor 4 reveals that the ‘information transfer/teaching focused’ variable (.39) is positively associated with the ‘conceptual change/student focused’ variable, the ‘information intention’ (.78) variable and the ‘information strategy’ variable (.79).
These results would suggest that factor 1 is in line with previous research, which has showed that ‘conceptual change/student focused’ approaches to teaching would be associated with positive perceptions of the teaching environment. This factor represents consonant and coherent associations. Factor 2 would be consistent with the conjecture that approaches to teaching using eLearning focused on learning would be negatively associated with approaches to teaching focusing on content and information. High loadings in the ‘communication intention’, ‘communication strategy’ and ‘collaboration intention’ variable and the negative association with the ‘information transfer/teacher focused’ variable would suggest this association. Also, in the same factor, a negative perception in relation to time pressure emerged as well. This would represent an incoherent association as ‘learning focused’ approaches have been associated with positive perceptions of the teaching situation. However, it is important to mention that ‘time pressure’ was a problematic issue, as suggested by the qualitative study, when trying to incorporate eLearning for supporting students’ learning. eLearning would increase substantially the amount of time needed for teaching. Factor 3 would represent consonant associations among variables as the ‘conceptual change/student focused’ is associated with variables representing ‘learning focused’ approaches to eLearning (‘communication’ and ‘collaboration focused’). Factor 4 would represent a dissonant association between approaches to teaching in conventional face-to-face settings. Also this factor was associated with an ‘information focused’ approach to eLearning. Finally, it is important to mention that ‘communication focused’ and ‘collaboration focused’ variables tended to load together in factors 2 and 3. This suggests that these scales represent the same underlying phenomenon, which is congruent as both approaches represent ‘learning focused’ ways of going about teaching using eLearning.

9.5 Cluster analysis

In this section, the result of the cluster analysis is presented. This was carried out to investigate the data at the level of individual teachers in relation to their experiences of teaching in blended learning environments. Standardised scores (z scores) were used to facilitate the analysis and interpretation. A hierarchical cluster analysis using Ward’s technique was employed. In deciding how many clusters to keep, the following steps were taken:
- It was decided that a solution of no more than five clusters would be selected, to facilitate the communication of results.
- Results from five cluster to two cluster analysis were examined to explore which would be most suitable, bearing in mind the theoretical foundations of the research.
- The stopping rule based on looking for sudden jumps in some measure of similarity or distance between clusters was employed to complement the other criteria with empirical support. Percentage of change in the clustering coefficient for five to two clusters was calculated. Results showed that the largest increase was observed when going from two to one cluster; and then the next noticeable change occurs when combining four into three clusters (Table 71).
- A four cluster solution was selected, based on the criteria mentioned, and results of percentage of change in the clustering coefficient.

<table>
<thead>
<tr>
<th>Number of clusters</th>
<th>Agglomeration coefficient</th>
<th>Percentage change in coefficient to next level</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>681.1</td>
<td>1.2</td>
</tr>
<tr>
<td>4</td>
<td>739.9</td>
<td>6.2</td>
</tr>
<tr>
<td>3</td>
<td>812.3</td>
<td>1.3</td>
</tr>
<tr>
<td>2</td>
<td>942.2</td>
<td>17.3</td>
</tr>
<tr>
<td>1</td>
<td>1105</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 72 presents the result of the analysis. Two clusters (1 and 2) represented teachers’ experiences of blended learning environments as expected. They appeared to present consonant and coherent forms of teaching. The other two clusters (3 and 4) represented dissonant and incoherent forms of teaching.
### Table 72: Cluster analysis of elements of the teaching in blended learning environments experience (n=86)

<table>
<thead>
<tr>
<th>Clusters</th>
<th>1 (n=23)</th>
<th>2 (n=36)</th>
<th>3 (n=10)</th>
<th>4 (n=17)</th>
<th>Statistically significant if p &lt; 0.00</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>consonant learning focused</td>
<td>consonantly information focused</td>
<td>dissonant and incoherent – high use of eLearning</td>
<td>dissonant and incoherent – low use of eLearning</td>
<td></td>
</tr>
</tbody>
</table>

#### Approaches to teaching

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Info. transfer/T. focused</td>
<td>-.86</td>
<td>.23</td>
<td>.13</td>
<td>.59</td>
<td>.000</td>
</tr>
<tr>
<td>Con. change/S. focused</td>
<td>.07</td>
<td>-.52</td>
<td>.75</td>
<td>.56</td>
<td>.000</td>
</tr>
</tbody>
</table>

#### Approaches to teaching using eLearning

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information intention</td>
<td>-.16</td>
<td>.01</td>
<td>.49</td>
<td>-.09</td>
<td>-</td>
</tr>
<tr>
<td>Information strategy</td>
<td>-.32</td>
<td>.17</td>
<td>.07</td>
<td>.04</td>
<td>-</td>
</tr>
<tr>
<td>Communication intention</td>
<td>.56</td>
<td>-.24</td>
<td>1.2</td>
<td>-.94</td>
<td>.000</td>
</tr>
<tr>
<td>Communication strategy</td>
<td>.34</td>
<td>-.20</td>
<td>1.4</td>
<td>-.89</td>
<td>.000</td>
</tr>
<tr>
<td>Collaboration intention</td>
<td>.08</td>
<td>-.41</td>
<td>2.1</td>
<td>-.52</td>
<td>.000</td>
</tr>
<tr>
<td>Collaboration strategy</td>
<td>-.19</td>
<td>-.16</td>
<td>1.9</td>
<td>-.53</td>
<td>.000</td>
</tr>
</tbody>
</table>

#### Perception of the teaching situation

<table>
<thead>
<tr>
<th></th>
<th>Cluster 1</th>
<th>Cluster 2</th>
<th>Cluster 3</th>
<th>Cluster 4</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching control</td>
<td>.54</td>
<td>-.65</td>
<td>-.24</td>
<td>.80</td>
<td>.000</td>
</tr>
<tr>
<td>Class size</td>
<td>.58</td>
<td>-.46</td>
<td>-.73</td>
<td>.62</td>
<td>.000</td>
</tr>
<tr>
<td>St. characteristics</td>
<td>.38</td>
<td>-.39</td>
<td>-.67</td>
<td>.71</td>
<td>.000</td>
</tr>
<tr>
<td>Dept. support for teaching</td>
<td>.44</td>
<td>-.48</td>
<td>-.64</td>
<td>.78</td>
<td>.000</td>
</tr>
<tr>
<td>Time pressure</td>
<td>.25</td>
<td>-.55</td>
<td>-.07</td>
<td>.87</td>
<td>.000</td>
</tr>
</tbody>
</table>

Cluster 1 (consonantly learning focused) showed a group of teachers (n=23) who had positive scores on the ‘conceptual change/student focused’ (.07, p< .000) variable and high scores on the ‘communication intention’ (.56, p< .000) and ‘communication strategy’ (.34, p< .000) variables; as well as a less high but positive score on the ‘collaboration intention’ (.08, p< .000) variable. This group also presented negative scores for the ‘information transfer/teacher focused’ (-.86, p< .000) variable, the ‘collaboration strategy’ strategy (-.19, p< .000) variable, the ‘information strategy’ (-.16, non significant) and ‘information intention’ (-.32, non significant) variables. Although suggesting a pattern, results for the last two variables were not statistically significant, so they need to be considered with due caution. Teachers in this group also had moderate to high positive scores across all the variables related to ‘perceptions of the teaching situation’. The most salient were ‘class size’ (.58, p< .000), ‘teaching control’ (.54, p< .000), ‘department support for teaching’ (.44, p< .000) and ‘students’ characteristics’ (.38, p< .000). ‘Time pressure’ also presented a positive but slightly lower score (.25, p< .000). This cluster would represent a consonant and coherent teaching profile, which is ‘learning focused’. Results suggest that teachers belonging to this cluster would approach teaching focusing on students’ learning, would make use of eLearning in teaching for
promoting high level understanding in their students and would have a perception of their teaching situation which affords ‘learning focused’ approaches to teaching.

