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Anna Parpala

EXPLORING THE EXPERIENCES AND CONCEPTIONS OF GOOD TEACHING IN HIGHER EDUCATION

Development of a questionnaire for assessing students' approaches to learning and experiences of the teaching-learning environment

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Abstract

The aim of this dissertation was to adapt a questionnaire for assessing students' approaches to learning and their experiences of the teaching-learning environment. The aim was to explore the validity of the modified *Experiences of Teaching and Learning Questionnaire* (ETLQ) by examining how the instrument measures the underlying dimensions of student experiences and their learning. The focus was on the relation between students' experiences of their teaching-learning environment and their approaches to learning. Moreover, the relation between students' experiences and students' and teachers' conceptions of good teaching was examined.

In Study I the focus was on the use of the ETLQ in two different contexts: Finnish and British. The study aimed to explore the similarities and differences between the factor structures that emerged from both data sets. The results showed that the factor structures concerning students' experiences of their teaching-learning environment and their approaches to learning were highly similar in the two contexts. Study I also examined how students' experiences of the teaching-learning environment are related to their approaches to learning in the two contexts. The results showed that students' positive experiences of their teaching-learning environment were positively related to their deep approach to learning and negatively to the surface approach to learning in both the Finnish and British data sets. This result was replicated in Study II, which examined the relation between approaches to learning and experiences of the teaching-learning environment on a group level. Furthermore, Study II aimed to explore students' approaches to learning and their experiences of the teaching-learning environment in different disciplines. The results showed that the deep approach to learning was more common in the soft sciences than in the hard sciences.

In Study III, students' conceptions of good teaching were explored by using qualitative methods, more precisely, by open-ended questions. The aim was to examine students' conceptions, disciplinary differences and their relation to students' approaches to learning. The focus was on three disciplines, which differed

in terms of students' experiences of their teaching-learning environment. The results showed that students' conceptions of good teaching were in line with the theory of good teaching and there were disciplinary differences in their conceptions. Study IV examined university teachers' conceptions of good teaching, which corresponded to the learning-focused approach to teaching. Furthermore, another aim in this doctoral dissertation was to compare the students' and teachers' conceptions of good teaching, the results of which showed that these conceptions appear to have similarities.

The four studies indicated that the ETLQ appears to be a sufficiently robust measurement instrument in different contexts. Moreover, its strength is its ability to be at the same time a valid research instrument and a practical tool for enhancing the quality of students' learning. In addition, the four studies emphasise that in order to enhance teaching and learning in higher education, various perspectives have to be taken into account. This study sheds light on the interaction between students' approaches to learning, their conceptions of good teaching, their experiences of the teaching-learning environment, and finally, the disciplinary culture.

Helsingin yliopiston käyttäytymistieteiden laitos
Kasvatustieteellisiä tutkimuksia 230

Anna Parpala

Kokemukset ja käsitykset hyvästä yliopisto-opetuksesta
Yliopisto-opiskelijoiden oppimista ja kokemuksia oppimisympäristöstä mittaavan kyselyn kehittäminen

Tiivistelmä

Tämän väitöskirjatutkimuksen tavoitteena oli kehittää kysely, jolla voidaan tutkia yliopisto-opiskelijoiden oppimista ja kokemuksia oppimisympäristöstä. Tutkimuksessa tarkasteltiin Opiskelijan oppiminen ja oppimisympäristöt (OPPI) -kyselyn validiteettia, eli sitä, mittaako kysely niitä ilmiöitä, joita sen on tarkoitus mitata. OPPI-kysely on muokattu versio Isossa-Britanniassa käytössä olevasta Experiences of Teaching and Learning Questionnaire (ETLQ). Väitöskirjatutkimuksen tavoitteena oli analysoida, miten opiskelijoiden kokemukset oppimisympäristöstä ovat yhteydessä heidän lähestymistapoihinsa oppimiseen. Lisäksi tarkasteltiin opiskelijoiden ja opettajien käsityksiä hyvästä opetuksesta ja näiden yhteyttä kokemuksiin oppimisympäristöstä.

Osatutkimus I tutki OPPI-kyselyn käyttöä kahdessa erilaisessa kontekstissa, suomalaisessa ja englantilaisessa. Osatutkimuksessa vertailtiin kahdesta eri aineistosta esille tulleita faktoriratkaisuja sekä niiden eroja ja samanlaisuuksia. Tulokset osoittivat, että samanlaiset faktorit koskien opiskelijoiden lähestymistapoja oppimiseen sekä heidän kokemuksiaan oppimisympäristöistä nousivat esiin kummassakin aineistossa. Osatutkimuksen tavoitteena oli myös tutkia, opiskelijoiden lähestymistapojen ja kokemusten välistä yhteyttä. Tulokset osoittivat, että opiskelijoiden positiiviset kokemukset oppimisympäristöstä olivat yhteydessä opiskelijoiden syväsuuntautuneeseen lähestymistapaan oppimisessa. Lisäksi kummassakin aineistossa löytyi systemaattinen ja negatiivinen yhteys pintasuuntautuneisuuden ja positiivisten kokemusten välillä. Tulokset olivat yhteneväisiä verrattuna osatutkimus II:een, jossa tarkasteltiin opiskelijoiden lähestymistapojen ja oppimisympäristökokemuksien välistä yhteyttä ryhmätasolla. Osatutkimus II analysoi myös tieteenalakohtaisia eroja opiskelijoiden lähestymistavoissa ja kokemuksissa oppimisympäristöistä. Tulokset osoittivat, että syväsuuntautuneisuus oli yleisempää ihmis- ja sosiaalitieteissä kuin esimerkiksi verrattuna luonnontieteisiin.

Osatutkimus III analysoi opiskelijoiden käsityksiä hyvästä opetuksesta laadullisella menetelmällä. Tutkimuksessa analysoitiin opiskelijoiden vastauksia avoimeen kysymykseen hyvästä opetuksesta. Tutkimuksessa tarkasteltiin opiske-

lijoiden käsitysten, lähestymistapojen ja tieteenalojen välistä yhteyttä. Osatutkimuksessa tarkasteltiin kolmea eri tieteenalaa, joiden opiskelijoiden kokemukset oppimisympäristöistä olivat erilaisia. Tulokset osoittivat, että opiskelijoiden käsityksissä hyvästä opetuksesta oli tieteenalakohtaisia eroja, mutta samalla ne olivat pääosin yhteneväisiä hyvää opetusta koskevan teorian kanssa. Lisäksi käsityksissä nousseet näkökulmat olivat samankaltaisia OPPI-kyselyn oppimisympäristöjä kuvaavien faktoreiden kanssa. Osatutkimus IV tarkasteli yliopisto-opettajien käsityksiä hyvästä opetuksesta ja tutkimustulokset osoittivat, että opettajat kuvasivat hyvää opetusta oppimislähtöisestä näkökulmasta. Tavoitteena tässä väitöskirjatutkimuksessa oli verrata opiskelijoiden ja opettajien käsityksiä hyvästä opetuksesta ja tulokset osoittivat, että käsitykset olivat hyvin yhteneväisiä keskenään.

Neljä osatutkimusta osoittivat, että OPPI-kysely toimii samankaltaisesti eri konteksteissa. OPPI-kyselyn vahvuus on, että se on samalla sekä validi tutkimusmittari että käytännön työkalu opetuksen ja oppimisen kehittämisessä. Tutkimus tuo lisää tärkeää tietoa siitä, miten opiskelijoiden lähestymistavat oppimiseen, heidän käsityksensä ja kokemuksensa hyvästä opetuksesta sekä heidän tieteenalansa ovat yhteydessä toisiinsa, ja miten nämä asiat voidaan huomioida yliopisto-opetuksen laadun kehittämisessä.

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Anna Parpala

Contents

List of original publications

I Parpala, A., Lindblom-Ylänne, S., Komulainen, E. & Entwistle, N. (submitted). Students' experiences of the teaching-learning environment, approaches to learning and their relation in two different contexts.

II Parpala, A., Lindblom-Ylänne, S., Komulainen, E., Litmanen, T. & Hirsto, L. (2010). Students' approaches to learning and their experiences of the teaching-learning environment in different disciplines, British Journal of Educational Psychology, 80, 269–282.

III Parpala, A., Lindblom-Ylänne, S. & Rytkönen, H. (2010). Students' conceptions of good teaching in three different disciplines, Assessment & Evaluation in Higher Education, 1–15, iFirst Article.

IV Parpala, A. & Lindblom-Ylänne, S. (2007). University teachers' conceptions of good teaching in the units of high-quality education, Studies in Educational Evaluation, 33, 355–370.

1 Introduction

The University of Helsinki reformed its degrees in 2005 as part of the Bologna process, which originated from the Bologna Declaration in 1998 and aimed to create a common European Higher Education Area. One method of doing this was to standardise the degree structures. This has had a profound impact on the degree structures in Finland. Instead of proceeding directly to a Master's degree without an intermediate Bachelor's degree, it is now mandatory for Finnish students to take the Bachelor's degree first. Alongside the structural reconstruction, Finnish universities redesigned their degrees through core content analysis (cf. Lindblom-Ylänne & Hämäläinen, 2004). The core contents of the new curricula were to include a core knowledge of the disciplines and skills needed later in working life.

One crucial goal of this reform was to assure the quality of the teaching and the learning outcomes of students. Student learning was emphasised more than teaching by turning away from the teacher-centredness toward a more student-centred approach to teaching (Programme for the Development of Teaching and Studies, 2003). The aim was thus to support students' learning processes by, for example, offering high-quality teaching, giving constructive feedback to students on their learning and offering systematic opportunities for student counselling (Lindblom-Ylänne, 2006). In practice this meant that students became obligated to write and maintain a personal study plan, in which, for example, they write their wishes and expectations regarding their studies and evaluate themselves as students and learners. Furthermore, orientation studies which give students information about studying at the University were included in the new curricula (Aronen, 2005). In sum, the overall aim of the curriculum reform was to increase students' deep approach to learning.

The other purpose of the Bologna Declaration, along with the easily comparable degrees in the European Higher Education Area, was to encourage European universities to assure the quality of their degrees and develop quality assurance systems with comparable criteria and methodologies. This aim also obligated the University of Helsinki and, like other European universities, the University of Helsinki has been developing a university-level quality-assurance system incorporating student evaluation (Strategy for the University of Helsinki 2010-2012, 2009). One aim of the student evaluation system has been to explore the effectiveness of the curriculum reform. Therefore, the University needed a student feedback system which answers the question of how well teaching supports students' deep approach to learning.

Student feedback systems are based on different principles. First of all, they can be divided into three groups on the basis of their focus: students' evaluation of teaching, students' satisfaction surveys and students' perception of academic quality (Richardson, 2005a). Richardson (2005a) argues that the first two for-

mal instruments of student feedback should be criticised because they are focused on either a single course (students' evaluation of teaching) or the institution as a whole (student satisfaction surveys). He points out that in order to enhance the quality of teaching, the focus should be on a study programme, which is usually the focus in instruments measuring students' perceptions or experiences of academic quality. Some of the instruments measuring students' perceptions are based on substantial empirical evidence, whereas others have not been evaluated externally (Richardson, 2005a). The wide range of student feedback instruments already in use at the University of Helsinki have mainly represented the latter; they have not been subjected to external scrutiny. Furthermore, the existing student feedback systems at the University of Helsinki have usually focused on a single course (Saari & Frimodig, 2009), which has been the predominant feedback level. Universities are now facing new challenges to provide information about their quality to policymakers, the society and the international higher education area and this information should be valid and internationally comparable. Thus, there is a need for constructing a new student feedback system that operates at a more general level and can be evaluated both critically and externally.

To tackle this aim the Helsinki University Centre for Research and Development of Higher Education together with pedagogical experts from the five faculties representing the Central Campus at the University of Helsinki (Arts, Behavioural Sciences, Law, Social Sciences, Theology), started the development of a student feedback instrument. The development process concentrated on constructing a feedback instrument with a solid theoretical framework in order to enable its critical scientific evaluation and ensure its validity. The relation between students' learning and their experiences of the teaching-learning environment was also emphasised to avoid the problem that student evaluations usually measure students' satisfaction with the teaching and assess teacher competence instead of focusing on learning experiences and learning outcomes (Harvey, 2003; Richardson, 2005a). After all, good teaching should be evaluated in relation to high-quality learning of students (Biggs, 2003; Entwistle & Walker, 2002).

There are only a few student feedback questionnaires suitable for evaluating teaching and learning at the degree level (Kember and Leung, 2009). After careful consideration and comparison between the existing student feedback instruments, the Experiences of Teaching and Learning Questionnaire (ETLQ; see Entwistle, McCune & Hounsell, 2003; TLRP, 2007) was chosen. It was developed as part of the research project 'Enhancing teaching-learning environments in undergraduate courses' (the ETL project; see http://www.etl.tla.ed.ac.uk), which investigated the ways in which findings from research could be used to create a learner-centred learning environment for students (Entwistle et al., 2003; TLRP, 2007). The strength of the ETLQ was that it combined the theories behind good teaching and approaches to learning at a course module level or a single course unit. Furthermore, ETLQ included elements of the teaching-learning environment which

were relevant in the light of the curriculum reform conducted at the University of Helsinki, such as teaching supporting students' understanding, constructive feedback given to students and constructive alignment.

The ETLQ is a formal, quantitative questionnaire, focusing on the ways students have actually studied in a course module and on their perceptions of their teaching-learning environments (Entwistle et al., 2003). The ETLQ instrument contains five sections, two of which were appropriate for use at the University of Helsinki. The first is the Approaches to Learning and Studying Inventory (ALSI), which contains items relating to approaches to learning and studying. This section was a modified form of an inventory originally published in 1983, namely Approaches to Studying Inventory (ASI). The inventory has provided a stable factor structure through several versions and across several countries (Richardson, 1994; Entwistle & McCune, 2004). The other section covers the students' experiences of the teaching-learning environment provided; it was based on a literature review, but also on an analysis of existing inventories measuring students' experiences of teaching-learning environments. There are still rather few studies using the ETLQ, but within the original study the scale consistency and the factor structure for each section were robust across the four subject areas used (McCune, 2003; Entwistle, 2009) and comparable factors were also obtained for experiences of teaching with students in mainland China (Xu, 2004).

As mentioned above, the first criterion in choosing the instrument was that it included both teaching and learning perspectives. The second criterion was that there was a need for systematic and extensive feedback for the whole university with its approximately 35,000 students. The ability to provide information systematically and from the entire student population is the strength of surveys with formal instruments (Richardson, 2005a). This is probably the reason why formal questionnaires are the most widely used form of student evaluation (Kember, Leung & Kwan, 2002). Nevertheless, they have been criticised for being challenging and problematic because they may reflect several things, and it may remain unclear what the questionnaires are really measuring (Langbein, 1994; Cohen, 2005). The use of questionnaires and quantitative student feedback systems may also be problematic because they do not allow students and teachers to discuss, explain and justify their responses (Johnson, 2000). Furthermore, the questionnaires may cover only a minority of the issues raised in students' open-ended questions and for this reason student feedback should be collected in a variety of ways (Huxham, Laybourn, Cairncross, Gray, Brown, Goldfinch & Earl, 2008). Kember (2000a) concludes that the most effective way of collecting student feedback is to combine qualitative and quantitative data. He argues that the use of solely quantitative data does not support an institution's quality enhancement. In his review of student feedback systems Richardson (2005a) comes to the same conclusion and suggests that open-ended questions should be included in feedback instruments. The combination of open-ended questions and Likert

scale items increases the validity of the feedback by bringing more information about how students judge their teaching-learning environment. Furthermore, the need for internationally comparable information raises a challenge for another kind of reliability and validity. In other words, do the instrument yield consistent results if it is used repeatedly under the same conditions, usually measured with Cronbach's coefficient alpha, and does the instrument measure the underlying trait or traits that it purports to measure (Richardson, 2004)? These assumptions and challenges of the questionnaires also affected the development of the modified ETLQ at the University of Helsinki.

In order to extensively explore the students' experiences of the teaching-learning environment at the University of Helsinki, both quantitative and qualitative multifaceted data were collected. This meant that several open-ended questions were added to the modified ETLQ. One of these questions was students' conceptions of good teaching. The question addressed was: are students' experiences of good teaching, measured with a theoretically-based questionnaire, related to students' conceptions of good teaching? The aim was to explore how well the implemented questionnaire, ETLQ, covered the issues students themselves raised when describing good teaching. This relation was interesting because most of the student feedback questionnaires at the University of Helsinki are usually based on in-house construction, without a solid theoretical foundation. Thus, the academics' own perceptions of good teaching have affected the development of the feedback questionnaires as well as the judgements of good teaching.