Cluster 2 (consonantly information focused) showed a group of teachers (n=36) who had positive scores on the variables ‘information transfer/teacher focused’ (.23, p<.000), the ‘information intention’ (.01, non significant) and ‘information strategy’ (.17, non significant); although results from the last two variables needed to be considered with caution, as they are not statistically significant. Moreover, these teachers had negative scores on the ‘conceptual change/student focused’ variable (-.52, p<.000), the ‘communication intention’ variable (-.24, p<.000), the ‘communication strategy’ variable (-.20, p<.000), the ‘collaboration intention’ variable (-.41, p<.000) and the ‘collaboration strategy’ variable (-.16, p<.000). Also, they presented negative scores on all of the ‘perception of the teaching situation’ variables, with variables ‘teaching control’ (-.65, p<.000) and ‘time pressure’ (-.55, p<.000) being particularly salient. This cluster would represent teachers with a consonant and coherent teaching profile, which is ‘information focused’. Results suggest that they approach teaching focusing on content and transmission of information, make use of eLearning for providing information and have a negative perception of their teaching situation; which affords an ‘information focused’ approach.

Cluster 3 (dissonant and incoherent – high use of eLearning) showed a group of teachers (n=10) who had a positive score on the variable ‘information transfer/teacher focused’ variable (.13, p<.000) and a very high score on the ‘conceptual change/student focused’ variable (.75, p<.000). Also, these teachers had very high scores on the variables ‘communication intention’ (1.2, p<.000), ‘communication strategy’ (1.4, p<.000), ‘collaboration intention’ (2.1, p<.000) and ‘collaboration strategy’ (1.9, p<.000). At the same time, all the variables representing teachers’ perception of their teaching situation had negative scores, the higher ones being ‘class size’ (-.73, p<.000) , ‘students’ characteristics’ (-.67, p<.000) and ‘department support for teaching’ (-.64, p<.000). Cluster 3 would represent teachers with a dissonant and incoherent teaching profile. This group of teachers would approach teaching focusing on students’ learning and transmission of information, would approach teaching using eLearning in an advanced manner, focusing in communication and collaboration; and would have very negative perceptions of their teaching situation.
Cluster 4 (dissonant and incoherent – low use of eLearning) showed a group of teachers (n=17) who had similar high positive scores both on the ‘information transfer/teacher focused’ variable (.59, p< .000) and the ‘conceptual change/student focused’ variable (.75, p< .000). Also, these teachers presented negative scores on all the variables associated with approaches to teaching using eLearning, except on the ‘information strategy’ one (although this was not statistically significant). In this case, variables associated with the ‘communication focused’ approach presented particularly high negative scores (-.94, p< .000, for the ‘communication intention’ variable; and -.89, p< .000, for the ‘communication strategy’ variable). In relation to perception of the teaching situation, these teachers presented high positive scores on all the variables: teaching control (.80, p< .000), class size (.62, p< .000), students’ characteristics (.71, p< .000), department support for teaching (.78, p< .000) and time pressure (.87, p< .000). This cluster would represent a dissonant and incoherent teaching profile. Teachers belonging to this cluster would approach teaching considering the ‘information transfer/content centred approach’ almost at the same level as the ‘conceptual change/student focused approach’. At the same time, they would make very little use of eLearning in their teaching and would have a perception of their teaching situation as highly positive, which would afford focusing on students’ learning.

It is important to mention that variables associated with ‘communication’ and ‘collaboration focused’ approaches had positive scores in clusters 1 (consonantly learning focused ) and 3 (dissonant and incoherent – high use of eLearning), which would suggest that teachers adopting one of these approaches tended to adopt the other one as well.

Additional information gathered (teaching experience, academic position, gender and discipline) was used to profile the clusters. Results are presented in Table 73.
Table 73: Profile of 4 cluster solution on additional information gathered

<table>
<thead>
<tr>
<th>Clusters</th>
<th>1 (n=23) (consonantly learning focused)</th>
<th>2 (n=36) (consonantly information focused)</th>
<th>3 (n=10) (dissonant and incoherent - high use of eLearning)</th>
<th>4 (n=17) (dissonant and incoherent - low use of eLearning)</th>
<th>Pearson Chi-square</th>
<th>Statistically significant if $p &lt; 0.00$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching experience</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 years</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>11.520</td>
<td>-</td>
</tr>
<tr>
<td>Between 6 and 10 years</td>
<td>5</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between 11 and 20 years</td>
<td>5</td>
<td>10</td>
<td>5</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More than 20 years</td>
<td>9</td>
<td>16</td>
<td>3</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Academic position</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tutor</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17.744</td>
<td>-</td>
</tr>
<tr>
<td>Associate lecturer</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td>9</td>
<td>13</td>
<td>5</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Senior lecturer</td>
<td>6</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate professor</td>
<td>3</td>
<td>6</td>
<td>0</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professor</td>
<td>3</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>9</td>
<td>19</td>
<td>6</td>
<td>8</td>
<td>1.611</td>
<td>-</td>
</tr>
<tr>
<td>Female</td>
<td>14</td>
<td>17</td>
<td>4</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Discipline</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard pure</td>
<td>7</td>
<td>12</td>
<td>1</td>
<td>6</td>
<td>14.491</td>
<td>-</td>
</tr>
<tr>
<td>Hard applied</td>
<td>7</td>
<td>13</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft pure</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft applied</td>
<td>6</td>
<td>10</td>
<td>0</td>
<td>4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The four cluster solution did not present distinctive profiles on this additional set of variables. Results of Chi-square tests showed no significant differences on each of these variables. It suggests that, for this group of teachers, variables selected for cluster profiling were not able to reveal the distinctive profiles of these teachers.

9.6 Chapter summary

Results presented in this chapter suggest that the hypothesised associations had support in the data gathered. These conjectures were, that elements of the experience of teaching in blended learning environments would tend to be associated in consonant or dissonant ways, and also
would be coherent or incoherent. Correlation analysis showed that two of the scales (communication strategy and collaboration intention) associated with ‘communication/collaboration focused’ approaches were positively associated with the ‘conceptual change/student focused’ variable, although these associations were low to moderate. On the other hand, one of these scales (communication intention) was negatively associated with the ‘information transfer/teacher focused’ variable, although this association was moderately low. Also, most scales of the questionnaire on ‘approaches to teaching using eLearning’ were negatively associated with variables representing perceptions of the teaching situation.

Following further exploration of these associations through principal components factor analysis, it was found that factor 1 represented ‘learning focused’ consonant and coherent associations between variables. Factor 2 represented consonant but incoherent associations between variables. A high negative load on the ‘information transfer/teaching focused’ variable was associated to positive and high loads in the ‘communication intention’ and ‘communication strategy’ variables, and a positive but lower load on the ‘collaboration intention’ variable. However, ‘time pressure’ loaded negatively on this factor. This would represent an incoherent perception with an approach which seems to be ‘learning focused’. Factor 3 would also represent a consonant ‘learning focused’ association as the ‘conceptual change/student focused’ variable was associated with ‘communication’ and ‘collaboration focused’ variables. Factor 4 represented a dissonant association between variables, as the ‘information transfer/teacher focused’ and ‘conceptual change/student focused’ variables loaded positively on this factor. Also, ‘information focused’ variables loaded quite heavily.

Results of cluster analysis showed that clusters 1 (consonantly learning focused) and 2 (consonantly information focused) represented teachers holding consonant and coherent associations. Cluster 1 (consonantly learning focused) represented ‘learning focused’ associations; while cluster 2 (consonantly information focused) represented ‘information focused’ associations. Clusters 3 (dissonant and incoherent – high use of eLearning) and 4 (dissonant and incoherent – low use of eLearning) represented teachers holding dissonant and incoherent associations. Cluster 3 (dissonant and incoherent – high use of eLearning) showed transmission and learning focused approaches in face-to-face teaching dissonantly associated; positive scores on all eLearning related scales, and negative scores on variables, associated with the perception of the teaching situation. Cluster 4 (dissonant and incoherent – low use of
eLearning) presented a similar association between variables in face-to-face teaching, but mostly negative ones in relation to eLearning, and positive scores on all the variables related with the perception of the teaching situation. Additional variables used to profile the clusters did not present significant differences and were not able to reveal distinctive profiles. Results from principal components and cluster analysis suggested that variables representing ‘communication’ and ‘collaboration focused’ approaches tended to be associated and may be better employed if grouped together.

In this chapter, results of correlation, principal components and cluster analysis exploring associations between the scales of the ‘approaches to teaching’, ‘approaches to teaching using eLearning’ and ‘perception of the teaching situation’ questionnaires, were presented. It was found that results provided further support to qualitative findings, and provided some further insights in relation to ‘incoherent’ associations between approaches and perceptions. The next chapter presents the discussion and conclusion of this research.
Chapter 10: Discussion and conclusion

This final chapter offers a discussion of findings and some conclusions arising from the research. It starts with a discussion of the qualitative analysis results, also mentioning some the limitations of the research. It discusses the main findings on conceptions and approaches, perceptions of the teaching situation, and teaching profiles and orchestrations. Next, findings of the quantitative study are discussed, and a further attention is paid to limitations of the study. Suggestions for further research, implications for practice and a summary of the research’s main contributions are also included.

10.1 Discussion

10.1.1 Discussion of the results of the qualitative analysis

10.1.1.1 Limitations

Before discussing the results of the qualitative study, it is important to acknowledge its limitations. Firstly, the sample came from just two Australian Universities and was relatively small. A sample of 18 is not uncommon in phenomenographic research (Åkerlind, 2005b; Trigwell, 2000). However, while the study may provide useful insights into experiences of teaching in blended learning environments, it is important to recognise that some categories were made up from a small number of responses. Also, interpretation of results needs to consider that the study represented the experiences of a small group of teachers in very particular contexts. Results are not claimed to be generalisable. Secondly, participants were volunteers. This implies that some of them may have chosen to participate because of their interest in teaching. The analysis showed that most of the interviewees conceived and approached teaching in a ‘learning focused’ manner. This needs to be considered with due care as it does not necessarily imply that a majority of university teachers teach and use eLearning in this manner. The sample used in the qualitative study showed variation in ways of thinking and approaching blended teaching, but analysis of the results does not represent a
‘quantification’ of the current situation. Thirdly, it is also important to point out that ways of thinking of, and approaching, eLearning described by the interviewees did not reflect an exhaustive range of the possible learning technology uses. Following Laurillard’s (2002) classification of learning technologies, results showed that uses of eLearning were mainly associated with ‘narrative’, ‘interactive’ and ‘communicative’ media and, to a lesser extent ‘productive’ media. ‘Adaptive’ technologies (e.g. simulations) did not emerge. Rather than seeking to describe every possible way of using eLearning, the aim of this study was to explore teachers’ experiences of incorporating eLearning from their own perspective. However, it is important to acknowledge that further studies may identify uses of eLearning not found in the present investigation, and that these may be associated with some different conceptions and approaches. Fourthly, although conducting phenomenographic analyses as a single researcher is an accepted practice (Åkerlind, 2005c), it is important to acknowledge that the outcomes of such analyses may be improved by involving other researchers. Therefore, the account presented in the qualitative analysis chapters reflects the experience of one single researcher uncovering one group of teachers’ ways of experiencing teaching in blended learning environments. In that sense, is not a definitive-unquestionable one; but the partial account that I have been able to build based on others’ partial accounts of their experiences (Åkerlind, 2002, 2005c). Finally, it is important to acknowledge that the study relied only on interview-based data. Kane et al (2002), among others, have argued that there may be incongruence between what teachers say in an interview and what they actually do. Consequently, Kane et al. proposed using observation as a medium for getting a more complete perspective on teaching. This is a limitation of the current study, which only used interview-based data. Further research will need to consider incorporation of observation to complement teachers’ accounts provided through interviews.

10.1.1.2 Conceptions and approaches to teaching (face-to-face and using eLearning)

Turning to results, it is possible to say that they are in line with findings from previous studies which have investigated conceptions and approaches in face-to-face and eLearning settings. At the same time, this study provides insights, not investigated previously, on the relationship between face-to-face and online teaching.
Regarding conceptions of teaching, results from this study are in line with previous research which has found that they range from ‘information-transmission’ to ‘learning focused’ conceptions (e.g., Prosser, Trigwell & Taylor, 1994; Kember, 1997; Samuelowicz & Bain, 1992; 2001; Åkerlind, 2004; Parpala & Lindblom-Ylänen; 2007). In ‘information-transmission focused’ conceptions emerging from this study, the role of the teacher was seen as a provider of information, students were seen as passive recipients of knowledge and the content taught was seen as constrained by the syllabus and/or teacher’s choices. On the side of ‘learning focused’ conceptions, the role of the teacher was seen as a learning facilitator, students were seen as active learners and had the opportunity of participating in the construction of the content taught. In contrast with Åkerlind’s (2004) study, benefits of the teaching process (for students or teachers) did not emerge as a dimension of variation. However, a new dimension, motivation, emerged as an important one for teachers holding ‘learning focused’ conceptions of teaching. For them, motivating students was seen as a key part of their role and an indicator of good teaching. This finding provided further support to Åkerlind’s (2004) idea that there are still many things to know about different facets of teaching. Therefore, exploratory studies in the area should not be discouraged, as Kember (1997) recommended.

In relation to approaches to teaching, results of this study are also in line with previous research which has found that they range from ‘teacher/content focused’ to ‘students/learning focused’ (e.g., Trigwell, Prosser & Taylor, 1994; Kember & Kwan, 2000; Postareff and Lindblom-Ylänen, 2008). Although studies of approaches to teaching, including the present, have found the above-mentioned range, it is important to notice different methodological perspectives. Kember and Kwan (2000) and Postareff and Lindblom-Ylänen (2008) preferred an option in which approaches are described through the analysis of dimensions. Kember and Kwan (2000) used one motivation and six strategy dimensions; and Postareff and Lindblom-Ylänen (2008) used four dimensions for describing approaches. In contrast, Trigwell and Prosser (1994) described approaches as composed of intentions and strategies: how teachers go about teaching and what they want to achieve. Trigwell and Prosser employed this way of conducting their research, as strategies alone had been shown to be insufficient for understanding approaches to teaching. The present study followed Trigwell and Prosser’s way of researching and reporting approaches to teaching. Therefore, the focus was on intentions and strategies.
‘Conceptions of teaching using eLearning’ is an area which has received less attention than conceptions of teaching in face-to-face ‘conventional’ settings. The few studies on this topic suggested that conceptions of teaching using eLearning ranged from ‘information’ to ‘communication/collaboration focused’ (Ellis, Steed & Applebee, 2006; Lameras, Paraskakis, & Levy, 2007; McConnell & Zhao, 2006; Roberts, 2003; Gonzalez, in press). Findings from the present study were in line with that range. At the same time, these findings extended what is known in the area by a) describing dimensions of variation in conceptions; and b) revealing that the communicative features of the web may not always be associated with conceptions that see eLearning as a medium for supporting higher level learning.

In relation to the first point (a), four dimensions of variation were discovered in this study: role of the teacher, role of the students, course participants’ interaction and perception of embeddedness with face-to-face aspects of teaching and learning. In the first place, these dimensions offer a description of how teachers think about eLearning with a level of detail not provided by previous studies. Research in the area had provided more general accounts. Besides, the other study exploring dimensions of variation (Gonzalez, in press) was conducted in distance education settings; so it did not provide insights into perceptions of embeddedness of eLearning within on-campus education settings. In the second place, these dimensions revealed a logical relationship between ‘information focused’ conceptions of teaching using eLearning and ‘teacher/content focused’ conceptions of teaching, and ‘communication/collaboration focused’ conceptions of teaching using eLearning and ‘learning focused’ conceptions of teaching. The first type of conceptions, found in both face-to-face and online teaching, focused on content and transmission of information. The second type is focused on facilitation of students’ learning and conceptual development. Also, the value of embedding eLearning into the learning and teaching experience was seen as of high importance in ‘learning focused’ conceptions and was not found in ‘information focused’ ones.