The development of the feedback system for the University of Helsinki was the basis of my PhD studies. I coordinated the development and modification of the ETLQ in the Finnish context at the University from the very beginning. In my view, the strength of the ETLQ as a feedback system was that it combined students' learning and their experiences of good teaching in a single questionnaire. The relation between learning and students' experiences also triggered my enthusiasm for doing more research on the ETLQ. Fortunately, I had the opportunity to do research in this project, and the challenges raised earlier became the main themes of this dissertation. My doctoral dissertation aims to develop a questionnaire for assessing students' approaches to learning and their experiences of the teaching-learning environment, and then to explore the validity of the modified ETLQ by examining how the instrument measures the underlying dimensions of students' experiences and their approaches to learning. Another aim is to answer the research questions concerning students' experiences of the teaching-learning environment, their conceptions of good teaching and the relation between conceptions, experiences and students' approaches to learning. More precisely, these research questions are the following:

1. How are students' experiences of the teaching-learning environment related to their approaches to learning in different contexts and in qualitatively different student groups?

2. How do students' experiences measured with the questionnaire differ from the conceptions of good teaching examined with qualitative methods? Are there similarities in students' and teachers' conceptions of good teaching?

Before introducing the aims and the research questions of the present study in detail, the theoretical background of the ETLQ and "good teaching" is introduced. The introduction starts with a description of learning, because good teaching can be defined as an extended awareness of the relationship between learning and teaching (Entwistle & Walker, 2002).

1.1 Approaches to learning

In the 1970s in Gothenburg, Sweden, Marton and Säljö (1976) were interested in how students went about reading an academic text. Students were asked to read an article and were then asked questions about it. They were asked to describe what the author's main message was and how they had tackled the task. Based on students' answers Marton and Säljö (1976) introduced terms describing two qualitatively different processes of learning: surface and deep processes. A student applying surface level processing concentrates on the text itself, whereas a student who processes learning at a deep level aims at interpreting the meaning of the text. A similar distinction was also reported by Svensson (1977), but with a different terminology. In his research, Svensson described the main variation in student learning by using holistic and atomistic approaches. Students approaching reading holistically try to understand the text as a whole, whereas students with an atomistic approach focus on specific comparisons in the text and try to memorise it. At the same time Pask (1976) introduced another concept into the research on student learning, which was based on his experiments with the kind of strategies students use when the task requires a deep level of understanding. According to these experiments, students' learning strategies were differentiated between holist and serialist strategies. Serialist learners tend to search for specific data and use evidence critically whereas holist learners show the intention to test relational hypotheses and see the task in a broad context.

The findings of the Gothenburg group strongly influenced the research in Lancaster (see Entwistle & Ramsden, 1983), and the distinction between surface and deep levels of processing was included in the research project. However, Noel Entwistle and his research group concluded that the term "processing" was too narrow because it did not include both the intentional and processing components, which are related to learning (Entwistle, Hanley & Hounsell, 1979). The term "processing" was seen to refer only to the process of learning (Craik & Lockhart, 1972) and thus the Lancaster group preferred to use the term approach (Entwistle & Ramsden, 1983), based on Svensson's (1977) description, but retaining the categories of deep and surface by Marton and Säljö (1976). The new term, approaches to learning, was then widely accepted as the most appropriate label

for these qualitative differences (Marton & Säljö, 1997). Since the 1970s the distinction between deep and surface approaches has been replicated in several studies (e.g., Biggs, 1979; Entwistle & Entwistle, 1992; Entwistle & Ramsden, 1983; Lonka & Lindblom-Ylänne, 1996; Marton & Säljö, 1997; Webb, 1997).

Entwistle and his research group (Entwistle & Ramsden, 1983) developed the Approaches to Studying Inventory (ASI), which was mainly designed to explore the relation between approaches to learning (Marton & Säljö, 1976) and learning styles (Pask, 1976). In the ASI the deep approach was divided into the intention to understand and an active, critical approach to learning. This critical approach to learning was measured with a combination of "relating ideas" (compare holist, Pask, 1976) and "use of evidence" (compare serialist, Pask, 1976). The use of these two components was essential in achieving deep-level outcomes. Furthermore, the recent development of the ASI broadened "relating ideas" by linking this to the aspects of students' self monitoring. A new scale labelled Monitoring studying was added to the questionnaire (Entwistle & McCune, 2004). A student's self monitoring can be seen as a part of his or her self-regulation strategies. Self-regulated learners are characterised as committed, active participants who efficiently control their own learning experiences in many different ways, including monitoring and adjusting their own learning processes according to the learning task (Pintrich, 2000). Previous research has provided evidence that students' self-regulation is related to their deep approach to learning (Lonka & Lindblom-Ylänne, 1996; Nieminen, Lonka & Lindblom-Ylänne, 2004; Vermunt & Vermetten, 2004). In addition to the self-regulation strategies, Vermunt and colleagues (Vermunt, 1998; Vermunt & van Rijswijk, 1988) distinguish two other regulation strategies: external regulation and lack of regulation. An externally regulated student relies strongly on the teacher, peers, or on study materials for guidance. A lack of regulation reflects students' confusion about how they should study. There is also evidence that external regulation, as well as lack of regulation, is related to the surface approach to learning (Lonka & Lindblom-Ylänne, 1996; Nieminen, et al., 2004)

The surface approach has been found to be related to memorising without understanding (Marton & Säljö, 1976). Moreover, Meyer (2000a) explored the contrasting forms of memorisation and concluded that students applying a surface approach tend to score higher on items measuring Memorising before understanding and Memorise as rehearsal, whereas Memorising after understanding was related to the deep approach to learning. Meyer (2000a) also suggests that in order to understand the differences between the processes of understanding, references to terms "memorise" or "understanding" without any descriptions should be avoided in the questionnaires. Students' use of a surface approach has also been found to be associated with their inability to see relationships between ideas or concepts, in other words, fragmented knowledge (Meyer, 1991). Based on these findings the Approaches to Learning and Studying Inventory (ALSI) (A modified

form of ASI; see also Chapter 1 Introduction) includes items measuring students' surface approach, which describe unreflective studying and unthinking acceptance; that is, taking transmitted knowledge for granted, memorising without understanding and possessing fragmented knowledge structures (Entwistle & McCune, 2004).

Also, a third category of approaches to learning was included in ASI, namely the strategic or achieving approach to studying (Biggs, 1987; Entwistle & Ramsden, 1983; Ramsden, 1979). The strategic approach has been found to be positively related to the deep approach to learning (Biggs, 1987), but it has also been found to be related positively to both deep and surface approaches to learning on the basis of confirmatory factor analyses (Kember & Leung, 1998). Furthermore, research implies that although the strategic approach can be related to both deep and surface approaches, it is more useful to combine it with a deep approach in order to succeed in various domains (Entwistle & Ramsden, 1983; Lonka & Lindblom-Ylänne, 1996). In short, all of these previous studies suggest that the strategic approach is not a distinct approach, such as the deep and surface approaches to learning.

The meaning of the strategic approach has been changed over time. Originally this approach referred to how ambitious and organised students are, but recently the strategic approach has lost the achievement element and reflects organised studying and effort management more than students' intention to compete against other students in their courses (Entwistle, 2009; Entwistle & McCune, 2004; Entwistle & Peterson, 2004). In the new, modified inventory (ALSI) the factor measuring strategic approach covers new items, which measure student's self-regulation and metacognitive skills. The term Strategic approach has thus been replaced by Organised studying (Entwistle et al., 2003). The organised approach has been described as an approach to studying rather than learning, because it measures how students go about their everyday studying, how they organise it and manage the time (Entwistle, 2009). In order to avoid using several concepts the term approaches to learning is used in this doctoral dissertation instead of approaches to learning and studying. Table 1 illustrates the three different approaches to learning measured with ALSI: deep, surface and organised.

Table 1. Scales measuring approaches to learning in Approaches to Learning and Studying Inventory (ALSI)

Deep approach	Surface approach	Organised studying
Intention to understand	Memorising without understanding	Time management
Relating ideas	Unthinking acceptance	Study organisation
Use of evidence	Fragmented knowledge	Effort management
		Concentration
Monitoring studying		
Study effectiveness		
Monitoring understanding		
Monitoring generic skills		

1.1.1 Combinations of different approaches to learning

Previous research suggests that a deep approach to learning is more likely to be related to higher quality learning outcomes than a surface approach (Biggs, 1979; Entwistle & Ramsden, 1983; Lindblom-Ylänne, 1999; Román, Cuestas & Fenollar, 2008; Trigwell & Prosser, 1991). Webb (1997) suggests that the dichotomy between the deep and surface approaches has been accepted among academics and it has been easy to agree that the deep approach to learning is more desirable. However, the simplicity of the dichotomy can be misleading (Entwistle, 1997), and it should be noted that an individual student or groups of students may adopt different combinations of approaches to learning according to context and students' conceptions of learning (Meyer, 1991). In an ideal situation, the various combinations of approaches to learning form a coherent whole in which different elements fit together theoretically. However, previous research has shown that inherent in such combinations may be degrees of conceptual incoherence or dissonance. This means that the expected theoretically coherent linkages between the approaches fail to appear (Lindblom-Ylänne, 2003; Lindblom-Ylänne & Lonka, 1999; Meyer, 2000b). For example, a student who is trying to understand the meaning of a text might also focus on memorising it, and thus the approach is unclear. These results have been explained in terms of a mismatch between a student's personal intentions and his or her perceptions of the learning environment (Entwistle, Tait & McCune, 2000; Meyer, 2000b).

"The Paradox of the Chinese Leaner" (Watkins & Biggs, 1996), the phenomenon in which Chinese students seem to use rote learning and still succeed in their studies, demonstrates the link between the theoretically different elements. The Paradox has been explained by the combination of understanding and memorisation (e.g. Kember, 1996; Kember & Gow, 1991). In their study, Marton, Watkins and Tang (1997) found that Chinese students made a clear distinction between rote memorising and memorising with understanding. Marton et al. (1997 p. 36) describe this as "the difference between the act of 'committing the memory', ta-

king either 'words' or 'meaning' as its objects". In their study, Marton and his colleagues also found two other ways of experiencing learning, which they called learning as understanding (meaning) and learning as understanding (phenomenon). Learning can be understanding the meaning of the text by looking into the text or looking at it from different angles, but it can also be understanding the phenomenon; in other words, trying to look through the text and understand that text is only one possible way of dealing with the phenomenon. Prosser and Trigwell (1999, 94) argue that committing words or meanings to memory would constitute a surface approach and, in order to adopt a deep approach to learning, the latter two ways, learning as understanding (meaning) and learning as understanding (phenomenon), should be used. The differences between committing to words or meanings are illustrated in Table 2. Kember (1996, 2000b) also suggests that approaches to learning might be characterised as a continuum rather than the dichotomous deep and surface approaches, and that this explains why memorising and understanding are combined in various forms. However, in his recent book, Entwistle (2009, p. 36) concludes that deep and surface approaches are dichotomous in the sense that they have different intentions. In a surface approach the intention is to reproduce the presented material, whereas in a deep approach it is to understand the material for oneself.

Table 2. The distinction between committing to memory and committing to understanding from different aspects (modified from Marton et al. 1997; Prosser & Trigwell, 1999).

	Surface approach to learning		**Deep approach to learning**	
Learning as a whole	Committing to memory (words)	Committing to memory (meaning)	Understanding (meaning)	Understanding (phenomenon)
Object aspect	The words of the text	The meaning of the text	The phenomenon	
Act aspect	Committing to memory		Understanding	
Subject aspect	Being taught		Something you do yourself	

Nevertheless, it has been suggested that for Chinese learners it is totally normal to try to understand and memorise at the same time (Marton, Wen & Wong, 2005). One interpretation is that Chinese and Asian learners have distinct approaches to learning compared with Western students, but there is no clear evidence for this interpretation (Kember, 2009). The study by Leung (in press) suggested that the continuum between surface and deep approaches to learning is likely to be applicable to Western as well Chinese students. Furthermore, Entwistle and Entwistle (2003) found evidence that the continuum might also occur among Western students. They examined Scottish students' ways of preparing for examinations and identified a strategy they called "Committing to memory". Students using this strategy repeated readings "with understanding being sequentially deepened and

regularly checked" (p.36). Kember (2009) argues that it is not the culture that affects students' approaches to learning but the perception of contextual factors in the teaching-learning environment, magnified by systemic pressures and societal expectations. He also argues that these pressures are more prevalent among Asian students who face, for example, assessment as restrictive public examinations and high parental expectations.

1.1.2 Disciplinary variation in approaches to learning

There is also evidence of disciplinary variation in approaches to learning (e.g., Entwistle & Ramsden, 1983; Smith & Miller, 2005). In general, students in the sciences and applied sciences are more inclined to adopt a surface approach to learning, whereas those in the humanities and social sciences are more inclined to adopt a deep approach to learning. For example, in their study, Lonka and Lindblom-Ylänne (1996) found that psychology students scored higher than medical students on items measuring the deep approach to learning. In addition, in Eley's (1992) study, English students reported the use of the deep approach more often than chemistry, biochemistry and accounting students. A more recent study (Nelson Laird, Shoup, Kuh & Schwarz, 2008) supports the previous research by showing that students representing soft sciences tend to use the deep approach to learning more often than the students representing hard sciences. Becher (1987) modified Biglan's (1973) earlier categorisation of the disciplines and distinguished hard sciences from the soft sciences because of the different conceptions of knowledge and methods in the fields. For example, a consensus of the nature of knowledge is more common in the hard sciences than in the soft sciences. In other words, in hard sciences there are clear criteria for knowledge verification, whereas in the soft sciences there is a dispute over the criteria for knowledge verification. Thus, it seems that the processes of production of knowledge, as well as the means of communicating knowledge, vary in different disciplines, and that during their university years students tacitly learn the norms of their disciplinary culture (Parry, 1998; Ylijoki, 2000). Disciplines have their own categories of thought, which provide members of the same academic field with shared concepts of theories, methods, techniques and problems (Ylijoki, 2000). This is demonstrated, for example, in McCune and Hounsell's study (2005), where they explored bioscience students' ways of thinking and practising in three different courses and found that although the course settings varied, the teaching-learning strategies were similar and in line with the ways of thinking and practising in the subject.

Nevertheless, the research on disciplinary comparison of approaches to learning is still rather scarce (Nelson Laird et al, 2008). Moreover, it is necessary to remember the suggestion that it is students' perceptions of their disciplinary context that are related to their approaches to learning, not the culture itself (Kember, 2009; Ramsden, 1997). Furthermore, it should be realised that the deep approach refers to different things in different disciplines, because of the way understan-

ding is developed in each discipline and, thus, the processes involved in the deep approach needs to be refined within each discipline (Entwistle, 2009; Entwistle, McCune & Walker, 2001).

1.2 The effective teaching-learning environment and its relation to approaches to learning

The learning environment can be described as "social, psychological and pedagogical contexts in which learning occurs and which affect student achievement and attitudes" (Fraser, 1998, p. 3). However, Entwistle et al. (2003) explain the aim of the ETL-project as to find ways of enhancing the teaching-learning environments which encourage students' engagement with the subject matter and higher quality learning. In order for this to occur, not only should descriptive concepts be identified, but it is also important to describe the aspects of the teaching-learning environment that affect students' deep approach to learning. In this chapter these aspects are presented and their relations to students' approaches to learning are described.

As mentioned earlier, the culture of the learning environment affects student learning. Interestingly, it has been found that students' experiences of the environment seem to have a stronger relationship with approaches to learning than the teaching methods used in the context (Ramsden, 1997). In other words, it is the students' experiences of the learning context that have a crucial influence on students' approaches to learning. Approaches to learning are thus seen to be context-related (Entwistle & Ramsden, 1983; Scouller, 1998; Vermetten, Lodewijsk & Vermunt, 1999). For example, there is empirical evidence that a positive perception of the teaching-learning environment is positively related to a deep approach and negatively related to a surface approach (Kreber, 2003; Lawless & Richardson, 2002; Richardson & Price, 2003; Sadlo & Richardson, 2003). Moreover, a relationship between the deep approach and the experiences of the learning environment as encouraging understanding has been found in different educational contexts and different subject areas (Entwistle, Tait et al., 2000; McCune, 2004). Yet, it should be noted that students' experiences and approaches overlap and, thus, the approaches to learning may be driven by the students' perceptions of their teaching-learning environment; but equally, students' perceptions may be driven by the approach adopted (Richardson, 2006; 2007a; in press).

A closer look at how different elements of the teaching-learning environment and students' experiences of them are related to their learning implies that, for example, assessment has an important role in determining students' learning. Whereas inappropriate assessment and a heavy workload push students toward surface approaches to learning, the students' experiences of good teaching influence them to move toward deep approaches to learning (Lizzio, Wilson & Simons, 2002.) According to Biggs (2003), good teaching is based on constructive alignment, that is, a teacher supports a student's deep approach to learning by aligning

teaching method and assessment to the expected learning outcomes. Biggs (2003, p. 140) uses the term "backwash", which means that assessment determines what and how students learn more than the curriculum does. From the students' point of view, assessment always defines the actual curriculum (Ramsden, 2003). Yet, in order to support students' deep approach to learning, assessment should be considered in relation to other aspects of the teaching-learning environment. Changing the assessment method with tasks that require understanding and critical thinking may increase students' surface approach to learning unless the workload is appropriate (Gijbels & Dochy, 2006; Nijhuis, Segers & Gijselaers, 2005; Struyven, Dochy, Janssens & Gielen, 2006).