In relation to the second point (b), the study presented here showed a different understanding of the communicative feature of eLearning. Previous research had suggested that teachers tended to conceived discussion boards, chat or email as media to promote learning (Roberts, 2003; Lameras, 2007; Gonzalez, in press). In this study, it was found that communication through the web can also be seen as merely provision of information. In this respect, eLearning as a medium for communication does not go further than the occasional
announcement or question. It is not seen as a space for learning. This new understanding led to a split of the conception ‘eLearning as a medium for communication among course participants’ into two. The lower level conception focused on use of discussion boards, etc, in an ‘information focused’ manner. The higher level conception focused on learning-related communication, particularly through the use of discussion boards, for engaging in reflecting, sharing, discussing, and promoting deep learning.

As in the case of conceptions, research on ‘approaches to teaching using eLearning’ had received little attention. Only the studies by Roberts (2003) and Gonzalez (in press) explored how university teachers went about teaching with eLearning (from a relational perspective). Both authors found approaches which were ‘informative/individual learning focused’ on one extreme, or ‘communication/collaboration focused’, on the other. Also, these two studies used dimensions for describing approaches. In the case of Roberts, these dimensions were: focus of use, nature of use, role of the teacher, time and place of use, role of students and relationships with students. In the case of Gonzalez, these dimensions were: intensity of use, resources, role of the teacher and role of the students. The present study used a different way of describing approaches. They were analysed through strategies and intentions associated with those strategies. This perspective was employed because previous research on approaches to teaching in face-to-face settings showed that strategies alone are not enough to understand approaches and attention needs to be given to underlying intentions (Trigwell, Prosser & Taylor, 1994). As with previous research, approaches to teaching using eLearning found in this study tended to support the observation that they ranged from ‘information focused’ to ‘communication/collaboration focused’.

10.1.1.3 Quality of approaches to teaching face-to-face and using eLearning

Prior research (Trigwell & Prosser, 1999) has demonstrated that teachers who adopt student-focused approaches to teaching are more likely to have students who adopt deeper approaches to learning and achieve higher quality learning outcomes. Therefore, it can be claimed that student-focused approaches to teaching would provide better quality learning experiences. In contrast, teacher-focused approaches to teaching would provide poorer quality learning experiences.
In the case of this research, it may be stated that the teacher-focused approach to teaching represented a lower quality experience. Results showed that teachers who adopt this approach did not provide opportunities for the students to engage in learning beyond being recipients of information. The teachers’ aim was for students to ‘get’ the concepts of the discipline taught. Opportunities to participate in interaction with the lecturers and peers were limited. In contrast, student-focused approaches found in this study seemed to be of better quality. In both, the focus was on students’ learning and teachers’ intentions were related to developing students’ understanding, expanding their world view and developing critical thinking. Students were exposed to more participative methods of teaching, such as face-to-face discussions, problem solving, presentations to their peers, etc. Teachers describing these approaches went further than just lecturing to their students. Learners were engaged in activities that helped them develop their understanding and critical thinking. Active learning was encouraged. Table 74 summarises the classification of approaches to teaching in relation to quality.

Table 74: Quality of approaches to teaching

<table>
<thead>
<tr>
<th>Approaches to teaching</th>
<th>Poorer quality</th>
<th>Better quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-focused approach</td>
<td>A teacher /content focused strategy with the intention of providing the students with the knowledge of the discipline</td>
<td>X</td>
</tr>
<tr>
<td>Student-focused approaches</td>
<td>A student/learning focused strategy with the intention of developing students’ understanding</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>A student/learning focused strategy with the intention of developing students’ critical thinking and/or expanding their worldview</td>
<td>X</td>
</tr>
</tbody>
</table>

A similar claim can be made in the case of approaches to teaching using eLearning. Teacher-focused approaches used eLearning to provide information, with very limited opportunities for students to participate or interact. They had a quite passive role. eLearning was not used as a learning space but merely as a repository for lecture notes, for clarifying course contents or to make announcements. These approaches were of lower quality. In contrast, student-focused approaches to teaching using eLearning were of better quality. eLearning was used as a learning space to help students to think deeply, participate, collaborate and create.
Opportunities were given to explore, interact and participate. Table 75 summarises the classification of approaches to teaching using eLearning in relation to quality.

Table 75: Quality of approaches to teaching using eLearning

<table>
<thead>
<tr>
<th>Approaches to teaching using eLearning</th>
<th>Poorer quality</th>
<th>Better quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher-focused approach</td>
<td></td>
<td></td>
</tr>
<tr>
<td>An information focused strategy with the intention of providing easy access to course materials</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>An information focused strategy with the intention of providing access to up-to-date quality materials</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A communication focused strategy with the intention of having a space for asking questions, making announcements &amp; keeping in touch</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Student-focused approaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A communication focused strategy with the intention of engaging students in deep thinking through online discussions</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>A collaborative learning strategy with the intention of providing an online space for building knowledge</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

10.1.1.4 Conceptions and approaches to blended teaching

Previous relational research had focused only on conceptions of blended teaching (Ellis et al, 2006). In contrast with the Ellis et al (2006) study, my interviewees were not asked directly about blended teaching but about their conceptions of teaching and, separately, what they thought eLearning was good for in their teaching. It was proposed that conceptions of blended teaching emerged from associations between conceptions of teaching face-to-face and using eLearning. I had two reasons for approaching the study of conceptions of blended teaching in this way. Firstly, there had been little research on university teachers’ conceptions of teaching using eLearning. Therefore, it was relevant to explore in detail this side of the blended teaching experience. In this way, it was possible to add, to the knowledge in the area,
a set of conceptions of teaching using eLearning as well as dimensions of variation further
describing this phenomenon. Secondly, it was hypothesised, at the beginning of this study,
that university teachers would ‘transfer’ their conceptions of teaching when thinking about
eLearning. Results suggested that this was the case. Teachers who held fragmented
conceptions of teaching tended to have conceptions of teaching using eLearning which were
fragmented as well. Teachers who held cohesive conceptions of teaching tended to have
conceptions of teaching using eLearning which were also cohesive. Those with dissonant
conceptions of teaching, holding elements of both fragmented and cohesive conceptions,
tended to present conceptions of teaching using eLearning that were mostly fragmented; and
those who held cohesive conceptions of teaching using eLearning presented elements of
cohesive conceptions in their dissonant descriptions of conceptions of teaching. Based on
these associations, three conceptions of blended teaching were proposed: a disintegrated way
of supporting transmission of information; a dissonant way of combining face-to-face and
online teaching without a clear pattern, and an embedded way of promoting students’
understanding.

In relation to approaches to teaching and approaches to teaching using eLearning, a similar
analysis was conducted. Approaches to blended teaching were proposed to emerge from the
associations between approaches to face-to-face teaching and approaches to teaching using
eLearning. This had the same rational as conceptions of blended teaching. In the case of
approaches to teaching using eLearning there was little prior research, therefore exploring
them was relevant and timely. Besides, it was also hypothesised that associations may be
found between approaches to teaching in face-to-face and online settings. Results showed
that teachers holding approaches to teaching which were ‘teacher/content focused’ tended to
approach teaching using eLearning in an ‘information focused’ manner, and teachers
approaching teaching in a ‘student/learning focused’ manner tended to have approaches to
teaching using eLearning focusing on ‘communication and collaboration’. There was also a
third group presenting approaches that did not follow a clear pattern and were called
dissonant. These associations led to me proposing three approaches to blended teaching:
disintegrated/ information focused, dissonant and embedded/learning focused.
10.1.1.5 Perceptions of the teaching situation

Previous research (Prosser & Trigwell, 1997a) showed that control of teaching, size of class, students’ characteristics, departmental support for teaching and academic workload influenced the way that teachers go about teaching in face-to-face settings. The present research explored elements influencing approaches to teaching both in general and in relation to eLearning. Similar elements, summarised in Table 76, emerged.