In their definition, Entwistle and Walker (2002), emphasise the role of teaching in supporting high-quality learning. According to them, good teaching can be defined as an extended awareness of the relationship between learning and teaching. This relation has been found also in other studies, which imply that teachers' approaches to teaching are related to students' approaches to learning (Kember & Gow, 1994; Prosser & Trigwell, 1999). Trigwell, Prosser, and Waterhouse (1999) found a positive relationship between teachers who keep the focus on their students in teaching activities and students' deep approach to learning. Recent studies of teaching in higher education have shown that teachers with a different focus in their teaching approach their teaching differently. Two different approaches to teaching have been identified and these have been labelled as teacher-centred or content-oriented and student-centred or learning-oriented (Entwistle & Walker, 2002; Kember, 1997; Prosser & Trigwell, 1999). In a teacher-centred (Prosser & Trigwell, 1999) or content-oriented (Kember & Kwan, 2002) or content-focused (Postareff & Lindblom-Ylänne, 2008) approach a teacher adopts a strategy with the intention of transmitting information to the students. In this transmission, the focus is on facts and skills that the teacher possesses. The students' prior knowledge is not taken into account. In the student-centred (Prosser & Trigwell, 1999) or learning-oriented (Kember & Kwan, 2000) or learning-focused (Postareff & Lindblom-Ylänne, 2008) approach a teacher adopts a strategy which helps his or her students to change their world views or conceptions of the phenomena they are studying. Students are seen to actively construct their own knowledge. Thus, the teacher has to focus on what the students are doing in the teaching-learning situation. Students' existing knowledge and conceptions are important in the learning and teaching process. Interestingly, Postareff and Lindblom-Ylänne (2008) found that teachers applying a learning-focused approach differed from teachers applying a content-focused approach in the level of their pedagogical awareness. The former teachers were more aware of their pedagogical skills and had processed their own teaching, whereas the latter group had not reflected on their teaching at a deeper level. The learning-focused approach has been described as more desirable (McKenzie, 1996) and more sophisticated (Entwistle & Walker, 2002) than the content-focused approach as it concentrates on student learning

rather than transmitting knowledge. In addition, Lindblom-Ylänne, Trigwell, Nevgi and Ashwin (2006) suggest that there is disciplinary variation in how teachers adopt these two different approaches to teaching and how teaching is evaluated. Their results showed that teachers representing hard disciplines were more likely to adopt a teacher-focused approach to teaching, while teachers who represented soft disciplines were more likely to take a student-focused approach to teaching. Figure 1 illustrates the differences between the two approaches to teaching.

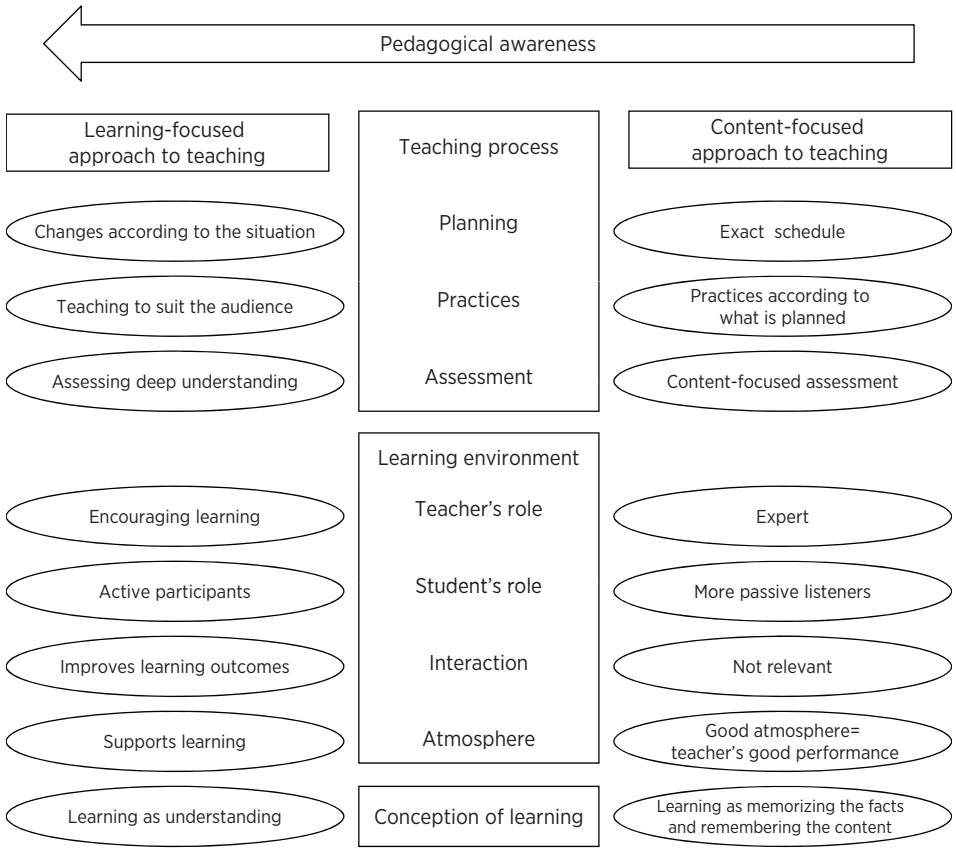

Figure 1. Variation in the approaches to teaching (adapted from Postareff & Lindblom-Ylänne, 2008)

Kember (1997) also found a third approach, which he labelled student-teacher interaction or apprenticeship and placed it between student- and teacher-centred approaches. However, another study did not find this approach (Kember & Kwan, 2002). Yet, previous studies have connected interaction as an important part of learning-oriented teaching: learning-oriented teaching encourages interaction, which supports knowledge construction and students' reflection on the learning process (De Corte, 2003; Leung & Kember, 2006; Postareff & Lindblom-Ylänne,

2008).

Student-student interaction has been found to be related to students' deeper understanding of the subject matter and better learning outcomes among Asian students (Yan & Kember, 2004a; 2004b). In order to achieve qualitatively better outcomes students had to be engaged with the group work (sharing material, studying and revising together before examinations); and this engaged approach to group work was related to students' deep approach to learning because these approaches share the same intention to understand (Yan & Kember, 2004b). Adoption of the engaged approach has been found to be influenced by the teaching-learning environment (Yan & Kember, 2004a). Yan and Kember (2004b) also suggest that students' group learning approaches, engaging or avoiding, are not culturally specific, and Kember (2009) argues that Asian and Western students' discussion and active participation can be encouraged using similar methods. For example, an atmosphere with an equal relationship between participants, as well as a sense of fairness, encourages students' interaction by creating an 'easy to ask' atmosphere (Postareff & Lindblom-Ylänne, 2008).

Finally, the role of the curriculum should be addressed. Although assessment determines what students learn more than the curriculum does (Ramsden, 2003), the curriculum framework has an important role in guiding teachers towards a learning-focused approach to teaching (Van Driel, Verloop, van Werven & Dekkers, 1997). Furthermore, research at school level found that a curriculum supporting understanding consists of identified generative topics, clear goals of what students should learn, performances of understanding, and, finally, an ongoing assessment of students' progress (Wiske, 1998). These elements in the curriculum support students' understanding, which can be seen as a flexible performance capability (Perkins, 1998). Thus, the curriculum creates a framework which encourages the different elements of good teaching mentioned above.

In the ETLQ, the aspects describing students' experiences of their teaching-learning environment were derived from a review of the literature and an examination of the existing inventories (Entwistle et al., 2003). These aspects represent high quality higher education and are described above. Various studies have shown similar factor solutions of the items measuring the experiences of the teaching-learning environment even though there is slight variation in the number of factors. This may occur because the factors are related to each other, and there is a strong latent factor of good teaching, which sums all the scores (Entwistle, 2009). Richardson describes this latent factor as academic quality (Richardson, 2005b). The factors of students' experiences of their teaching-learning environment that emerged in the previous studies are presented in Table 3.

Table 3. Scales of students' experiences of their teaching-learning environment items in various studies using ETLQ.

Entwistle et al., 2003	**McCune, 2003**	**Xu, 2004**	**Entwistle, 2009**
F1 Organisation, structure and alignment	F1 Clear aims, organization, alignment and integration	F1 Clarity & choice	F1 Congruence and coherence
F2 Encouraging learning	F2 Teaching for understanding and choice	F2 Understanding, Challenge & Support	F2 Teaching for understanding
F3 Staff supportive	F3 Staff enthusiasm and support	F3 Supportiveness	F3 Staff enthusiasm and support
F4 Assessment, assigments and feedback	F4 Assessment for understanding, guidance and feedback	F4 Assessment focus	F4 Constructive feedback
	F5 Support from other students		F5 Support from other students
F5 Evoking Interest	F6 Interest, enjoyment and relevance	F5 Engagement	F6 Interest and relevance

1.3 Conceptions of good teaching

In addition to the aim of exploring students' experiences of the teaching-learning environment and their approaches to learning, another aim of the present study is to explore how students themselves describe and conceive of good teaching, and how these descriptions are related to their experiences of good teaching and to their approaches to learning. There is a substantial body of educational research which has identified how conceptions of teaching vary and affect approaches to learning and teaching (an overview of this research is provided in Prosser & Trigwell, 1999), but the term conception is still not clearly defined. Pratt (1992) is one of the few to define this term, and concludes:

> Conceptions are specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world (p. 204).

This definition brings together conceptions and perceptions of teaching; on the one hand, the conceptions are created on the basis of perceptions and, on the other hand, conceptions also affect our interpretations and experiences of the world. Entwistle, Skinner, Entwistle and Orr (2000) explored student teachers'

conceptions and beliefs about good teaching. The results suggested that experience, as a pupil, as a parent, or in teaching practice, has a very strong influence on views about good teaching. In addition, Sugrue (1997) found that student teachers' views about good teaching were influenced by their prior beliefs. In sum, sophisticated conceptions of teaching are based on various affective and cognitive elements and, for example, beliefs and experiences of good teaching (Entwistle, Skinner et al. 2000). Furthermore, it should be acknowledged that the present study differentiates between teachers' conceptions of teaching, presented earlier, and students' and teachers' conceptions of good teaching discussed in this chapter.

1.3.1 Students' and teachers' conceptions of good teaching

Among the key elements affecting students' conceptions of good teaching are students' conceptions of learning. Studies concerning Asian students' conceptions of good teaching and their conceptions of learning suggest that students with different conceptions of learning differ also in terms of their beliefs about good teaching (Kember, Jenkins & Ng, 2003; Kember, Jenkins & Ng, 2004; Kember & Wong, 2000). In a study by Kember and Wong (2000) students with an active conception of learning saw good teaching as multifaceted and promoting active engagement, whereas students with a passive conception of learning emphasised systematic step-by-step teaching, clarity of information and the effort to help students to understand. Students' conceptions of learning describe what learning means to them; these conceptions develop from simple, passive, learning as taking in bits of knowledge and reproducing them, to a more advanced and active conception in which learning is seen as the active construction, modification and application of knowledge (Entwistle, 1988; Marton & Säljö, 1997). There is empirical evidence of a relation between students' advanced conception of learning and students' deep approach to learning (Lonka & Lindblom-Ylänne, 1996; Nieminen et al., 2004).

Conceptions of good teaching have also been suggested to be context-bound (Carpenter & Tait, 2001; Kember et al. 2004). However, in a study concerning British students and tutors in distance education, students' conceptions of effective tutoring did not vary across different faculties, while tutors' conceptions of good tutoring did (Jelfs, Richardson & Price, 2009). In this study both students and teachers answered a questionnaire which investigated conceptions of good tutoring. The results showed that effective tutoring encompassed a teacher's expertise in the subject matter, vocational guidance and pastoral care. Moreover, teachers and students emphasised the importance of support for critical thinking and active learning (Jelfs et al., 2009). A study by Reid and Johnston (1999) explored teachers' and students' conceptions of good teaching by applying a qualitative approach. They interviewed both teachers and students, and based on the interviews, six dimensions emerged. There was a marked overlap in teachers' and students' views. The dimensions were approachability, clarity, depth, interaction,

interest and organisation. Although these dimensions overlapped in teachers' and students' descriptions about good teaching some of the dimensions were emphasised differently in these two groups. Students did not regard the teachers' own research as an important element, and teachers demonstrated no awareness of students' perception of the importance of teachers' approachability.

Ramsden (2003) argues that students identify the same characteristics as their lecturers: organisation, stimulation of interest, understandable explanations, empathy with students' needs, feedback on work, clear goals and encouragement of independent thought. Lecturers' personality and sense of humour is not so significant to students, but they appreciate the teachers' efforts in teaching. Kember and Wong (2000) suggest that students' conceptions reflect their own beliefs about teaching and also their perceptions of the teachers' beliefs about good teaching. Ramsden (2003) concludes that research on good teaching mirrors students' descriptions of good teaching. He introduces six key principles of good teaching: 1. Interest and explanation, 2. Concern and respect for students and student learning, 3. Appropriate assessment and feedback, 4. Clear goals and intellectual challenge, 5. Independence, control and engagement, 6. Learning from students. These principles have similarities with the elements of good teaching identified in the present study as a part of the effective teaching-learning environment.

1.4 Summary: The perspectives adopted

1.4.1 The instrument

The reasons why the ETLQ was selected as a tool for exploring students' experiences of their degree subject were already described briefly in the Introduction. In order to clarify these reasons, a more detailed analysis is provided in the following chapter.

The term teaching-learning environment can be defined very broadly, describing, for example, a combination of social, cultural and political contexts. However, the focus of the curriculum reform at the University of Helsinki was on the degree structures. Thus, quality enhancement as well as students' feedback systems concentrates on students' degree subject. This is in line with the notion of Kember and Leung (2009) that the curriculum for a degree is more than a sum of the teaching in the constituent courses. It means that in order to enhance an institution's quality of teaching and learning, the focus should not only be on the level of a single course or instructor. However, only a few student feedback questionnaires are suitable for evaluating teaching and learning in programmes, degrees, majors or departments (Kember and Leung, 2009). One of the instruments that operating on the level of the whole degree or programme, and which has been widely used and evaluated, is the Course Experience Questionnaire (CEQ; Ramsden, 1991). Nevertheless, CEQ has also been criticised for not including items rela-

ted to students' intellectual stimulation, social support, guidance and organisation of the curriculum (McInnis, Griffin, James & Coates, 2001). It can be thus argued that CEQ does not cover all the aspects of the teaching-learning environment which according to Fraser (1998), are the social, psychological and pedagogical contexts in which learning occurs. The ETLQ, on the other hand, covers these aspects broadly. It concentrates on course design, its organisation and alignment, ways to encourage learning, teaching and assessing course content, staff-student relationships, and peer support (Entwistle et al., 2003). These aspects were also the focus of the curriculum reform at the University of Helsinki. Furthermore, the decision to use the term teaching-learning environment was made because it emphasises the relation between teaching and learning (Entwistle & Walker, 2002; Prosser & Trigwell, 1999), which is an important aspect when developing university teaching.

One of the strengths of the ETLQ is that it includes questions measuring students' approaches to learning; in other words, Approaches to Learning and Studying Inventory (ALSI). As mentioned the earlier version of ALSI was ASI, which had already been used at the University of Helsinki. Thus, information and research about its use was available in the Finnish context (e.g. Lindblom-Ylänne & Lonka, 1999). The use of ALSI also has practical strengths. In their evaluation of 13 potential questionnaires for improving teaching, Coffield, Moseley, Hall and Ecclestone (2004) argue that the strength of using the concepts deep and surface approach is a shared language and categories and, thus, teachers can use them without in-depth understanding of the theory and underlying implications of these concepts.

The use of the ETLQ was also justifiable because it had been used in a multidisciplinary context with students from five different subject areas (Entwistle et al. 2003). Furthermore, the University of Edinburgh, the leading institution of the ETL project, and developer of the ETLQ shares an interest in research with the University of Helsinki. They are both research-intensive universities and members of the League of European Research Universities (LERU). These universities share the values of high-quality teaching within an environment of internationally competitive research.