Table 76: Dimensions of the perception of the teaching situation

<table>
<thead>
<tr>
<th>Dimensions of the perception of teaching situation (Prosser &amp; Trigwell, 1997a)</th>
<th>Themes related to teaching in general</th>
<th>Themes specifically related to eLearning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control of teaching</td>
<td>Lack of control makes teachers stick to contents needed to be taught</td>
<td>Lack of control does not allow experimenting with more advanced uses of eLearning</td>
</tr>
<tr>
<td>Size class</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Student characteristics</td>
<td>Students’ outside university commitments, difference in prior knowledge and language problems hinder ‘student focused’ approaches.</td>
<td>Students’ skills and pressure for use of eLearning promote its up-taking</td>
</tr>
<tr>
<td>Department support for teaching</td>
<td>Support for teaching training and clear strategy on teaching helps to d</td>
<td>Clear institutional strategy, technical and pedagogical support promote eLearning (although support which is technical only may lead to less engagement)</td>
</tr>
<tr>
<td>Academic workload</td>
<td>-</td>
<td>eLearning is widely perceived as time consuming.</td>
</tr>
</tbody>
</table>

Therefore, the present study provided further support to previously found elements influencing approaches to teaching in face-to-face settings, and extended knowledge by showing how these elements were associated to approaches to teaching using eLearning. In the context of this study, ‘size of class’ and ‘academic workload’ did not emerge as elements affecting how these teachers approached teaching in face-to-face settings. Besides, size of class did not emerge in relation to factors affecting teaching using eLearning.
Although these elements were not found, results from this study are consistent and provide further support to Prosser & Trigwell’s (1997a) study.

### 10.1.1.6 Teaching profiles and orchestrations

Previous research on the phenomenon of ‘consonance/dissonance’ in teaching had focused on teaching in face-to-face settings (e.g., Prosser et al, 2003; Postareff et al, 2008). The current study extended research on ‘consonance/dissonance’ in teaching to blended learning environments. Methodologically, prior research had used questionnaires (Prosser et al, 2003) and content analysis supported by quantitative methods (Postareff et al, 2008). Postareff et al (2008) argued for qualitative methods to investigate dissonance. They would be more suitable to uncover this phenomenon: only one element of dissonance in an individual teaching profile would lead to its identification. At the time of conducting this research, there were no studies which had investigated ‘consonance/dissonance’ phenomenographically. Therefore, my question was whether it was possible to explore ‘consonance/dissonance’ using phenomenography.

Phenomenography does not start with a set of predetermined categories for analysing interview transcripts; but categories emerge from the data (Marton, 1986). This is different from what Postareff et al (2008) proposed. These researchers used four broad dimensions with specific categories for analysing profiles (teaching process, learning environment, conception of learning and pedagogical development). Thus, profiles would be the result of allocating teachers to predetermined categories. In the case of this study, categories emerged from the data and only in a second stage, when allocating individual teachers to categories of description, were ‘consonant’ or ‘dissonant’ profiles identified.

In phenomenographic research, after discovering categories of description, teachers are allocated to the highest category presented when interviewed (e.g., Trigwell & Prosser, 1996). This procedure has been successful in establishing associations between conceptions and/or approaches. However, it seemed to be of less value for identifying dissonance. If one teacher is just allocated to the highest category of description, some elements that may suggest a dissonant profile would remain unexplored. Dissonance would tend to be hidden by the allocation. In order to avoid this problem, a slightly different procedure was followed.
Once categories of description had been established, sections of interviews describing conceptions and approaches were read - seeking not only for the highest category that individual teachers held, but also searching for elements suggesting dissonance. In this way, it was possible to identify dissonant descriptions of conceptions or approaches. It is important to mention that this type of dissonance is related to the description of one particular conception or approach. However, dissonance also emerged when exploring associations between conceptions and/or approaches. Therefore, it may emerge in descriptions of one specific conception or approach, and/or in associations between conceptions and/or approaches. A profile was identified as ‘dissonant’ if dissonance emerged in descriptions of single conceptions, approaches or in associations between them. This supports the idea of Postareff et al (2008) that qualitative research is likely to identify this phenomenon, as one single dissonant aspect leads to a dissonant teaching profile.

Returning to the question of phenomenography as an approach for exploring dissonance, the analysis suggested that it would be suitable if the following elements are taken into consideration:

1. Teaching profiles are built upon conceptions and approaches emerging from the data and not from predetermined categories.
2. Being aware that the process of allocating individual teachers to categories of description needs to be open to explore elements of dissonance.
3. Being aware that dissonance may also emerge in associations between conceptions and/or approaches.

Postareff et al (2008) proposed to extend to teaching the concept of ‘orchestration’, which was originally used in relation to studying (‘study orchestration’; e.g., Lindblom-Ylänne, 2003). These authors proposed the idea of ‘teaching orchestrations’ for researching how teaching profiles (emerging from associations between conceptions and approaches) are influenced by the context. They believed that a relationship between different teaching profiles and the context is likely. The present study explored ‘teaching orchestrations’ in blended learning environments through associations between teaching profiles and perceptions of the teaching situation. Results suggested that teaching profiles and the context (‘perceptions of the teaching situation’) were associated. ‘Systematically information focused profiles’ were associated with ‘mostly inadequate’ perceptions; ‘systematically learning
focused profiles’ were associated to ‘mostly adequate’ perceptions; and ‘dissonant profiles’ did not present a clear pattern of association to perceptions. These are interesting and exciting results. They provided support for the conjectures of Postareff et al (2008), and extended research on ‘teaching orchestrations’ to blended learning environments, an area not explored using this conceptualisation before. The results also provided further support to Prosser & Trigwell (1997a), which established the importance of the teaching situation for the adoption of approaches to teaching.

The present study also explored associations between blended teaching profiles and teachers’ characteristics. Discipline seemed to have an influence in teaching profiles. ‘Systematically information focused’ profiles were associated with ‘hard pure’ disciplines, and ‘systematically learning focused’ profiles were mostly associated with ‘soft’ disciplines (although two of eight interviewees were from ‘hard’ disciplines). This is in line with a previous study by Lindblom-Ylänne et al (2006). These researchers found that lecturers in ‘hard’ disciplines were more likely to have an ‘information focused’ approach, while lecturers from ‘soft’ disciplines were more likely to have a ‘learning focused’ approach. Although the Lindblom-Ylänne et al (2006) study did not explore teaching profiles, but only approaches to teaching, their results showed a similar trend. Regarding ‘dissonant blended teaching profiles’, Prosser et al (2003) claimed that dissonance was found mainly in less experienced teachers. The present study offered some further but limited support for those findings. Three out of eight teachers were new to teaching (and there were no newer teachers with consonant profiles). However, the other teachers presenting dissonant profiles were not new to teaching. Two of these eight teachers had lengthy teaching experience, and the incorporation of eLearning had had an impact on how they conceive and approach their teaching. In this case, what had been previously found in relation to students: dissonance related to problems in adapting to perceived requirements of learning environments (Vermunt & Verloop, 1999; Lindlom-Ylänne, 1999; Lindlom-Ylänne and Lonka, 1999; 2000), seemed to affect them. Their ‘dissonant profiles’ seemed to emerge due to their attempts to cope with the new requirement of incorporating eLearning. Finally, in relation to the other three teachers presenting ‘dissonant profiles’, it seemed that very specific elements they perceived in their teaching situation triggered dissonance. These were negative perceptions of students and problems with accessing and managing the LMS.
A model for understanding teaching in blended learning environments, emerging from the elements investigated through the qualitative study, is presented in Figure 16.
Figure 16: A model for the understanding of the experience of teaching in blended learning environments
10.1.2 Discussion of the results of the quantitative analysis

10.1.2.1 Limitations

The quantitative study had limitations that need to be taken into account before discussing its results.

Firstly, in relation to the development of the ‘approaches to teaching using eLearning’ questionnaire, there are three issues that need to be considered. The first is that the scope of this novel questionnaire is limited. It was built based on the findings of the qualitative study, which showed approaches to teaching using eLearning ranging from ‘information’ to ‘communication/collaboration focused’. As stated before, in terms of Laurillard’s (2002) classification of learning technologies, this questionnaire would cover mainly ‘narrative’ ‘interactive’ and ‘communicative’ media; and, to a lesser extent, ‘productive’. However, the ‘adaptive’ capabilities of eLearning were not covered at all. ‘Adaptive’ capabilities, which allow students to experiment and practise, are ones Laurillard (2006) argued for when thinking of the eLearning potential. On the other hand, the aim of this questionnaire was to further explore what was already found in the qualitative study; not trying to cover all possible uses of eLearning. It is important, however, to acknowledge this issue and leave open the possibility of further development in this direction if needed. The second issue is that the sample achieved did not produce a respondent/item ratio large enough for conducting a factor analysis including all the items. This is a traditional guideline for the development of questionnaires (e.g., DeVellis, 2003) which could not be followed strictly. Questionnaires developed previously in a similar way have been criticised (Meyer & Eley, 2006). However, I factor analysed each of the proposed scales and conducted factor analysis at the level of the summated scales, obtaining reasonable results. Further development of the ‘approaches to teaching using eLearning’ questionnaire will need to consider conducting factor analysis at the level of the items. The third issue is that the ‘information strategy’ scale presented some problems that may lead us to think it needs further development. This was the only scale which did not form one factor (but two instead) when analysing its unidimensionality. It also presented the lowest level of reliability, based on Cronbach’s alpha.
Secondly, in relation to the analysis of associations between ‘approaches to teaching’, ‘approaches to teaching using eLearning’ and ‘perception of the teaching situation’, two issues needed to be mentioned. The first is that the study is based on a small self-selected sample. Although results presented in chapter 9 were in line with hypothesised associations, it is important to consider them with due caution. The study does not claim these are stable generalisable results. They represent how approaches and perceptions were associated for this group of teachers only. The second issue is related to cluster analysis. Variables included in profiling the clusters (teaching experience, gender, academic position and discipline) did not show significant differences. The qualitative study had suggested that these elements would be associated with approaches. Also, prior research had suggested disciplinary variation in approaches (Lindblom-Ylänne et al, 2006). Therefore, it may be the case that these non-significant findings are due to the sample features (small and self-selected) and need to be taken with caution.

\[ \text{10.1.2.2 Results} \]

As described in chapter 3, there has been an intense debate between supporters of maximum likelihood factor analysis and those using principal components factor analysis for scale development (Hair, 1998; Thompson, 2004; Costello & Osborne, 2005; Osborne, Jason, & Costello, 2004; Meyer & Eley, 2006; Trigwell & Prosser, 2006). In order to address this issue, the analysis conducted in chapter 8 employed both methods. Results showed that both maximum likelihood and principal components analyses yielded similar results, although the former tended to yield lower level communalities. In scales where communalities yielded by principal components were low, the maximum likelihood analysis tended to bring them down to almost unacceptable levels, for example on the ‘information strategy’ scale. However, when the principal components analysis yielded high communalities and high factor loadings, as in the case of the analysis of summated scales, the maximum likelihood analysis yielded outcomes that did not question the principal components results. This suggests that if communalities found in principal components analysis are too low, results of maximum likelihood analysis would lead one to think of deleting some items. However, where loadings and communalities are high, probably this would not be needed. For the purpose of this study, the ‘information strategy’ scale was kept in order to test associations with scales from the
other questionnaires. However, I am aware that its inclusion may be questionable and that further development of that particular scale may be needed.

Analysis of the scales of the ‘approaches to teaching using eLearning’ questionnaire showed congruent associations between intention and strategy for each approach. This is an encouraging outcome as it is consistent with the structure of approaches to teaching using eLearning emerging from the qualitative study. At the same time, it extends outcomes from previous research, on approaches to teaching face-to-face, between intention and strategy (Trigwell and Prosser, 1996). Findings from the present study support the idea that the strategy adopted by university teachers matches the intention they have, not only in face-to-face teaching, but also when using eLearning.

Turning to results on associations between ‘approaches to teaching’, ‘approaches to teaching using eLearning’ and ‘perceptions of the teaching situation’, there are three issues to be discussed.

The first is that, in contrast with the qualitative study, ‘conceptions’ were not included in the quantitative study. There are no suitable questionnaires available, from a relational perspective, on conceptions of teaching or conceptions of teaching using eLearning. One questionnaire on conceptions of teaching is used by Gow and Kember (1993), and this has been adapted and reused by Norton et al (2005). However, this questionnaire was considered unsuitable for the present study as it takes a different perspective on research into teaching. Therefore, this study was restricted to approaches and perceptions, and used questionnaires developed within a relational framework.

The second issue is that scales related with ‘communication’ and ‘collaboration focused’ approaches tended to be associated. These four scales were associated among themselves, as showed by correlation analysis. They tended to load together in principal components factor analysis (factors 2 and 3), and cluster analysis showed that teachers in clusters 1 and 3 tended to have positive scores on scales for both approaches. This suggests that ‘communication’ and ‘collaboration focused’ approaches would be part of the same phenomenon. Results from the qualitative analysis showed that these types of approaches were both ‘learning focused’ and, actually, were grouped together in one called ‘communication/collaboration focused’.
These approaches represented the incorporation of eLearning in teaching in a way that is intended to foster high quality learning experiences.

Thirdly, results from the quantitative study tended to be congruent with the outcomes of the qualitative one, and also added some new insights. Firstly, in relation to congruence with the qualitative study, quantitative results suggested that teachers who approached the face-to-face teaching in an ‘information focused’ manner tended to approach teaching using eLearning consonantly. Also, for teachers holding these approaches, the perception of the teaching situation tended to be negative (cluster 2). On the other hand, approaches focused on learning in face-to-face teaching and when using eLearning tended to be associated, and, in this case, perceptions of the teaching situation tended to be positive (e.g., factors 2 and 3; cluster 1). Finally, dissonant associations were also found (e.g., factor 4; clusters 3 and 4). Secondly, in relation to new insights, the quantitative study identified ‘incoherent’ associations between approaches and perceptions which had not been identified in the qualitative study. These emerged in clusters 3 and 4. Cluster 3 presented an incoherent perception of the teaching situation which is highly negative - combined with dissonant associations in face-to-face teaching (both information and learning focused) and an advanced approach to teaching using eLearning, focused on communication and collaboration. Cluster 4 would be in a similar position where a highly positive perception of the teaching situation, affording a student-learning focused approach to teaching, is associated with dissonant associations in face-to-face teaching.

It is also important to mention that results from the quantitative study also provided support for findings from previous research on approaches and perceptions in face-to-face ‘conventional’ settings (Prosser & Trigwell, 1997a). Factor one and cluster one showed that ‘conceptual change/student focused’ approaches to teaching were associated with positive perceptions of the teaching situation. On the other hand, cluster 2 showed that ‘information transfer/teacher focused’ approaches to teaching were associated with negative perceptions of the teaching situation.

### 10.1.3 Further research

Further research is needed to assess the robustness of the categories of description and associations emerging from the qualitative study presented in this thesis. The sample
employed in this research came from only two universities. Therefore, it is important to replicate this study in order to see if findings are similar, or whether different categories and/or associations emerge. It is also important to undertake the study of associations between categories of description, particularly associations between the face-to-face and eLearning sides of blended teaching. Although this research has provided some insights into these associations, we are at the beginning of understanding what happens when face-to-face and eLearning teaching are combined together. Much more research is needed in this area. In this particular study I have opted to explore both sides of the blended teaching experiences separately. However, I acknowledge that further research in this area may explore blended teaching as a seamless whole (e.g., Ellis et al, 2006) rather than as a construct composed of its face-to-face and online aspects.

Research into perceptions of the teaching situation, particularly in relation to eLearning and how it influences approaches to teaching using eLearning, is also needed. Results from the qualitative study showed that teachers’ perceptions of their situation had an important influence on the approach they adopted. However, these findings are also partial and need to be contrasted against findings from different settings. This is particularly relevant as teaching situations may vary significantly in different universities. In exploring associations between the elements of the teaching experience, further studies should consider using the concepts of ‘teaching profiles’ and ‘orchestrations’. Associated with this issue, the value of phenomenography, as a qualitative method suitable for exploring teaching profiles and orchestrations, should be explored further.