The focus on the Finnish modified version was at a more general level, exploring students' experiences in their major subjects. The modified ETLQ was also shorter because only two sections were relevant at the University of Helsinki. These sections concerned 40 items measuring students' perceptions of their teaching-learning environments and 18 items measuring their approaches to learning. The two sections of the ETLQ were translated into Finnish and modified by the research group at the Centre for Research and Development of Higher Education, University of Helsinki, keeping in mind the culturally-specific context of the present study. To avoid any changes in the composition of the main scales of the original ETLQ, a back-translation procedure took place. The items were transla-

ted into Finnish by the authors and back-translated into English by a person not associated with the study. After that the English version was checked against the original by another researcher. The original English and back-translated versions of the inventory were quite similar. If there was a clear mismatch between some items, these items were rewritten and discussed with the research group. Furthermore, problematic items were presented to a larger group consisting of different expert in the field. As mentioned earlier, the biggest difference was that the original ETLQ focused on experiences in a single course unit or module, whereas the version used in the present study focuses on studying in the students' major subject as a whole. Before answering the items concerning approaches to learning, students were asked to consider a typical course in their major subject (teaching and assessment methods, nature of the course, number of participating students) and describe it. It should be noted that initially students' levels of processing, deep and surface, referred to students' reaction to the content of the task (Marton & Säljö, 1976) but in ALSI, students' approaches to learning are used to indicate a more typical way of studying across contexts with similar demands (Entwistle & McCune, 2004).

Before the modified ETLQ was used for the first time in the Finnish context in 2006, most of the faculties of the University of Helsinki had expressed their willingness to participate in the research project. Before the first round, the first Finnish version of the questionnaire was piloted on a sample of first-year theology students in spring 2005. After the testing, minor changes were made in the wording of some items. In the first "official" round 2,509 Bachelor students from ten out of eleven faculties used the questionnaire. The original ETLQ was a printed questionnaire whereas the modified version used in this study was an online questionnaire.

1.4.2 Psychometric dimensions in focus

The use of the questionnaire was also inevitable in order to explore students' experiences of the teaching-learning environment systematically and with a wide range of students. Furthermore, it enabled the analyses of the psychometric dimensions of the ETLQ by making the examination of the cultural and disciplinary differences possible. In order to use ETLQ as a research instrument, it is important to explore its reliability and validity. Reliability describes how well the instrument would yield consistent results in a test-retest situation under the same conditions. Since test-retest situations are very difficult to establish, reliability is usually measured with Cronbach's alpha (Cronbach, 1951), which describes the correlation coefficient of the emerged scales. Cronbach's alpha has been criticised, however, for not giving an accurate value for reliability. Therefore, in the present study a more accurate up-to-date method of calculating reliability, General Reliability (Tarkkonen & Vehkalahti, 2005; Vehkalahti, Puntanen & Tarkkonen, 2007), is used.

The validity of a measurement instrument describes how well the instrument measures what it is supposed to measure; this is harder to establish than reliability (Kember & Leung, 2009). In his article, Richardson (2009) summarises the different ways of approaching validity, which have been used in exploring the use of CEQ. *Face validity* examines the wording or structure of the constituent items; in other words, whether they, for example, are easily interpreted in the way they are supposed to be. *Construct validity* examines the relationships between the scores given by a sample of students and is usually addressed by means of factor analysis. *Criterion validity* is used to describe the correlations between the scores of an instrument and the scores obtained on an independent criterion. The measurement, for example, of the CEQ showed that CEQ scales concerning good teaching correlated with students' scores on their overall satisfaction of the course. Finally, the focus of *discriminative validity* is on the different scores of groups of participants who would be expected to differ (Richardson, 2009). These groups can be based on gender, age or contextual characteristics such as discipline.

1.4.3 Other relevant constructs: conceptions of good teaching

Although there are various reasons for using questionnaires as student feedback instruments, their use also have limitations. They may, for example, only cover a minority of the issues students' would regard as good teaching (Huxham et al. 2008). This was acknowledged in the development process of the ETLQ, so students' views on good teaching were also explored using qualitative methods, or more precisely, open-ended questions, with a focus on the faculties in which students' experiences of the teaching-learning environment varied the most. The question was, if students' experiences of the teaching-learning environment vary, do their conceptions vary as well?

In order to clarify the terms used in the present study, it is necessary to mention the terminology. Students' answers to the open-ended questions were described as their conceptions of good teaching. The theoretical introduction of the students' conceptions of good teaching, described in Chapter 1.3, illustrates that a variety of elements are related to these conceptions. Furthermore, there is an overlap between, for example, students' conceptions and perceptions of good teaching (Entwistle, Skinner et al., 2000). Consequently the term 'perception' has been used in several studies when describing conceptions but also as a synonym of 'experience'. To clarify the terminology of the present study the term 'conception' is used when exploring the dimensions students themselves use in describing good teaching. The previous studies concerning students' experiences of the teaching-learning environment use the terms 'experiences' and 'perceptions' as synonyms and this terminology has also been adapted in the present study. The terms 'experiences' and 'perceptions' are used as overlapping when describing students' experiences of the teaching-learning environment as measured with a theoretically based questionnaire.

This doctoral dissertation has concentrated on the students' experiences of the teaching-learning environment. Students, as well as teachers, are important actors in the teaching-learning situation. This was also emphasised by using the term teaching-learning environment. For deeper analyses of the conceptions and how they are related to academics' beliefs and views in general, the present study also explored teachers' conceptions of good teaching, focusing on teachers who represent the quality units of higher education. These teachers were selected because they would probably be more aware of the issues regarding good teaching. Students whose conceptions of good teaching were examined had answered to the questionnaire including several themes of effective teaching-learning environment. These may have affected their answers concerning good teaching, because they were already oriented to what is regarded as quality in teaching. Teachers from the quality units would probably also be oriented to and more aware of the elements of good teaching, and thus it is logical to explore their conceptions of good teaching.

1.4.4 The aims and research questions of the study

There is a need for valid student feedback questionnaires (Kember & Leung, 2009; Kember & Wong, 2000; Richardson, 2007b; Richardson, 2009), and these instruments should also provide internationally comparable information. The present study explores the use and development of the ETLQ in a different cultural and linguistic context, in other words, at the University of Helsinki. It also explores the construct validity of the modified ETLQ by examining how the instruments measure the underlying dimensions of student experiences and their learning (cf. Richardson, 2004). Furthermore, Richardson (2004) argues that from the perspective of discriminative validity, the instruments should provide different scores on groups or individuals who would be expected to differ in those underlying dimensions.

The theoretical framework is summarised briefly as follows. Students' positive experiences of their teaching-learning environment, in other words, of academic quality, has been found to be related to the deep approach to learning (Kreber, 2003; Lawless & Richardson, 2002; Richardson & Price, 2003; Sadlo & Richardson, 2003). Furthermore, there is evidence of disciplinary differences in students' approaches to learning although the research on this aspect is still rather scarce (Nelson Laird et. al, 2008). Students in the hard sciences seem to apply the surface approach more than students in the soft sciences (Lonka & Lindblom-Ylänne, 1996, Nelson Laird et. al, 2008). It was also expected that students' experiences of their teaching-learning environment would vary, because teaching practises and what is regarded as valuable in teaching varies across disciplines (Lindblom-Ylänne et al, 2006; McCune & Hounsell, 2005). The present study also focuses on how students themselves describe good teaching, that is, students' conceptions of good teaching. Previous research has shown that students' views on good teaching

are similar to views emerging from research on good teaching (Ramsden, 2003). In addition, the underlying assumption was that students' conceptions of good teaching vary between different disciplines (Kember et al., 2004). The previous studies suggest that students' conceptions of learning are related to students' conceptions of good teaching (Kember & Wong, 2000). Because students' conceptions of learning are related to their approaches to learning (Entwistle, 1988; Lonka & Lindblom-Ylänne, 1996), it was hypothesised that there is a relation between students' approaches and their conceptions of good teaching as well. Moreover, it is suggested that students identify the same characteristics as teachers, and these characteristics are in line with the theory of good teaching (Ramsden, 2003; Reid & Johnston, 1999).

In accordance with the theoretical framework outlined earlier, the following general research questions were posed:

1. How are students' experiences of the teaching-learning environment related to their approaches to learning in different contexts and in qualitatively different student groups, representing different combinations of approaches to learning, measured by the ETLQ questionnaire?
    a. What kind of approaches to learning and aspects of teaching-learning environment emerge in two culturally and linguistically diverse contexts? (Study I)
    b. How are students' experiences of the teaching-learning environment related to their approaches to learning in the two contexts? (Study I)
    c. What kind of disciplinary differences are there in students' approaches to learning and their experiences of the teaching-learning environment? (Study II)
    d. How do the various student groups differ in terms of their experiences of the teaching-learning environment? (Study II)
2. How do students' experiences measured by the questionnaire differ from the conceptions of good teaching examined by using qualitative methods?
    a. How do students' experiences of good teaching (positive perceptions) differ from their conceptions of good teaching? (Study III)
    b. Is there variation between students' and teachers' conceptions of good teaching? (Study IV)

In Study I, the focus was on the use of the ETLQ in two different contexts: Finnish and British. The aim was to explore the similarities and differences between the factor structures that emerge from both data sets. The focus was on examining whether the ETLQ measures the same underlying dimensions concerning students' experiences of their teaching-learning environment and their approaches to learning across different contexts. Based on prior research (Entwistle, 2009; Entwistle & Ramsden, 1983; Entwistle et al., 2003), it was hypothesised

that factors measuring students' deep, surface and organised studying would emerge from both data sets. In addition, it was expected that factors measuring students' experiences would cover course design, its organisation and alignment, ways to encourage learning, teaching and assessing course content, staff-student relationships and peer support (Entwistle, 2009; Entwistle et al., 2003). Students' positive experiences were expected to be related to the deep approach to learning (Kreber, 2003; Lawless & Richardson, 2002; Richardson & Price, 2003; Sadlo & Richardson, 2003).

Study II explored students' approaches to learning and their experiences of the teaching-learning environment in different disciplines, the aim being to determine whether the analyses would replicate the results of the previous studies of the differences across disciplines. The hypothesis was that students' approaches to learning (Lonka & Lindblom-Ylänne, 1996, Nelson Laird et. al, 2008) and their experiences of their teaching (Becher, 1987; Becher & Trowler, 2001; Lindblom-Ylänne et al., 2006; McCune & Hounsell, 2005) would differ across disciplines.

In Study III, students' views on good teaching were explored by using qualitative methods, or more precisely, by open-ended questions within the student questionnaire. The aim was to examine students' conceptions, disciplinary differences and their relation to students' approaches to learning. The focus was on three disciplines which differed in terms of students' experiences of their teaching-learning environment. On the basis of previous research it was expected that students with different approaches to learning would also differ in their conceptions of good teaching (Kember & Wong, 2000) and, furthermore, based on the results of Study II, that there would be disciplinary variation as well. The hypothesis was that students' conceptions of good teaching would, in general, be in line with research on the elements of good teaching (Ramsden, 2003), and, thus in line with the aspects of the effective teaching-learning environment measured with the ETLQ (see Chapter 1.2: The effective teaching-learning environment and its relation to approaches to learning).

Study IV elicits information about what university teachers considered as good teaching. University teachers representing high-quality education units were interviewed. The teachers were asked to describe what they consider as good teaching and how would they teach in an ideal teaching-learning situation. Furthermore, the results concerning students' conceptions of good teaching (Study III) were compared with the teachers' conceptions of good teaching (IV). Based on prior research (Ramsden, 2003; Reid & Johnston, 1999) it was hypothesised that students' and teachers' conceptions would be similar.

The following chapter presents overviews of the four original publications, which focus on descriptions of the relevant results and discussion in the light of this doctoral dissertation. Study I is described in more detail because its methodology as well as the results are important in the development process of the ETLQ.

2 Study I: Students' experiences of the teaching-learning environment, approaches to learning and their relation in two different contexts

2.1 Method

Participants. The study in Finland was carried out in spring 2006 in 10 of the 11 faculties of the University of Helsinki, the target being first- and third-year students. Because the main aim of Study I was to examine the use of the modified ETLQ in the Finnish context, the analyses of Finnish participants are presented here in more detail. The analyses started by handling the missing data of the whole sample, which included all the respondents (N=2,538). This showed that the missing data per item was low (0.9 %), and it varied per item from 0.6 to 2.1 %. A deeper analysis of the missing data revealed that most of the unanswered items were those of the 29 respondents with over 18% unanswered items in the whole questionnaire. These respondents were removed from the data.

Finally, a total of 2,509 first- and third year Finnish students' answers to an online questionnaire were analysed. The response rates varied markedly between faculties (from 86 to 28%), with response rates for the first-year students of 34 % (n=1367) and for the third-year students of 31 % (n=1103). Thirty-nine students did not report their study year. Of the sample, 22% were men (n=546) and 78% were women (n=1960). Three students did not report their gender. Since the percentage of female students in 2006 actively studying at the University of Helsinki was 66%, the percentage of women in the present study was somewhat higher than the total proportion of female students at the University.

The British data came from a total sample of 2,710 students, early and late in their degree course. They represented 26 undergraduate course units across eleven universities and one college, and were taking courses in electronic engineering (19%), biological sciences (30%), economics (24%) and history (27%). These subject areas were drawn from contrasting faculties which ran popular courses. Of the students 1,436 came from the science and applied science faculties and 1,274 from the arts and social sciences, and they came from the 2002 and 2003 cohorts. Furthermore, 50 % of the British sample were men (n=1,352) and 50 % were women (n=1,358).

Instrument. The analyses were carried out on the two sections of the ETLQ, described in the previous chapter and common to each data set. The first section contained 40 items measuring students' experiences of the teaching-learning environment; the second contained 18 items indicating students' approaches to learning and studying, and related either to the courses in the main subject (Finland) or to the specific course unit (Britain). The original ETLQ was a printed

questionnaire whereas the modified version used in this doctoral dissertation was an online questionnaire.

Statistical analyses. The first phase of the analyses was the initial screening of the data. Distributions and ranges were examined. The number of missing values in the data was also considered. The Missing Value Analysis (MVA) module of the SPSS and its option expectation maximization (EM) algorithm (Little & Rubin, 1987) were used to impute the missing values in the data. The EM algorithm is an iterative estimation procedure, which has proven to be a useful method for conducting data analysis with missing data (Graham & Donaldson, 1993).

Before the final factor analyses were carried out in both data sets (Finnish and British), several factor analyses were conducted with the Finnish data using orthogonal and oblique methods. Orthogonal rotation is often justified because it may produce more easily interpretable results. The results of this rotation were compared with the results conducted with oblique methods. The differences between the students' scores in different factors were analysed with Manova. The focus was on the differences between students' gender, study year and earned credits. These initial analyses showed that students' experiences of their teaching-learning environment differed slightly between first- and third-year students, with first-year students scoring higher on items measuring experiences of the teaching-learning environment than third-year students. Furthermore, the initial analysis of the differences in students' approaches to learning showed that male students scored higher on the deep approach to learning and lower on the surface approach to learning than female students. Students with the highest number of earned credits scored higher on the deep approach to learning and organised studying and lower on the surface approach to learning than students with the lowest number of earned credits. Information on the students' ages was not available. In sum, differences existed, but in a large sample of students, statistically significant differences emerge easily. Thus, statistical significance itself does not tell us about the theoretical and practical importance; therefore, an effect-size estimation gives us a clearer picture (Kline, 2004). The effect sizes were also calculated in the initial analyses and they were small, f ranging from 0.10 to 0.19 (see more Parpala, Lindblom-Ylänne, Komulainen, Hirsto & Litmanen, 2009). Because Study I focused on comparing two different contexts, there was some limitation on the analyses. The students' age, study phase and earned credits were not available in the British data. Thus, this affected the comparison. The initial screening and differences in the two data sets concerned only gender.

The first phase of statistical analyses concerning both Finnish and British data sets was finished with exploratory factor analyses (EFA, principal axis factor solution, promax rotation). The use of the promax rotation was justified because initial factor analyses with orthogonal and oblique methods were quite similar. The analysis started with orthogonal rotation as it produces factors that are uncorrela-

ted and its strength has been claimed to be its ability to produce a more easily interpretable factor solution than oblique methods, which allow factors to correlate. Because oblique methods allow factors to correlate, it has been advised that these be used in social sciences, where correlation among factors is generally expected (Costello & Osborne, 2005). From previous analyses of the ETLQ instrument, it was expected that the factors would correlate (Entwistle & McCune, 2004); thus, the oblique rotation was chosen. Promax is an oblique method which relies heavily on the orthogonal method, usually the Varimax (Cureton & Mulaik, 1975).

The second phase of statistical analyses started with a comparison of the factor structures in the two data sets. The robustness of the measurement instrument was first analysed with confirmatory factor analysis (CFA). Since CFA led to difficulties in obtaining convergence in the modelling process, Exploratory Structural Equation Modeling (ESEM), which allows less restrictive measurement models to be used (see Asparouhov & Muthén, 2008; Marsh et al., 2009), was chosen. ESEM has been found appropriate in situations in which CFA models are unable to fit the data (Marsh, Lüdtke, Muthén, Asparouhov, Morin, Trautwein & Nagengast, in press). ESEM also provides access to all the usual Structual Equation Modeling parameters and indicates correlations.

Furthermore, ESEM was complemented with transformation analysis (Ahmavaara & Markkanen, 1958; Rummel, 1970; Cattell, 1978) for comparing the equality of the factor structures in the Finnish and the British data. In addition, several analyses concerning Finnish data were conducted and these analyses showed that the factorial invariance between 10 faculties was very good. A comparison was also carried out between first- and third-year students. This congruence was almost perfect. Because these results are not the focus of this doctoral dissertation, they are not discussed here in more detail. In addition, up-to-date methods of estimating the reliability of weighted composites were used (cf. Raykov, 1997; Tarkkonen & Vehkalahti, 2005; Vehkalahti et al., 2007). ESEM provided correlations, which were used to elucidate the relations between factors formed from experiences of the teaching-learning environment and approaches to learning. The analyses were conducted with SPSS/PASW version 18, Mplus version 5.21 and SURVO MM version 3.06 (Mustonen, 1992).

2.2 Results

Initial screening of the data. The initial analysis showed that some items were problematic in the light of their distributions and, for example, item 3, measuring approaches to learning, exceeded value -1 in negative skewness in both data sets. In addition, some of the items measuring students' experiences exceeded value -1 in negative skewness. In the Finnish data, these items were 8, 29, 24, and in the British data 1, 3, 6, 9, 11, 18, 23, 29 and 33. Some of the items tended to have problems also in kurtosis. The mean of items 18, 32, 37, 38, measuring experiences, and item 10, measuring approaches, were higher in the British data while

the means in item 16, measuring approaches, and item 8, measuring perceptions, were higher in the Finnish data. In addition, the differences between countries were evident, but gender differences were generally small. The problematic items were not removed from the analysis, but the differences were taken into account in the further development of the questionnaire.

The factor solutions that emerged. Solution with six factors of items measuring experiences (40 items) and solution with four factors of items measuring approaches to learning (18 items) were chosen because they presented the clearest pattern matrix and they were based on theoretical viewpoints and earlier empirical findings. Furthermore, the four-factor solution of items measuring approaches to learning emerged when the Eigenvalue was less than one in the Finnish data. The three- and two-factor solutions combined Organised studying and Intention to understand, but not Deep approach and Intention to understand, which would have been theoretically expected (Entwistle & Ramsden, 1983). In addition, the relation between a deep approach and student's intention to understand was seen in the British data and, therefore, the number of the factors measuring approaches to learning in the British data could also have been three. In order to compare the structures, four-factor solutions were selected for further analyses in both data sets on the grounds of the factor solutions in the Finnish data. The six-factor solution of items measuring students' experiences of their teaching-learning environment emerged from both data sets.

The comparison of the factor structures. The comparison of the factor structures with EFA suggested that the factor structures in items measuring students' experiences of the teaching-learning environment and students' approaches to learning were similar in both data sets. The analysis of the 40 items measuring students' experiences of the teaching-learning environment showed that the Kaiser-Meyer-Olkin measure was in both contexts very similar (FI .954 and UK .952). In addition, the analysis of the 18 items measuring students' approaches to learning also suggests similar values in the two contexts (FI .888 and UK .885).

However, a more detailed analysis of the differences in the factor structures with ESEM suggested a lack of fit in the factor structures for items measuring experiences of the teaching-learning environment (Chi-square 6604.71, df=1110, $p<.001$, CFI=.928, TLI=.899, RMSEA=.044) and for items measuring students' approaches to learning (Chi-square 868.17, df=174, $p<.001$, CFI=.969, TLI=.946, RMSEA=.039). The results suggested that the differences between the factor structures in the two contexts were significant; in other words, the structures were too different to conduct a common factor analyses and modelling process. The ESEM modelling solutions were thus carried out separately. Table 4 gives the final factors and items measuring students' experiences of their teaching-learning environment and their approaches to learning with an example (the highest loading

example) of the Finnish data. In addition, reliabilities of the factors in the two data sets are provided. The factors and all the items are presented in more detail in Study I.

Table 4. The reliability values of the factors measuring approaches to learning and students' experiences of the teaching learning environment in the two data sets (N=2509 and N=2710). The examples from the Finnish data.

Factor		**General reliability**	
Approaches to learning	**Example item**	**Finnish**	**British**
FA 1. Deep approach	9. I've looked at evidence carefully to reach my own conclusion about what I'm studying	0.817	0.755
FA 2. Organised studying	7. On the whole, I've been quite systematic and organised in my studying	0.763	0.780
FA 3. Intention to understand	3. I have usually set out to understand for myself the meaning of what we had to learn	0.700	0.597
FA 4. Surface approach	1. I've often had trouble in making sense of the things I have to remember	0.585	0.697
Experiences of the teaching-learning environment			
FE 1. Teaching for understanding	28. Staff helped us to see how you are supposed to think and reach conclusions in this subject.		0.764
FE 2. Alignment	1. It was clear to me what was expected in the assessed work for this course unit.	0.816	0.817
FE 3. Staff enthusiasm and support	30. This course unit provided plenty of opportunities for me to discuss important ideas	0.734	0.774
FE 4. Interest and relevance	22. I found most of what I learned in this course unit really interesting	0.811	0.818
FE 5. Constructive feedback	40. The feedback given on my set work helped to clarify things I hadn't fully understood	0.785	0.800
FE 6. Support from other students	21. Students supported each other and tried to give help when it was needed	0.792	0.804

To complete the ESEM analyses, transformation analyses were performed. Transformation analyses showed that the correspondences of the six factors measuring students' experiences of the teaching-learning environment (FE) and the four factors measuring approaches to learning (FA) were high even though their variation prevented combined analysis of the two data sets. The coefficients (varying from 0= no correspondence to -1/1= total correspondence) of the factors measuring experiences were: FE1 .869, FE2 .924, FE3 .706, FE4 .847, FE5 .848 and FE6 .954. In four factors measuring approaches to learning, the figures were: FA1 .880, FA2

.947, FA3 .817 and FA4 .949. The transformation analysis showed also that there were items with a notable difference in the two contexts. These were items 5, 11, 28, 30, 31, 32, 34 measuring experiences of the teaching-learning environment. Most of these items loaded on many factors. Furthermore, item 28 loaded clearly on different factors in the two contexts and item 34 had low loadings in the British context. Items 14, 16 and 17 measuring approaches to learning also had notable differences. These differences may have occurred because items 14 and 16 measure Intention to understand, which in the British data was clearly related to Deep approach in the three factor solution.

The labelling of the final factors. The final six factors of students' experiences were labelled as: (FE1) Teaching for understanding, (FE2) Alignment (labelled Coherence and congruence in the British study), (FE3) Staff enthusiasm and support, (FE4) Interest and relevance, (FE5) Constructive feedback, (FE6) Support from other students. The factors measuring approaches to learning were named as follows: (FA1) Deep approach, (FA2) Organised studying, (FA3) Intention to understand, (FA4) Surface approach. The calculation of reliability showed that the internal consistency of the Surface approach (Finnish .585 and British .697) was quite low.

Relationships between experiences of the teaching-learning environment and approaches to learning. The results of Study I showed statistically significant and positive correlations between the factors Deep approach (FA1), Organised studying (FA2) and Intention to understand (FA3), and the six factors of perceptions of the teaching-learning environment in both contexts. The Surface approach (FA4) and the six factors of perceptions of the teaching-learning environment had significant uniformly negative correlations (For more detailed results see Study I). Table 5 presents the correlations between students' experiences of the teaching-learning environment and their approaches to learning in the two data sets. In addition, similar relations were found in all the faculties represented in the Finnish data.

Table 5. Intercorrelations between the Perceptions of the teaching-learning environment factors and the Approaches to learning factors in the two contexts.

	Context	**Factors measuring experiences of the teaching-learning environments**						**Factors measuring approaches to learning**			
		FE1.	FE2.	FE3.	FE4.	FE5.	FE6.	FA1.	FA2.	FA3.	FA4.
FE1.	Finnish	1									
	British	1									
FE2.	Finnish	0.587	1								
	British	0.429	1								
FE3.	Finnish	0.471	0.390	1							
	British	0.481	0.423	1							
FE4.	Finnish	0.474	0.434	0.204	1						
	British	0.510	0.410	0.477	1						
FE5.	Finnish	0.487	0.440	0.395	0.223	1					
	British	0.458	0.288	0.517	0.319	1					
FE6.	Finnish	0.304	0.255	0.223	0.268	0.250	1				
	British	0.235	0.160	0.309	0.277	0.288	1				
FA1.	Finnish	0.430	0.157	0.219	0.318	0.246	0.107	1			
	British	0.658	0.260	0.295	0.442	0.401	0.221	1			
FA2.	Finnish	0.179	0.241	0.116	0.360	0.230	0.221	0.295	1		
	British	0.274	0.192	0.214	0.239	0.298	0.189	0.416	1		
FA3.	Finnish	0.285	0.252	0.050	0.487	0.206	0.275	0.439	0.444	1	
	British	0.348	0.270	0.266	0.272	0.201	0.247	0.561	0.439	1	
FA4.	Finnish	-0.441	-0.506	-0.215	-0.468	-0.138	-0.233	-0.379	-0.255	-0.370	1
	British	-0.275	-0.519	-0.289	-0.485	-0.205	-0.123	-0.405	-0.234	-0.304	1
Factor determinacy index	Finnish	0.933	0.923	0.867	0.909	0.899	0.884	0.914	0.889	0.864	0.830
	British	0.893	0.906	0.905	0.922	0.914	0.885	0.902	0.900	0.818	0.874

Note. FE1. Teaching for understanding, FE2. Alignment, FE3. Staff enthusiasm and support, FE4. Interest and relevance, FE5. Constructive feedback, FE6. Support from other students. FA1. Deep approach, FA2. Organised studying, FA3. Intention to understand, FA4. Surface approach.

2.3 Discussion

In Study I the Experiences of Teaching and Learning Questionnaire (ETLQ) was used in two different contexts. The factor structures consisted of six factors measuring students' experiences of the teaching-learning environment and four factors measuring students' approaches to learning. The analyses revealed that the factor structures varied somewhat between the two data sets. Some differences were, in fact, expected, as it must be kept in mind that both approaches to learning, as well as perceptions of the teaching-learning environment, have been shown to be context-specific (e.g., Entwistle & Ramsden, 1983; Lonka & Lindblom-Ylänne, 1996). In addition, the focus varied in the two data sets from the degree subject to specific course modules and so the factor structures of the ETLQ instrument may well be expected to vary in such different contexts.

The reliability of the factors that emerged was measured with General Reliability (Tarkkonen & Vehkalahti, 2005; Vehkalahti et al., 2007), and the values ranged from 0.595 to 0.851. Surface approach received low reliabilities in both contexts. This is in line with the reliabilities that have been reported for these scales in earlier studies (Lonka & Lindblom-Ylänne, 1996; Watkins, 1998). In earlier studies, two somewhat different factors have been reported within the surface approach, one indicating Fragmented knowledge, Memorising without understanding and Fear of failure, the other indicating Unthinking acceptance and a Lack of engagement (Entwistle, 1998; Entwistle & McCune, 2004). Such rather disparate elements would account for the lower reliability of a composite scale. The other reliabilities were mostly over .60, which are acceptable values for reliability (Nunnally & Bernstein, 1994); thus, the results suggest the appropriateness of the ETLQ in the two different contexts.

The same relation among different components across cultures is one criterion for cross-cultural validity. The present study investigated the relation between the factors measuring students' approaches to learning and their perceptions of the teaching-learning environment from the validity perspective; in other words, do the same underlying dimensions appear (Hui & Triandis, 1985; Richardson, 2009). The results showed that the correlation between Deep approach, Organised studying and Intention to understand, and the six factors measuring perceptions of the teaching-learning environment were uniformly positive and statistically significant, while the correlation between Surface approach and the six factors of perceptions of the teaching-learning environment were uniformly negative and statistically significant. The results suggest that positive perceptions of the teaching-learning environment are positively related to deep approaches to learning and negatively related to a surface approach to learning. This result is in line with earlier studies (Entwistle et al., 2003; Lawless & Richardson, 2002; Lizzio et al., 2002; Richardson, 2005a) In sum, the factor structures were highly similar in the differing contexts and under the differing conditions of completion, even though their variation prevented the combined analyses of the data sets. Thus, the instru-

ment is not as robust as, for example, Programme for International Student Assessment (PISA), which provides internationally comparable information across different fields of education. Therefore, the use of the ETLQ for comparative purposes should be critically evaluated. Moreover, the results showed that there are certain items that need more detailed analysis, especially from both cultural and linguistic perspectives. Yet, these items may also vary because of the difference in focus in the two data sets between degree subject and specific module. Still, the relation between the students' experiences of the teaching-learning environment and their approaches to learning suggest substantial cross-cultural validity; in other words, how well the modified and original ETLQ measure the same dimensions that they are supposed to measure.

3 Study II: Students' approaches to learning and their experiences of the teaching-learning environment in different disciplines

3.1 Method

Participants. The data in Study II was the same as the Finnish data in Study I. Since the focus was on the disciplines, it is necessary to introduce the faculties in more detail. The study was carried out in 10 of the 11 faculties of the University of Helsinki. These faculties differ in many ways. The Faculties of Law, Pharmacy, Theology and Veterinary Medicine offer degree study programmes on both the Bachelor's and Master's level, which incorporate various sub-disciplines and, therefore, represent more homogeneous disciplinary contexts than the other faculties. On the other hand, the faculties of Agriculture and Forestry, Arts, Behavioural Sciences, Biological and Environmental Sciences (previously Biosciences), Science, and Social Sciences are multidisciplinary. Agriculture and Forestry comprises the disciplines of agro- and food technology, animal science, applied biology, chemistry and microbiology, economics and management, and forest ecology. The Faculty of Arts is the largest faculty with various disciplines, such as languages, history, philosophy, art history and musicology. Behavioural Sciences comprises educational sciences, psychology and speech science, while Biological and Environmental Sciences includes biological, ecological and environmental sciences. The Faculty of Science incorporates the disciplines of astronomy, chemistry, computer science, geography and physical sciences, for example. Finally, the Faculty of Social Sciences has disciplines of communication, economics, political science, social policy and sociology. The response rates varied between faculties. The highest response rate was at the Faculty of Veterinary Medicine (86%) and the lowest at the Faculty of Biological and Environmental Sciences (28%).

Instrument. The questionnaire used in Study II was ETLQ, the same as in Study I (see section 1.4.1 above The Instrument). In addition to the items used in Study I (18 items measuring approaches to learning and 40 items measuring experiences of the teaching-learning environment), the respondents' indications of the total credits they had earned during their university studies (not only those concerning their current degree) their gender and study year were used as background information in Study II. The resulting figures of earned credits indicated students' experience of university studies and three equal-sized groups were formed based on the number of earned credits.

Statistical analyses. In order to explore and to clarify the picture of the various combinations of approaches to learning, students were divided into homogeneous

subgroups on the basis of their approach to learning (18 items) using latent profile analysis (LPA) in the M*plus* statistical program (Muthén & Muthén, 1998-2007). LPA allows the derivation of information about categorical latent variables from the observed values of continuous variables. The advantage of this approach over traditional heuristic cluster analysis (e.g. K-Means) is that it is model-based, and generates probabilities of group membership (Vermunt, 2003; Vermunt & Magidson, 2002). It is also possible to test the models and to analyse their goodness of fit. The number of clusters may also be partly statistically determined. The Lo-Mendell-Rubin (LMR) likelihood ratio test of model fit (Lo, Mendell & Rubin, 2001) compares the estimated model with a model with one class fewer than the estimated model. The p-value obtained represents the probability that the data have been generated by the model with one class fewer: a low p-value indicates the rejection of this model in favour of the estimated model. An adjustment to the Lo-Mendell-Rubin test is also given (Vuong-Lo-Mendel-Rubin, VLMR): the model with one class fewer is obtained by deleting the first class in the estimated model. LPA seeks to identify the smallest number of latent classes (i.e., clusters) that adequately describe and reproduce the covariances among the observed continuous variables as manifested in the 18 approach items. In fact, latent class (LC) clustering could be considered as a probabilistic variant of K-Means clustering in which probabilities are used to define "closeness" to each centre (MacLachlan & Basford, 1988). The LC clustering solution is invariant of linear transformations on the variables; thus, standardisation is not necessary. Solutions were generated by means of maximum likelihood (ML) estimation starting from two groups and ending with six. The Bayesian Information Criterion (BIC) and the Vuong-Lo-Mendel-Rubin (VLMR) likelihood ratio test (both available in Mplus) were used to find the number of groups with the best fit.