Similarly, the quantitative study should be replicated, including a broader sample of teachers, ideally coming from different universities. In this way, it would be possible to further explore associations between approaches and perceptions found in this study. Also, in relation to cluster analysis, it would be important to explore further the variables included for profiling them (teaching experience, academic position, gender and discipline). In this study, these variables showed no significant differences. A replication should include other variables that may be more helpful in profiling, but should also include ones that did not provide significant results in the present study. This result may be due to the sample size, and before dismissing these variables, it would be worth trying them with a bigger sample. This is particularly relevant considering that the qualitative study provided some support, suggesting that these variables would have some level of association with teaching profiles. Another relevant
consideration is that previous research has suggested that discipline has an influence on approaches to teaching (Lindblom-Ylänne et al, 2006). In line with replicating this quantitative study, it will be important to give attention to improving the questionnaire developed on ‘approaches to teaching using eLearning’. One clear avenue for further development emerges from the results of this study. The scale on ‘information strategy’ did not work particularly well: it was the only one not forming one factor when testing unidimensionality, communalities of its items were low and presented a low level of reliability. Another avenue did not emerge directly from the data gathered, but from a theoretical perspective. As stated in the discussion of the limitations of the quantitative study, the full spectrum of possible uses of eLearning was not reflected in the questionnaire, only approaches emerging from the qualitative study. The questionnaire did not cover elements of ‘adaptive’ media, as defined by Laurillard (2002). Therefore, in further developing the scales, one may think of including items reflecting those uses.

So far, further research has been proposed in the form of replicating and testing the research already conducted. But there are other areas that may raise different research questions about the experience of using eLearning with campus-based teaching. One of these areas is how teachers’ approaches to teaching in blended learning environments are associated with students’ approaches to learning in this sort of environment. Prior research conducted on teaching in face-to-face settings has shown that students tended to adopt deep approaches to learning when teachers adopted approaches focused on learning and the student (Trigwell et al, 1999). However, research on students’ learning when eLearning is incorporated in a ‘learning focused’ manner, such as structured online and face-to-face discussions, showed that there was variation in approaches to learning and a majority of students tended to adopt surface approaches (Ellis et al, 2006). This may suggest that an approach to teaching using eLearning which is ‘communication/collaboration focused’ would not necessarily lead to students adopting deep approaches to learning (through discussions in this case). Research exploring this issue is needed in order to know if approaches to teaching and learning, when eLearning is involved, are associated in similar ways; as when the learning and teaching process is conducted in face-to-face settings.

Another area of interest for further research is exploring teachers’ experiences of particular eLearning tools. In the current research, the aim was to explore experiences in general. However, it would be of interest to investigate what and how they teach through online and
face-to-face discussions, as in the case of the study about students. More specifically, it would be of interest to know how teachers conceive and approach teaching using eLearning in specific contexts, for example: problem-based learning tasks, such as online searches or interaction with multimedia materials; or specific technologies for teaching, such as discussion boards. This second area is broad and may develop an important body of knowledge about teachers’ experiences of eLearning.

Finally, studies which account for changes in conceptions and approaches over time would be worth undertaking. Change in conceptions and approaches may be driven by teachers’ involvement with eLearning through participation in academic development units, through interaction with LMS or other eLearning tools. At the same time, it needs to be recognised that eLearning is an area of continuing change. Therefore, experiences of teaching using eLearning may change over time because new learning technologies have emerged and others have become obsolete. Further research may lead to a better understanding of change in how university teachers understand and approach eLearning.

10.1.4 Implications for practice

Findings from this research have implications for academic development, for management of university teaching and eLearning; and for the practice of teaching.

In relation to academic development, eLearning related programs have focused, so far, mainly on providing technical skills. The aim has been that teachers know how to use the LMS their universities are employing (Salmon, 2005). While it is important that the teachers get knowledge on how to use the LMS, results from this research suggest that other elements should also be addressed. One very relevant issue is the lack of pedagogical knowledge teachers reported to have on how to incorporate eLearning. Programs for academic development, previously implemented, have used relational research for developing the pedagogical awareness of university teachers (Prosser & Trigwell, 1997b; 1999). These programs have been focused on developing conceptions of teaching towards more sophisticated ones; and understanding variation in approaches to teaching, directed to make teachers aware of the value of more sophisticated approaches. A similar approach should be taken for developing a pedagogical awareness of what and how eLearning may be
incorporated into teaching in a way that supports quality learning experiences. Programs of academic development may be employed for promoting more sophisticated conceptions and approaches to teaching using eLearning, those in which it is seen as a medium for supporting learning rather than just for providing information. At the same time, academic development should promote an awareness of how eLearning can be embedded in ‘conventional’ face-to-face teaching in a way that both sides of blended learning environments are strengthened, produce synergy for creating and delivering quality learning experiences.

In relation to the management of teaching, particularly in relation to eLearning, results of this research show that attention needs to be paid to factors that may affect the incorporation of eLearning into teaching. Firstly, teachers need to perceive they have control over what they teach, in order to try and experiment with learning technologies. If they do not feel enough control over their teaching, it is unlikely that they will try new or more advanced forms of eLearning. Secondly, a clear strategy and goals for deploying eLearning needs to be in place. In the development of these strategies, teachers need to be involved and agreement needs to be achieved for the strategy to work. Thirdly, there needs to be good quality technical and pedagogical support for teaching using eLearning. The focus has been on providing technical support, which is highly regarded and recognised by teachers; but more needs to be done to provide pedagogical support. This type of support needs to be oriented towards design of units, how to embed eLearning in on-campus courses, what type of tools are available and which are suitable for particular learning tasks. The university management has a key role in setting up the right conditions for eLearning to be incorporated in a way that fosters quality learning experiences.

Finally, in relation to the practice of teaching in blended environments, it should be aligned, in its face-to-face and online aspects, in order to promote students’ learning. This implies that university teachers should incorporate eLearning in their ‘conventional’ face-to-face teaching, focusing on communication-collaboration and knowledge building. This can be done by developing and implementing tasks which promote high level understanding. Examples of such tasks, identified in this study, are:

- Blended discussions: teachers may design and implement tasks in which students get involved in reading relevant texts in a specific area of knowledge, then participate in face-to-face discussions to deepen their understanding of the main concepts of the
texts and then continue discussing online with the aim of further deepening their understanding: developing a critical perspective on what they are learning, making sense of and through their own experience, etc.

- Knowledge building tasks: teachers may design and implement tasks in which students need to create a conceptual artifact of some kind. Examples might include work on the creation of an e-poster, a report, a blog, etc. eLearning may play a key role in such tasks. It may be employed as a shared repository of student-constructed artifacts, as a medium for collaboratively writing a report, or for creating, uploading and commenting on an e-poster or a blog.

Student-focused teaching in blended environments may be a difficult task. This research has identified elements such as lack of time, lack of pedagogical support, etc. as obstacles to student-focused approaches to teaching. Academic development and well-designed teaching and eLearning strategies may help with this issue. If university teachers are offered the right academic development courses and activities, and their university policies are in line with student-focused approaches to teaching, then it would be likely that they may take advantage of such elements to align and develop their teaching.

Finally, on this point, it is important to mention what university teachers should avoid when teaching in blended environments. Lower level conceptions of, and approaches to, blended teaching showed a focus on transmission of information. Prior research on teaching - although not carried out in a blended environment - has shown that emphasis on transmission is unlikely to lead students to deep approaches to studying or to higher level learning outcomes (Prosser and Trigwell, 1999). Therefore, university teachers should avoid the transmissive model in their blended teaching and move their practice towards a focus on learning and the student.