Having established the clusters based on the 18 items measuring approaches to learning, bivariate associations were checked using Chi-square and one-way-ANOVAs. Canonical variate analysis (CVA) was the method chosen for the final analyses (Thorndike, 1978). It is a method that allows for many variables in sets 1 (explanatory) and 2 (dependent). Nominal variables (faculty, cluster) were treated as indicator-coded dummy variables (Cohen, Cohen, West & Aiken, 2003). When dependent set variables (set 2) are measured on an interval-scale the method is known as MANOVA. CVA makes it possible to take statistical account of other background variables and to use adjusted values of dependent variables (Levine, 1977). The ratio between the observations and the variables was better than 60, which has been set as a reasonable limit when using dummy variables (Darlington, Weinberg & Walberg, 1973). Bartlett's Chi-square (based on Wilks' lambda) offers a solution for comparing nested CVA models. It could be said that CVA (i.e. set correlations) provides a single framework of measures of association, parametric estimation, hypothesis testing and statistical power analysis that encompasses most of the standard data-analytic methods (Van de Geer, 1971; Cooley & Loh-

nes, 1971; 1976). Partial-Eta - squared can be used to measure effect-size. It closely resembles Cohen's f^2 in which an effect size of 0.02 is considered as small, and 0.15 medium (Cohen, 1988). Items (18 variables) indicating various approaches and perceptions (regression-estimated factor scores, six variables) were linearly transformed into a scale in which mean was set at 500 and standard deviation at 100 for illustration purposes and in order to simplify the visual comparisons. The results are presented mainly in figures. All the associations discussed are statistically significant (at least $p<.001$) unless otherwise indicated. SPSS for Windows Ver. 16, and especially the MANOVA-module was used for all the analyses except for the LPA.

3.2 Results

Cluster groups that emerged. According to the latent profile analyses (LPA) the four-class solution seemed to fit the data best. The items in each cluster are presented in Figure 2. The items which were supposed to measure the same approach "acted" similarly in the cluster analysis. Thus, these clusters were described in more general terms by using four factors of approaches to learning. These four factors had emerged in a previous study which used the same data (Parpala et al., 2009) and these factors were identical with those that emerged in Study I (from the Finnish data set).

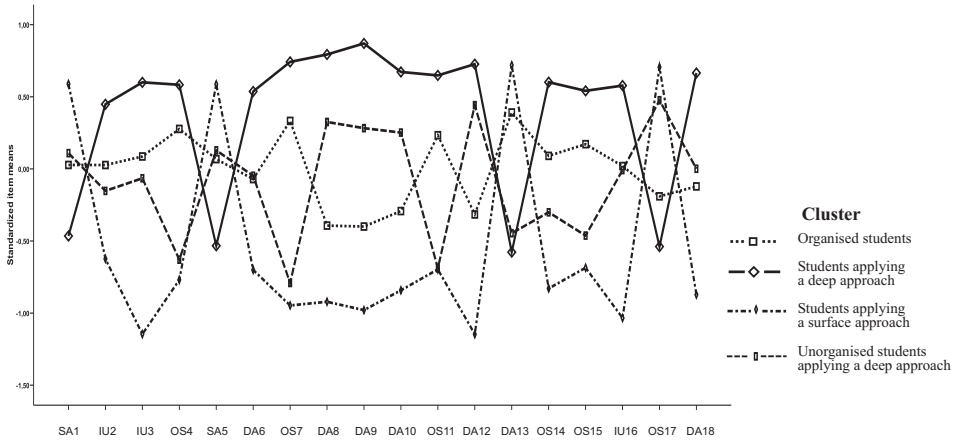

Figure 2. Items in four clusters (18 items are presented in Study I, Table 2). Note. DA= Deep approach, OS= Organised studying, IU= Intention to understand, SA= Surface approach

The first cluster comprised 899 (35.8%) students who scored highly on items measuring Organised studying. These students scored low on items measuring Deep approach, and average on items measuring Surface approach and Intention to understand. This cluster was labelled as Organised students. In Study I the deep

approach to learning was divided into two dimensions; one that represented Intention to understand and the other representing a more analytical approach to studying. The latter was entitled Deep approach because it covered the processes of understanding, such as relating ideas and use of evidence.

The second cluster included 675 (26.9%) students who scored the highest on both Deep approach and Intention to understand. These students also achieved the highest scores on Organised studying and lowest on Surface approach. This cluster was labelled Students applying a deep approach. The third cluster, which was called Students applying a surface approach, comprised 390 (15.5%) respondents with the highest scores for Surface approach and the lowest for Deep approach, Organised studying and Intention to understand. Finally, the fourth cluster included 545 (21.7%) students with the second highest scores on items measuring Deep approach and second lowest on items measuring Organised studying. These students achieved close-to-average scores on both Surface approach and Intention to understand. The cluster was labelled Unorganised students applying a deep approach. The cluster profiles based on the four factors measuring approaches to learning are presented in Figure 3.

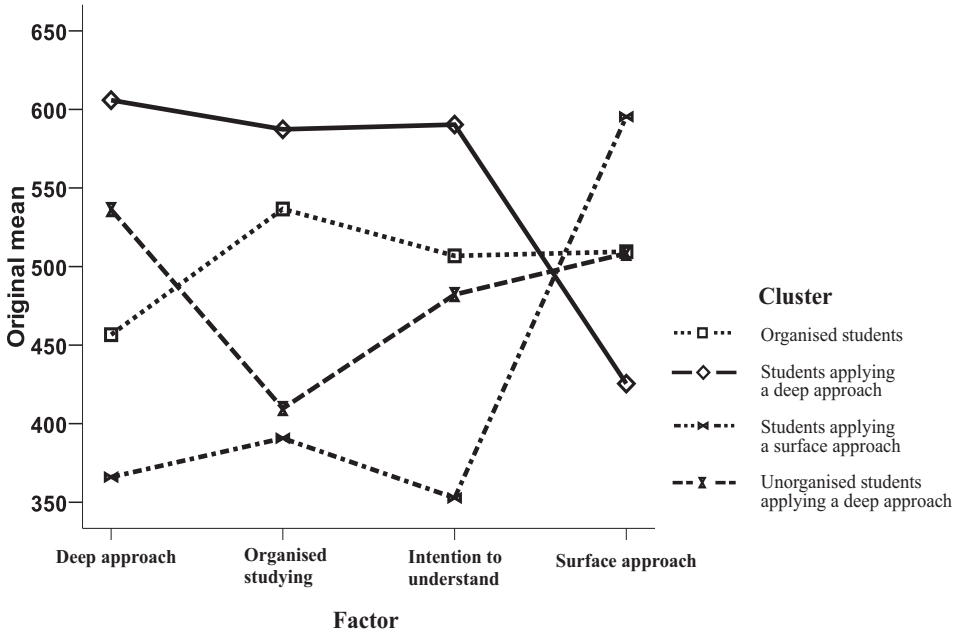

Figure 3. Cluster profiles.

Disciplinary differences. The first aim of Study II was to explore the relationship between the clusters and faculty membership: students studying in the 10 faculties were compared according to the cluster into which they fell. Firstly, the canonical analyses showed a statistically significant relationship between the sets

of explanatory (Set 1:faculty, study year, gender, earned credits) and dependent (Set 2: cluster) variables. Secondly, MANOVA analyses showed that the relationship between the individual explanatory variables and the dependent variables was statistically significant (f^2=.015). Univariate analysis was then conducted separately for each faculty. The effect size f^2 remained low and varied between 0.002 and 0.010. Furthermore, there were no statistically significant differences in three faculties, namely Biological and Environmental Sciences, Arts, and Social Sciences, compared to the prevalence of the clusters in the total sample. In five of the faculties, namely Veterinary medicine (45.1%), Law (41.7%), Agriculture and Forestry (37.9%), Pharmacy (35.9%) and Science (31.3%), Cluster 1 (Organised students) was the most common cluster, while Cluster 2 (Students applying a deep approach) was the most common in the Faculties of Behavioural Sciences (37.4%) and Social Sciences (32.5%). Furthermore, it was only in the faculties of Science (21.8%) and Pharmacy (21.30%), that the membership of Cluster 3 (Students applying a surface approach) exceeded 20 percent of the sample. Cluster 4 (Unorganised students applying a deep approach) was the most common among those studying in the faculties of Theology (35.6%), Biological and Environmental Sciences (32.7%), and Arts (28.5%). The adjusted percentages of the clusters in each faculty are presented in Figure 4.

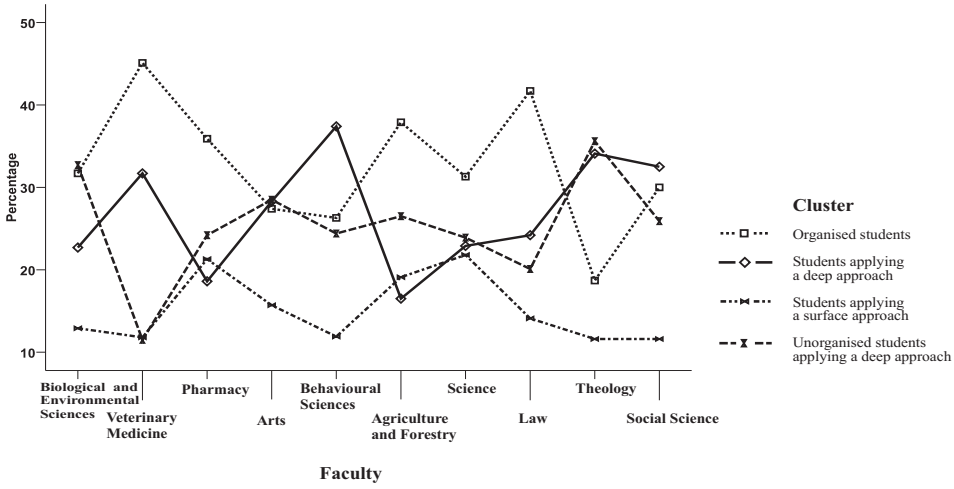

Figure 4. Cluster percentages in ten faculties.

Students' experiences of their learning environments. The comparisons of students' experiences of their teaching-learning environment in different faculties generally showed that students at the Faculty of Law achieved lower scores, and those studying at the Faculty of Veterinary Medicine achieved higher scores than students in other faculties on the six factors measuring perceptions of the teaching-learning environment (for more detailed results see Study II).

In line with the third aim of Study II, the differences between the clusters in terms of experiences of the teaching-learning environment were explored. The results showed that the students who belonged in Cluster 2 (Students applying a deep approach) achieved the highest scores on all six factors and, on the other hand, that those in Cluster 3 (Students applying a surface approach) achieved the lowest scores.

3.3 Discussion

On the basis of Latent profile analysis (LPA) four clusters were formed. The students in the second and third clusters (Students applying a deep approach and Students applying a surface approach) clearly differed and were easy to interpret on the basis of previous research: those in Cluster 2 achieved the highest scores on items measuring a deep approach and Organised studying, while those in Cluster 3 achieved the lowest scores on Organised studying. These results are in line with those of previous research showing that a strategic approach correlates positively with a deep approach and, respectively, negatively with a surface approach (e.g., Entwistle, Tait et al., 2000).

The first (Organised students) and fourth (Unorganised students applying a deep approach) clusters are more problematic to interpret. Students in Cluster 1 scored highly only on items measuring Organised studying, and rather low on items measuring Deep approach. No other items clearly emerged from their cluster profile. Interestingly, these students appear to be systematic in their studies without looking for arguments and justifications for various perspectives, and at the same time they achieved similar scores on both the Intention to understand and Surface approach scales. By way of contrast, students in Cluster 4 with the second highest scores on Deep approach and the second lowest on Organised studying appear to take a critical and analytical approach to their learning, but at the same time they do not seem to be systematic. The combination of approaches here is very interesting, and warrants further investigation of the relationship with academic achievement.

The composition of Clusters 1 and 4 shows a clear division among students taking a deep approach between those concerned with an intention to understand and those concerned with the process of understanding, such as relating ideas and use of evidence. This is in line with the results in Study I. The focus here was on the individual level. The scores on the Deep scale correlated both negatively and positively with those on the Organised studying scale, whereas in previous studies the strategic approach to learning has been negatively related to the surface approach and positively to the deep approach to learning (Entwistle, Tait et al., 2000). Study II thus suggests a more autonomous role for the organised or strategic approach than found in previous studies (Kember & Leung, 1998; Kember, Biggs & Leung, 2004; Richardson, 1994).

Again in Clusters 1 and 4, the students achieved near average scores on In-

tention to understand and Surface approach. On the one hand, this may reflect a dissonant study profile (or orchestration) characterised by atypical combinations of aspects of studying that do not fit together theoretically (Meyer, 2000b), and on the other hand, scoring similarly on deep and surface approaches to learning may reflect a strategic approach involving changing the approach to learning depending on the course of study.

The results further confirm those reported in previous studies (Kreber, 2003; Lawless & Richardson, 2002; Richardson, 2005b; Richardson & Price, 2003; Sadlo & Richardson, 2003) by clearly showing that students' approaches to learning were related to their experiences of their teaching-learning environment: those in Cluster 2 achieved the highest scores and those in Cluster 3 achieved the lowest on almost all scales measuring positive perceptions of the teaching-learning environment.

Disciplinary variation in approaches to learning. Previous research has shown that students who study the soft disciplines score higher on a deep approach to learning than students who study the hard disciplines (see Chapter 1.1.2 Disciplinary variation in approaches to learning). The results of the present study reflect these earlier findings in that students in the behavioural and social sciences were most likely to fall into Cluster 2 (Students applying a deep approach). Furthermore, only 15 percent of the whole sample of students belonged to the third cluster. However, regarding the faculties of Pharmacy and Science, over 20 percent of the students belonged to Cluster 3. This is also in line with the results of previous research on the effect of the study discipline on approaches to learning (e.g., Entwistle & Ramsden, 1983; Smith & Miller, 2005). The clusters in other disciplines are discussed in Study II in more detail.

4 Study III: Students' conceptions of good teaching in three different disciplines

4.1 Method

Participants. The data were the same as in Study I and II but the focus was only on three disciplines. A total of 695 students' open-ended answers were analysed: 416 from the Faculty of Behavioural Sciences, 198 law students and 81 veterinary students. The response rates varied between the faculties, the highest being in the Faculty of Veterinary Medicine (80%), the second highest in the Faculty of Law (43%) and the lowest in the Faculty of Behavioural Sciences (37%). The first-year students were better represented in that their response rate was 59 percent (n=407) against 41 percent (n=288) among the third-year students. Nineteen percent of the 695 students were male (n=129) and 81 percent were female (n=566). The percentages of female participants in the Faculties of Behavioural Sciences, Law and Veterinary Medicine were 91, 58 and 91, respectively. Compared to the percentages of all females studying in these faculties in the year 2006 female students were over-represented in the Faculties of Behavioural Sciences (all females 86%) and Law (all females 56%), and slightly under-represented in the Faculty of Veterinary Medicine in which 93 percent of the students were female.

Contexts. As described in Study II, the three faculties differ in their structures. They also differ in their teaching-learning environments. The curriculum of the Faculty of Veterinary Medicine has traditionally been school-like in nature, with a preset timetabled study plan and course overload (Ruohoniemi & Lindblom-Ylänne, 2009). The studies are therefore guided by the curriculum, whereas in the Faculty of Law the curriculum is not highly structured and is mainly based on independent study. In order to advance in their studies, law students need good self-regulation and study skills (Lindblom-Ylänne, 2004). The Faculty of Behavioural Sciences incorporates various, heterogeneous teaching-learning environments and curricula structures.

Materials. In addition to the two sections of the modified ETLQ used in Study I and II, the students were asked to complete an additional open-ended question asking them to describe what they considered a good teaching situation to be. The data provided by the students were analysed in the present study. Furthermore, four clusters derived from the larger data (Study II) were used, namely: Organised students, Students applying a deep approach, Students applying a surface approach and Unorganised students applying a deep approach. According to Study I, Cluster 1 (Organised students) was the biggest cluster in two of the faculties, namely Veterinary medicine (45.1%) and Law (41.7%), and Cluster 2 (Students

applying a deep approach) was the biggest in the Faculty of Behavioural Sciences (37.4%). Cluster 1 was the second biggest cluster in the Faculty of Behavioural Sciences (33.4%)[1].

Analyses. The students' comments on the question "What do you consider as a good teaching situation? Please, provide an example." were assessed by means of a qualitative content analysis (Flick, 2002). The first and second author read and analysed the open-ended answers independently in order to capture and describe the variation in students' conceptions of good teaching. They analysed the texts in an iterative manner, reading through them repeatedly and searching for categories of description. The tentative categories were first discussed between the two researchers. What differed between the two researchers was their judgement about the category describing interaction. The discussion revealed that the initial category was too broad, and in order to capture all the disciplinary variation the researchers decided to use smaller units of analysis. This increased the number of categories. After this, the data was compared with similar, multidisciplinary data collected at the Finnish Open University. The comparison confirmed the choice of created categories. In order to determine how well the initial categories covered the data, the third researcher read through the responses independently and the categories were then discussed and refined by all the authors. This resulted in agreement about the final categories, which were then organised thematically. Extracts from the responses were selected to illustrate how a particular category had been derived, the unit of analysis varying from single words to whole sentences. The students' comments thus comprised between one and ten categories, the majority (n=527) incorporating between two and four.