10.1.5 Key contributions of this research

This research has contributed to the understanding of teaching in blended learning environments. In so doing, it has extended prior research into teaching in face-to-face settings, has provided new insights into teaching using eLearning and into the associations between face-to-face teaching and eLearning when they are combined in blended learning
environments. In relation to conceptions, it has discovered a set of conceptions of teaching which is coherent with previous research, and it has produced new insights into dimensions of variation. The research has also discovered a set of conceptions of teaching using eLearning, which is coherent with previous research, but advances our understanding by identifying and describing dimensions of variation. Regarding approaches, these were coherent with previous research both for teaching in face-to-face settings and when using eLearning, and also provided new insights. Conceptions of blended teaching were proposed as emerging from associations between conceptions of teaching and conceptions of teaching using eLearning. Similarly, approaches to blended teaching emerged from associations between teaching in face-to-face settings and using eLearning. This research also contributed to the knowledge in the area by identifying elements affecting the perception of the teaching situation, both in general and in relation to eLearning. Having explored the elements of the teaching experience (conceptions, approaches and perceptions) this research contributed by investigating their associations through the ideas of ‘consonance/dissonance’, ‘coherence/incoherence’ and ‘teaching orchestration’. In this way, it offered a model for understanding teaching in blended learning environments which included the elements of the experience of teaching, and also their associations. Methodologically, this research contributed in two ways. 1) By developing a novel questionnaire on ‘approaches to teaching using eLearning’. Before this study, there was not an instrument for exploring quantitatively, from a relational perspective, associations between face-to-face and online teaching. 2) By extending the use of phenomenography to study ‘consonance/dissonance’. Previously, studies used content analysis or questionnaires to investigate dissonance. This research has provided insights and practical advice on how to use phenomenographic methods in the exploration of ‘consonance/dissonance’.

10.2 Conclusion

The research presented in this thesis had the aim of inquiring about university teachers’ experiences of blended learning environments. In order to conduct this task, four research questions guided the inquiry:

1. How do university teachers’ understand good teaching? What is eLearning good for in teaching? How are these conceptions associated?
2. How do university teachers approach teaching? How do they approach teaching using eLearning? How are these approaches associated?

3. What are university teachers’ perceptions of their teaching situation when teaching in blended learning environments?

4. How are the elements of the experience of teaching in blended learning environments (conceptions, approaches and perceptions) associated?

In relation to question one, findings showed the following:

1. Conceptions of teaching were: ‘transmitting basic information of the discipline’, ‘transmitting lecturers’ understanding’, ‘developing students’ understanding’ and ‘changing students’ understanding – developing critical thinking’. The first two conceptions were fragmented; while the last two were cohesive. Dimensions of variation were: role of the lecturer, role of the students, content and motivation.

2. Conceptions of teaching using eLearning were: ‘a medium to provide information’, ‘for occasional communication’, ‘for online discussions’ and ‘to support knowledge building tasks’. The first two conceptions were fragmented, while the last two were cohesive. Dimensions of variation were: role of the teacher, role of the students, course participants’ interaction and perception of embeddedness with face-to-face component.

3. Conceptions of teaching and conceptions of teaching using eLearning were consonantly and dissonantly associated. These associations led, at a meta-level, to three conceptions of blended teaching: ‘blended teaching as a disintegrated way of supporting transmission of information’, ‘blended teaching as a dissonant way of combining face-to-face and online teaching without a clear pattern’ and ‘blended teaching as an embedded way of promoting students’ understanding’.

In relation to question 2, the following results were found:

1. Approaches to teaching were: ‘a teacher/content focused strategy with the intention of providing knowledge of the discipline’, ‘a student/learning focused strategy with the intention of developing students’ understanding’ and ‘a student/learning focused strategy with the intention of developing students’ critical thinking-worldview’. The
first one represented a lower quality approach, while the second and the third represented higher quality approaches.

2. Approaches to teaching using eLearning were: ‘an information focused strategy with the intention of providing easy access to course materials-administrative information’, ‘an information focused strategy with the intention of providing access to up-to-date/quality materials’, ‘a communication focused strategy with the intention of having a space for asking questions-making announcements-keeping in touch’, ‘a communication focused strategy with the intention of engaging students in deep thinking through online discussions’ and ‘a collaborative learning strategy with the intention of providing an online space for knowledge building’. The first three approaches represented lower quality ones, while approaches four and five represent higher quality.

3. Approaches to teaching and approaches to teaching using eLearning were consonantly and dissonantly associated. These associations led, at a meta-level, to three approaches to blended teaching: ‘disintegrated/information focused’, ‘dissonant’ and ‘embedded/learning focused’.

In relation to question 3, findings showed the following:

1. Seven factors emerged as influencing teachers’ perceptions of their teaching situation in relation to eLearning: ‘control of teaching’, ‘institutional strategy’, ‘technical support’, ‘pedagogical support’, ‘amount of time needed’, ‘teacher’s skills for eLearning’ and ‘students’ ability and willingness to using eLearning’. Factors influencing teachers’ general perception of their teaching situation were ‘control of teaching’, ‘institutional support’ and ‘students’ characteristics’. Results suggested that teachers would be more likely to incorporate eLearning for fostering quality learning experiences if:

- They have adequate control over what they teach, allowing them space for experimenting with new ways of using eLearning.
- There is a clear and agreed institutional strategy which supports and promotes the up-take of eLearning.
- There is proper technical support.
- There is proper pedagogical support.
- There is enough time allocated for teaching using eLearning, or proper strategies for dealing with an increasing need for time are in place.
- Teachers perceive they have good technical skills (for using computers).
- Teachers perceive their students are pressing for incorporation of eLearning and have the proper skills for using it.

2. Results also suggested that teachers would be more likely to adopt ‘learning focused’ approaches to teaching if:

- They perceive they have control over what they teach.
- They perceive there is institutional support for their teaching.
- They have positive perceptions about their students.

In relation to question 4, results showed the following:

1. Associations between conceptions, approaches and perceptions were explored through ‘teaching profiles’ and ‘teaching orchestrations’. Teaching profiles referred to systematic associations between conceptions and approaches to teaching in face-to-face and online teaching. Three blended teaching profiles emerged: ‘systematically information focused’, ‘dissonant’ (with 5 variations) and ‘systematically learning focused’. Blended teaching profiles associated with perceptions of the teaching situation and teachers’ characteristics led to ‘teaching orchestrations’. Three orchestrations emerged: ‘consonant (information focused) and coherent’, ‘dissonant and coherent’ and ‘consonant (learning focused) and coherent’.

The research was conducted in two stages. The first was a qualitative phenomenographic study. The second was a questionnaire-based quantitative study. Results of the quantitative study tended to support prior qualitative findings, and also identified ‘incoherent’ associations between approaches to teaching and perceptions of the teaching situation, which had not emerged in the qualitative study.

Research findings were claimed to have implications for further research and for practice. In relation to further research, it was proposed that replication of the studies conducted here, using a broader range of universities, would be needed to assess the categories and
associations found. Also, further research was proposed for exploring associations between teachers’ and students’ experiences of blended learning environments, teaching using learning technologies for specific tasks or when employing particular tools, and how conceptions and approaches to teaching change over time. In relation to implications for practice, the implementation of academic development programs, focused on making teachers aware of variation in conceptions and approaches to teaching using eLearning, was proposed. This would promote more sophisticated ways of incorporating eLearning into on-campus education. Also, it was proposed that management of eLearning should help to set up favourable conditions for the teachers to perceive they are supported for the incorporation of eLearning into their teaching.

Results from this research suggest that teachers will incorporate eLearning for fostering quality learning experiences if they hold conceptions of teaching centred on facilitating students’ learning, approach teaching consonantly, hold conceptions of teaching using eLearning which are aligned with their learning focused conceptions of teaching, and approach teaching using eLearning focusing on students’ learning. At the same time, teachers who perceive their teaching situation positively, both in general and in relation to eLearning, would be more likely to approach teaching in blended learning environments in a ‘consonantly student/learning focused’ manner. Conceptions and approaches can be shifted towards more sophisticated ones through academic development activities. The teaching situation may be modified towards setting up the right conditions for eLearning up-take. These guidelines, carefully incorporated across different levels of the university, could help to deploy eLearning in a way that is likely to stimulate high quality learning experiences.
References


Appendices
Appendix 1: Interview schedule
Appendix 2: Copy of the web based survey
Appendix 3: List of original items of the novel ‘approaches to teaching using eLearning’ questionnaire