After establishing the categories of good teaching the differences in conceptions were examined by cluster and faculty. In order to do this the categories were coded as dummy-variables and entered into the data that contained information on cluster and faculty membership. Chi-square tests were used to establish the association, on the one hand, between conceptions of good teaching and faculty membership, and on the other hand, between conceptions and cluster membership.

[1] Cluster percentages are also illustrated in Table 1 in Study III. Figure 3 in Study II presents the adjusted percentages of the clusters in different disciplines.

4.2 Results

Categories of good teaching. Twenty-one categories were created from the data. The first five: Clearly defined expected learning outcomes, Feedback from assessment, Interaction, Combining theory and practice and Matching teaching with students' prior knowledge were organised thematically under the heading Teaching practice, the common element being that they concentrated on what the teacher does in practice. Secondly, the four categories Lecture, Group work, Guided group work, and Web-based learning were placed under the heading Teaching methods. The third theme, The teacher's role, comprised the Inspiring teacher, Teacher as an expert, Encouraging critical thinking, Supporting student learning, and Opportunities to ask questions, which included descriptions of the role the teacher plays in good teaching. The fourth theme, Teaching skills, comprised the two categories Good performance and Good materials, and the fifth, The students' role, included three: Motivated students, Students processing knowledge, and Learning by doing. Finally, the two categories Atmosphere and Facilities were placed under the heading The teaching-learning environment. Table 6 represents the categories. All categories, numbers and percentages of students mentioning them, a brief content description of the category along with examples are presented in more detail in Study III.

Table 6. Categories of students' conceptions of good teaching.

1 Teaching practice	**2 Teaching methods**	**3 Teacher's role**
1.1 Clearly defined expected learning outcomes	2.1 Lecture - traditional, teacher transmitting the knowledge	3.1 Inspiring teacher
1.2 Feedback from assessment -giving feedback and not just a grade	2.2 Group work - students working together in a small group	3.2 Teacher as an expert - of his or her own field
1.3 Interaction - interaction in general and more specific definitions	2.3 Guided group work - teacher is guiding the group	3.3 Encouraging critical thinking - teacher invites students to question and to compare various perspectives
1.4 Combining theory and practice -examples to illustrate the theory	2.4 Web-based learning - web-based learning as supportive of a lecture or separate course	3.4 Supporting student learning - ensuring students' learning, be available
1.5 Matching teaching with students' prior knowledge		3.5 Opportunities to ask - time and place for asking questions
4 Teaching skills	**5 The students' role**	**6 The teaching-learning environment**
4.1 Good performance - clear and consistent teaching	5.1 Motivated students - students are inspired and prepared	6.1 Atmosphere - students feel free to comment and feel that their opinions are respected
4.2 Good material - variety of good and easily available materials	5.2 Students processing knowledge - students working together or independently with the learning tasks	6.2 Facilities - importance and functionality of facilities
	5.3 Learning by doing - applying and trying out skills in practice	

The most common categories were Interaction, Group work and Combining theory and practice, referred to by over two hundred students. Furthermore, approximately 25 percent mentioned Lecture and Good performance categories. The students' own role was mentioned only 182 times, whereas the teacher's role was referred to 400 times, and most of the categories that emerged were focused on teaching and the teacher rather than on learning and the students' active participation in the teaching-learning process.

Differences in students' conceptions of good teaching. The results showed that students representing different profiles of approaches differed statistically significantly in only one category, Group work ($\chi^2 = 14.391$, df = 3, p = .002): almost every second student in the clusters Unorganised students applying a deep approach and Students applying a surface approach stressed the importance of group work in good teaching, whereas only one third of the students representing Organised students and Students applying a deep approach mentioned it.

Differences between the students in the three faculties. The present study focused on students from three faculties: Behavioural Sciences, Law and Veterinary Medicine. These students differed statistically significantly in their responses in 12 categories describing their conceptions of good teaching. Nearly two-thirds (63%) of the students in the Faculty of Behavioural Sciences emphasised interaction as one aspect of a good teaching situation, compared to 44.9 and 34.6 percent, respectively, of students of law and veterinary medicine. On the other hand, only 18.3 percent of those studying behavioural sciences mentioned the Lecture category, compared to about 38 and 33 percent of the veterinary medicine and law students, respectively. The behavioural science students made more frequent mention of Matching teaching with students' prior knowledge and Encouraging critical thinking than those in the other two faculties, and they were the only ones who referred to Guided group work.

Three of the categories were mentioned more often by the law students than by the others. The first of these was Group work: almost 40 percent associated it with a good teaching situation, compared with 30 and 20 percent of the behavioural science and veterinary medicine students, respectively. The second was Good materials and the third was Facilities, which were mentioned by approximately every tenth law student.

Eleven percent of the students of veterinary medicine mentioned Learning by doing, against only three and one percent, respectively, of those in the Behavioural Sciences and Law faculties. In addition, almost half (44.4%) of veterinary medicine students Combining theory and practice as part of a good teaching situation, and more of them referred to Supporting student learning and Opportunities to ask questions than students in the Behavioural Sciences and Law faculties. The disciplinary differences are presented in Table 7.

Table 7. Statistically significant differences between the three faculty groups in the categories of students' conceptions.

Category	Difference between faculties	Faculty		
		Behavioural Sciences	Law	Veterinary Medicine
1.3 Interaction	(χ^2 = 32.330, df = 2, p < .001)	63.0	44.9	34.6
1.4 Combining theory and research	(χ^2 = 11.110, df = 2, p = .004)	27.2	25.8	44.4
1.5 Matching teaching with students' prior knowledge	(χ^2 = 6.252, df=2, p= .044)	7.2	2.5	3.7
2.1 Lecture	(χ^2 = 24.272, df = 2, p < .001)	18.3	32.8	38.3
2.3 Group work	(χ^2 = 12.203, df = 2, p = .002)	29.8	39.9	19.8
2.2 Guided group work	(χ^2 = 8.189, df = 2, p = .017)	2.9	0	0
3.3 Encouraging critical thinking	(χ^2 = 9.692, df = 2, p = .008)	12.7	6.6	3.7
3.4 Supporting student learning	(χ^2 = 8.639, df = 2, p = .013)	7.9	10.1	18.5
3.5 Opportunities to ask questions	(χ^2 = 7.170, df = 2, p = .028)	7.0	4.5	13.6
4.2 Good materials	(χ^2 = 7.570, df = 2, p = .023)	5.8	12.1	7.4
5.3 Learning by doing	(χ^2 = 18.914, df = 2, p < .001)	2.9	1.0	11.1
6.2 Facilities	(χ^2 = 26.735, df = 2, p < .001)	1.9	11.1	2.5

4.3 Discussion

The analysis of students' responses to open-ended questions produced twenty-one categories, which were in line with research on good teaching (Ramsden, 2003). Although students were asked to describe good teaching, some of them (17%) emphasised their active role in the teaching-learning situation by mentioning the category Students processing knowledge. Students in Study III thus considered good teaching mainly in terms of categories related to teaching and the teacher's action in it rather than to their own active role in learning. This may be due to the fact that student evaluations have usually measured students' satisfaction with the teaching and assessed teacher competence instead of focusing on learning experiences (Harvey, 2003).

The relation between conceptions and approaches to learning. A further aim in Study III was to explore the relation between students' approaches to learning and their conceptions of good teaching. The analysis revealed that Unorganised students applying a deep approach and Students applying a surface approach mentioned Group work more often than students in the other two clusters (Organised students and Students applying a deep approach). The finding that only one cate-

gory differed between approaches to learning was somewhat surprising because students' conceptions of good teaching were in previous studies found to be related to their conceptions of learning (Kember et al., 2003; Kember & Wong, 2000).

Disciplinary differences in conceptions of good teaching. The analyses revealed disciplinary differences in students' conceptions of good teaching in twelve categories. In general, the results of the present study showed, on the one hand, that although the students representing different approaches to learning experienced the teaching-learning environment differently (Study II) their conceptions of good teaching were quite coherent at the group level, or more precisely, in the four cluster groups. On the other hand, there were faculty-level differences in students' conceptions of good teaching at the University of Helsinki. These findings partly explain students' different experiences of their teaching-learning environment and are in line with those reported in previous studies (Carpenter & Tait, 2001; Kember et al., 2004) suggesting that conceptions of good teaching are context-related.

5 Study IV: University teachers' conceptions of good teaching in the units of high-quality education

5.1 Method

Participants. The participants in Study IV were 20 teachers from four disciplines at the University of Helsinki: theology (n=5), medicine (n=5), Finnish language (n=5) and political science (n=5), which were presented the units of high-quality education. Units of high-quality education in Finland have been rewarded on the basis of three criteria: 1) aim of the education, 2) method of implementation, and 3) evaluation of the education. Thus the teachers working in these units were expected to be more aware of the theories behind good teaching. Furthermore, the individual interviewees were selected on two different basis: faculty recommendations and participation in pedagogical courses or training.

Analyses. The interviews were semi-structured, focusing on the teachers' teaching, how they plan it, how they assess student learning, what it is like to be a teacher in their department, and how the teachers learn themselves. They were also asked questions about their aims in teaching, what they consider as being important in teaching, and how they experience teaching. These questions preceded questions on how they would teach in an ideal situation and what their conceptions of good teaching were.

The interviews were analysed by the first author in the following way: the interviews were read in an iterative manner by reading through transcripts repeatedly while searching for broad dimensions. The aim was to capture all variation in the teachers' experiences and conceptions concerning their teaching, good teaching and an ideal teaching situation, and to describe this variation. After the first author had found the initial dimensions, the second author read all the transcripts independently in order to search for the dimensions. The dimensions were then compared and refined through discussion. The dimensions formed by the second author were highly similar to those of the first author. However, after discussing the dimensions, the authors reduced their number by combining them. During this process some dimensions became sub-dimensions, and the dimensions which emerged, were highly different from each other. For example, the dimensions of teaching practice and physical environment represent very different conceptions; unlike the physical environment, teaching practice is something that teachers can control themselves. By dimension the authors refer to different aspects spontaneously mentioned by teachers when describing teaching. The quotations from the transcripts illustrated how certain dimensions had been derived. After establishing these dimensions, the interview transcripts were examined more closely

for key characteristics describing these dimensions.

5.2 Results

Six dimensions emerged from the analysis of teachers' conceptions of good teaching. These dimensions were: teaching practice, teaching context, teacher's role, student's role, the atmosphere and the physical environment. Some of these dimensions consisted of different sub-dimensions. The dimension of teaching practice consisted of three sub-dimensions: interaction; putting teaching into a larger context; variety in teaching methods. The dimension of a teacher's role consisted of two sub-dimensions: the teacher's role is to inspire students; expert in her/his own field. The dimension of student's role also consisted of two sub-dimensions: motivated; processing knowledge. The dimensions are illustrated in Table 8. The results concerning what teachers regarded as important in their teaching, as well as examples of each dimension, are reported in Study IV.

Table 8. Teachers' conceptions of good teaching.

Dimensions of good teaching
1 Teaching practice
1.1 Interaction (in a small group)
1.2 Putting teaching into a larger context
1.3 Variety in teaching methods
2 Teaching context
3 Teacher's role
3.1 Inspriring
3.2 Expert
4 Student's role
4.1 Motivated
4.2 Processing knowledge
5 The atmosphere
6 The physical environment

5.3 Discussion

The six dimensions that emerged were reflected more of a student-centred or learning-oriented approach rather than a teacher-centred or content-oriented approach. There may be several reasons why the teachers highlighted similar themes to those which characterise the student-centred or learning-focused approach. For instance Study IV focused on teachers in the quality units of university education, and the number of participants was quite limited. Furthermore, teachers were selected for this study using two different methods with two main criteria. First,

the faculties recommended teachers active in developing the departments' teaching, and second, teachers with pedagogical training voluntarily participated in the interview. The participants of the present study might have had a good awareness of what is considered as good teaching.

The general results followed Kember's (1997) findings of the student-centred/ learning-oriented approach and student-teacher interaction/ apprenticeship. Students were seen as actively constructing their own knowledge, and the teacher's role was to facilitate and inspire students' learning. Teaching practice was supporting of students' participation by being an interactive process and the atmosphere encouraged students to speak up. The aim of the teaching was to enhance critical analyses of the subject matter and enthusiasm to learn more. The teachers emphasised that students should have a holistic view about the subject matter. Teachers also saw that the physical environment should support teaching and learning by being pleasant and functional.

In Study IV, conceptions of good teaching also contained content-centred views about transmitting information to students. However, at the same time teachers who emphasised knowledge transmission also recognized the importance of interaction. This finding is in line with the previous research, which has shown that in the student-centred/ learning-oriented approach the teacher can change his or her teaching according to the level of the students and the teaching context (Lindblom-Ylänne et al., 2006; Trigwell, 2002).

6 General discussion

The four studies explored students' experiences and students' and teachers' conceptions of good teaching from various perspectives. The most important findings in the light of the overall aims of this doctoral dissertation are summarised as follows.

The aim of Study I was to compare the factor structures, or more precisely, the factors that emerged concerning students' approaches to learning and their experiences of the teaching-learning environment in two culturally and linguistically different contexts: Finnish and British. In previous studies concerning students' approaches to learning, three factors have generally emerged: the deep, organised and surface approach (Entwistle, 2009; Entwistle et al., 2003; Entwistle & Ramsden, 1983; Richardson, 2005b). The findings of this doctoral dissertation show similar results. However, whereas in these previous studies the deep approach has been a combination of both intention and process of understanding, in this research items measuring intention to understand and items measuring the process of understanding formed separate factors. Thus, in the present study four different factors emerged: Deep approach, Organised studying, Intention to understand and Surface approach. The data analysis showed that all students' scores on items measuring Intention to understand were quite similar; in other words, students in the Finnish data scored high on these items. Thus, these items had a negative skewness and high average. This may imply that students of the University of Helsinki share a common aim to understand the content matter. There may be several reasons for this. One might be that because there are highly demanding entrance examinations in every discipline at the University of Helsinki, students are a selected group. As a member of this group it is perhaps very difficult to disagree with the statement: "I have usually set out to understand for myself the meaning of what we had to learn". This item clearly needs to be rephrased and clarified. The item could be, for example: "My aim is to understand the content matter for myself instead of reproducing knowledge", in which the term 'usually' is not used.

The second item with high loading on the factor Intention to understand was item 16. ("In reading for this course unit, I've tried to find out for myself exactly what the author means.") This loaded on Deep approach in the British data. In the Finnish data the items measuring intention to understand loaded on a different factor than the items measuring the processes aimed at understanding. Yet, intention to understand without the process of understanding does not itself support high-quality learning (Entwistle & Ramsden, 1983). It appears that the "real" deep approach in the Finnish data is measured with the factor Deep approach. The distribution and mean of this factor indicates variation in students' scores, and this factor more clearly measures deep processes, such as analysing, relating ideas and searching for evidence. The University of Helsinki is a highly research-

intensive university with a strong emphasis on researcher education (Lindblom-Ylänne, 2006). Thus, students need to develop their analytical and critical thinking skills from the very beginning of their studies. The factor Deep approach brings valuable information of students' learning in this context.

Despite the fact that Intention to understand and Deep approach were treated as separate factors in Study I, the results showed similarities to the factor structures concerning students' approaches to learning in the previous studies. Furthermore, the factor structures and the six factors that emerged concerning students' experiences of their teaching-learning environment were similar in the Finnish and British contexts, but they also had similarities with the previous studies. The factor solutions were compared with earlier factorisations (Entwistle, 2009; McCune, 2003; Xu, 2004) and similar results were found. Study I examined also how students' experiences of the teaching-learning environment are related to their approaches to learning in the two contexts. The results showed that students' positive experiences of their teaching-learning environment were related to their deep approach to learning. This replicates the results of previous studies (Kreber, 2003; Lawless & Richardson, 2002; Richardson, 2005b; Richardson & Price, 2003; Sadlo & Richardson, 2003).

There were a few items with differences in the two contexts and some items had notable skewness and kurtosis. This probably was the reason why, for example, Intention to understand formed a separate factor. The findings concerning kurtosis and skewness have provided important information for the development and validation process of the modified ETLQ (see Chapter 6.1 Limitations of the study and the development of the ETLQ). Nevertheless, most of the items measuring approaches to learning and students' experiences loaded on factors where they were supposed to load. This suggests the construct validity of the instrument, which describes the similarity of the results to that which is generally accepted to be the construct (Cohen, Mannion & Morrison, 2007). In sum, ETLQ appears to be a sufficiently robust and reliable instrument to allow it to be used across countries for collecting comparable student feedback and, in addition, at either the degree subject or the single course module level.

Study II explored the disciplinary differences in students' approaches to learning and their experiences of the teaching-learning environment. The focus was on qualitatively different student cluster groups measuring different combinations of approaches to learning. Four cluster groups were identified: Organised students, Students applying a deep approach, Students applying a surface approach and Unorganised students applying a deep approach. Moreover, the study showed that these cluster groups were differently represented in different disciplines and that the deep approach to learning was more common in the soft sciences than in the hard sciences. Thus, the results were in line with the previous studies (Lonka & Lindblom-Ylänne, 1996, Nelson Laird et al., 2008). Yet, the differences may occur because the deep approach refers to different things in different dis-

ciplines (Entwistle, 2009; Entwistle et al., 2001). Thus, the items measuring the deep approach need to be refined within each discipline. In addition, it should be acknowledged that students in the behavioural and social sciences may be more aware of the "desirable" approach to learning, and this may influence their responses. These reasons have been taken into account in the development process of the questionnaire by giving students feedback on their learning and in this way encouraging them to be more honest in their answers (see chapter 6.1: Limitations of the study and the development of the ETLQ). The focus in Study II was also on how the cluster groups, representing different combinations of approaches to learning, differed in terms of their experiences of the teaching-learning environment. The results showed that Students applying a deep approach scored higher on items measuring positive experiences of the teaching-learning environment than Students applying a surface approach. This replicated the results in Study I, and may suggest the validity of the ETLQ in the sense that it yields different scores on students who differ in terms of their approaches to learning. Furthermore, the important finding in Study II was that approaches to learning as well as students' study discipline seem to affect their experiences of the teaching-learning environment.

The aim of Study III was to explore students' conceptions of good teaching in three different faculties that differ in terms of students' experiences of their teaching-learning environment. Twenty-one categories emerged and they were placed under six different headlines: Teaching practice, Teaching methods, The teacher's role, Teaching skills, The students' role and The teaching-learning environment. The results revealed that students' descriptions were mainly related to the teaching activities and to the teacher. Instead, the student's own role was emphasised to a lesser extent. Interestingly, the results of Study III showed that although the students representing different approaches to learning experienced the teaching-learning environment differently (Study II), their conceptions of good teaching were quite coherent at the group level, or more precisely, in the four cluster groups. This result is different from previous research. For example, Kember and colleagues (Kember et al., 2004; Kember & Wong, 2000) have shown that students with different conceptions of learning share different conceptions of good teaching. However, it should be acknowledged that in the study by Kember and Wong (2000), the students were asked to describe types of teaching in which they learn the most. These descriptions reflected their beliefs about good teaching. In a study by Kember and others (2004), the descriptions of good teaching were analysed in relation to students' beliefs and perceptions of their studying as a whole. The focus was thus more on learning, whereas in Study III the focus was on good teaching.

Study III also suggested faculty-level differences in students' conceptions of good teaching at the University of Helsinki. There the results imply that the disciplinary culture (Parry, 1998; Ylijoki, 2000) and ways of thinking and practising

in the subject (McCune & Hounsell, 2005) affect students' experiences as well as their conceptions of good teaching. For example, law students need to take more responsibility for their own learning and studying, whereas veterinary students can lean more on their teachers and the curriculum structure. Therefore, these students experience their teaching-learning environment very differently (Study I), which reflects the differences in these students' conceptions of good teaching as well (Study III). These findings partly explain students' different experiences of their teaching-learning environment and are in line with those reported in previous studies suggesting that conceptions of good teaching are context-related (Carpenter & Tait, 2001; Kember et al., 2004).

The aim of this doctoral dissertation was to explore how students' experiences of good teaching differ from their conceptions of good teaching. The comparison between 21 categories which emerged in Study III and the factors of good teaching in the ETLQ (Study II) shows that there is some overlap between students' conceptions of good teaching and the items measuring good teaching in the ETLQ. Teaching practice covers the factors Alignment and Constructive feedback. In addition, the category Interaction is related to both Teaching for understanding and the Support from other students. The teacher's role includes the factors Teaching for understanding, Staff enthusiasm and support, and Interest and relevance. The students' role has a category of Students processing knowledge, which has similarities with the factors Support from other students and Teaching for understanding. In addition, the factor Learning by doing has similarities with the factor Interest and Relevance. Finally, the category The teaching-learning environment covered the aspects that were also measured in Staff enthusiasm and support. However, the students' descriptions of good teaching covered more aspects of good teaching than what was covered in the items measuring students' experiences of their teaching-learning environment (Study I). Students emphasised their own role in processing knowledge, but they also emphasised their role as motivated, committed actors in the teaching-learning situation. They, for example, hoped that all students would be motivated and responsible for their own learning and do their share in the teaching-learning situation. Johnson and Johnson (2009) argue that personal responsibility is an important element of cooperative learning and they emphasise that students' responsibility to complete their own share of the work as well as for facilitating the work of other group members are important elements in cooperative learning and positive interdependence. Furthermore, students were somewhat practical in their descriptions because they emphasised teaching methods, teaching skills and, finally, facilities.

Study IV describes good teaching from the university teachers' point of view. The results of Study IV were highly similar to those of Study III. Dimensions emerged in teachers' descriptions of good teaching that were similar to the students' conceptions. Furthermore, the dimensions were in line with the aspects of the teaching-learning environment measured with ETLQ (Study I). The teachers also

emphasised the students' role as motivated, active participants of the teaching-learning situation. In addition, they paid attention to the facilities of the teaching-learning situation, which is also a very practical issue and similar to students' description of good material and facilities. Teachers' conceptions of good teaching were mostly in line with the theories of good teaching, but although appropriate assessment has been shown to be an important element in good teaching (Biggs, 2003; Lizzio et al., 2002; Ramsden, 2003), the teachers did not emphasise its role in good teaching. From the teachers' perspective, instead of being an essential part of good teaching, assessment was considered as something separate.

6.1 Limitations of the study and development of the ETLQ

The limitation of Study I and Study II was that the students' background information was not available in the analyses. This was due to the limited amount of background information provided in the data. The Finnish data included information only about the students' gender and study year and, for example, students' age was not available. Important information would also have been students' study success. The need for background information has been taken into account in the development process of the ETLQ. The ETLQ will be related to the Registrars of the Universities of Helsinki. A feedback system will be developed to automatically collect the background information of the students and connect it with their responses in the ETLQ. A comparison between students' demographic characteristics brings important information also about the validity of the measurement instrument.

The response rate in some faculties (for example, Biological and Environmental Sciences) was very low. A low response rate can be a problem in web-based data collection, and to avoid that, methods of encouraging participation are important (Lefever, Dal & Matthiasdottir, 2007). In order to increase the response rates, the link to the questionnaire was sent two or three times to each student. The e-mail sent to students contained a brief explanation of the research that the students were being asked to participate in. Despite these attempts the response rate remained quite low, which affects the use and interpretations of the results. Furthermore, because the ETLQ is meant for feedback purposes at the University of Helsinki, it is important to increase the response rates. Richardson (2005a) suggests that response rates over 60% are desirable for students who have completed their courses whereas for drop-out students it may be lower. The requirement for better response rates has been acknowledged in the development process of the ETLQ at the University of Helsinki. At the moment a feedback system which uses the ETLQ is under construction, and one important element in this system is that it will give feedback to individual students about their approaches to learning and experiences of the teaching-learning environment. This provides valuable information for students about their learning and motivates them to answer the questionnaire. The students are also able to compare their results with

the results of the other students from their faculty. The questionnaire will also be compulsory for all students of the University of Helsinki. Thus, the response rates will be close to 100 percent. Furthermore, some faculties are already using the questionnaire systematically, for example, as part of student counselling. The studies focusing on these faculties show that the factor structures are in line with the ones presented in this dissertation (Ruohoniemi, Parpala, Lindblom-Ylänne, Katajavuori, 2010; Rytkönen, Parpala, Lindblom-Ylänne & Virtanen, 2009). The practical developments at the University are described more in Chapter 6.1.1 Practical Implications.

Another limitation of the study was the lack of student opinions about the items measuring their approaches to learning and experiences of the teaching-learning environment. Although the original English inventory was translated into Finnish by experts in the field of teaching and learning in higher education and then independently back-translated back to English by another expert, it would have been interesting to have students' opinions as well. This may have increased the face validity of the questionnaire by clarifying what the students thought of the items, especially students representing different disciplines. In order to increase the face validity, focus group interviews of students representing a variety of disciplines have already been conducted. They revealed that most of the items were clear to the students, but that there were also items that were difficult to interpret. These items have been clarified according to students' suggestions. In addition, the focus group interviews suggested that the typical teaching-learning situation was difficult for students to describe and that there was much variation between the students' experiences of the typical teaching situation in different faculties. It is important to specify what students evaluate, as well as their descriptions of what they have in mind when they are thinking about a typical course in their major subject. It should be noted that although the same dimensions emerge from the data sets, they are interpreted differently within cultures (Richardson, 1994), and thus it is important to take cultural diversity into account when adapting new questionnaires (Richardson, 2004).

Study I and Study II used new up-to-date methods in exploring the differences between factorial structures in two different contexts and students with different combinations of approaches to learning. These methods are not used widely yet, and they should be evaluated critically. Exploratory structural equation modelling (ESEM), for example, is a relatively new statistical tool and the "best practices" have not yet developed; they have to evolve with experience (Marsh et al., in press). The combinations of the students' approaches to learning were examined with Latent profile analysis (LPA). LPA has been criticised because it is based on the same correlation structure as factor analysis and thus there is no need to distinguish between the two methods (Barthomelow, Steele, Moustaki & Galbraith, 2008). Barthomelow and others (2008) conclude that the LPA can be used if a factor solution is better approached from the latent profile perspective, but the

use of the LPA should be evaluated critically. The use of the LPA was justified in Study II because it enabled the exploration of the different combinations of approaches to learning and the disciplinary differences between the cluster groups. The results of the LPA were also compared to the result of the K-means, a more conventional model of finding non-observed groupings in data. The results were highly similar, which strengthens the interpretation of the results.

Study III and Study IV applied a qualitative approach. Study III explored students' descriptions of good teaching; the analysis was conducted from students' written descriptions. Interviews would have been required in order to form a broader picture of the students' conceptions. In Study IV the focus was on teachers' descriptions, the teachers being representatives of the quality units of higher education. There were only 20 teachers representing four different disciplines. Thus, disciplinary variation could not be taken into account. It would also have been interesting to interview teachers who represented the same fields, as did the students who participated in Study III. Thus, it would have been possible to get a clearer picture of the relation between students' and teachers' conceptions of good teaching. Kember and others (2000) found that students' conceptions reflected their perceptions of the teachers' beliefs about good teaching. This suggests that the interaction between students and their teacher have an effect on their conceptions of good teaching.

6.1.1 Practical Implications

The strength of the research-informed nature of the ETLQ has been widely acknowledged at the University of Helsinki, where the ETLQ has been implemented as a part of the University's quality assurance system (Saari & Frimodig, 2008; Strategy for the University of Helsinki 2010-2012, 2009). Moreover, the questionnaire has been used across the faculties and there are several practical examples of how results provided by the ETLQ should be used in developing teaching and learning (Haarala-Muhonen, Ruohoniemi, Katajavuori & Lindblom-Ylänne, in press; Ruohoniemi et al., 2010; Rytkönen et al., 2009). For example, faculties have discussed the results at the annual Development seminars for staff, and the theoretical framework has offered a powerful tool in making the terminology of teaching and learning more transparent. In addition, the use of the ETLQ has allowed university teachers to see more specifically how they might enhance their teaching by comparing teaching and learning in different disciplines and by learning from good practices in other fields (Haarala-Muhonen et al., in press). At the Faculty of Veterinary Medicine, the Finnish ETLQ has, for example, been used extensively in enhancing the quality of teaching and learning. ETLQ is a part of the Bachelor's portfolio and first- and third-year veterinary students respond to the questionnaire, and receive personal feedback on their approaches to learning as well as guidance for enhancing their learning skills (Koivisto 2009). In addition, the results of the questionnaire are used as a part of the Faculty's quality assurance

system (Ruohoniemi 2009). The strategic objective of the University of Helsinki is to use ETLQ across faculties and implement it as a part of the University's quality enhancement system (Strategy for the University of Helsinki 2010-2012, 2009). The use of the questionnaire will be compulsory for all students. The work carried out at the University of Helsinki clearly demonstrates the value of using ETLQ: at the same time it is a valid research instrument and a practical tool for enhancing the quality of students learning. These elements have given the University a very powerful tool in assuring its quality.

Yet, it should be kept in mind that implementing ETLQ in a mass system raises many questions and challenges, because the students at the University are a very heterogeneous group (Haggis, 2003). Harvey (2003) concludes that institution-wide surveys reported to programme level are useful aids to improvement, but they need to be complemented by module-level feedback that emphasises qualitative comments. This kind of a feedback system has already been piloted at the University.

6.2 Future research

The present study highlights the impact of the discipline on students' experiences of their teaching-learning environment and on their conceptions of good teaching. These results suggest that the comparison of student feedback should not only be done in relation to students' learning, but that also the disciplinary differences should be taken into account. The ETLQ has already been used at the University of Jyväskylä in Finland, and it will be useful to compare the results between the University of Helsinki and the University of Jyväskylä within the same subject areas. This would provide information about relationships between students' experiences and their approaches to learning, discipline and institutional context.

The ETLQ includes items which measure the social aspects of the teaching-learning environment, such as constructive feedback and support from other students and staff. Moreover, the Approaches to Learning and Studying Inventory, ALSI (the part in the ETLQ which measures students' approaches to learning) contains items that measure students' self-regulation, self-monitoring and effort. These aspects are mainly in line with the elements of cooperative learning (Johnson & Johnson, 2009). Yet, one important element is not clearly covered in the existing ETLQ. This is positive interdependence, which is a feeling that students will complete their own share of the work as well as facilitate the work of other group members (Johnson & Johnson, 2009). This was the aspect which students and teachers emphasised when describing good teaching (Study III, Study IV). Future research should focus on the relations between these different aspects measuring students' cooperation with other students, their personal commitment and responsibility and their approaches to learning. Some findings already imply the relation between different kinds of cooperation and students' approaches to learning. Student-student interaction has, for example, been found to be related

to students' deeper understanding of the subject matter and better learning outcomes (Yan & Kember, 2004a; 2004b). Furthermore, Study III suggests that students applying a surface approach emphasise group work as a part of good teaching. These relations deserve further research.

Students' achievement was not in focus in this dissertation but it should be examined in future in more detail. The present study showed disciplinary differences in students' approaches to learning (Study II). Yet, it remains unclear to what extent these approaches affect students' study success. Studies concerning the relation between students' achievement and their approaches to learning suggest that a deep approach to learning is more likely to be related to higher quality learning outcomes than a surface approach (Biggs 1979; Entwistle and Ramsden 1983; Lindblom-Ylänne 1999; Trigwell and Prosser 1991). On the other hand, there are studies in which the relation between deep approach to learning and study success has not been found (Diseth, 2003; 2007a; 2007b; Gijbels, Van de Watering, Dochy, Van den Bossche, 2005; Rytkönen et al., 2009). Further research is clearly needed from the disciplinary perspective. There is also a need for qualitative research because the ETLQ only provides statistical relationships.

Study II showed a student profile with a combination of unorganised studying and a deep approach to learning. The results indicate an incoherent or a dissonant student profile, but further research is needed. In particular, there should be a follow-up study involving the students who participated in this study in order to examine if the incoherent approach implies a change process in a student's approach to learning and a continuum in his or her approaches (Kember, 1996). Furthermore, we need qualitative research in order to achieve a deeper understanding of the dissonant approach to learning (Lindblom-Ylänne, 2003). Ruohoniemi and others (2010) suggest, on the basis of students' open-ended questions, that in the field of veterinary medicine this combination of approaches would indicate a dissonant study profile; dissonant, in the sense, that the students representing this group seemed to suffer the most from the workload and pressure of progressing according to a predetermined timetable in their studies.

Previous research emphasises that the relation between students' experiences and their approaches to learning appears to be bi-directional; in other words, students' experiences affect approaches to learning, but approaches to learning affect students' experiences as well (Richardson 2006; 2007a; in press). The results of this doctoral dissertation have offered a starting point for exploring these overlapping phenomena. What remains unexplored is the direction of the effect. In the light of the student feedback, the direction of the effect is an interesting question, whether it is students' approaches to learning that affect their experiences or their experiences that affect students' approaches to learning. In order to understand this phenomenon, qualitative research is needed on how, for example, teachers' approaches to teaching are related to students' approaches to learning and to students' learning outcomes (Richardson, 2005c). There is a rich body of

research concerning teaching and learning in higher education, but there is still a lack of evidence on how enhancement and changes in teaching, affect students' deep approach to learning (Gibbs, 1992; Hambleton, Foster & Richardson, 1998; Honkimäki, Tynjälä & Valkonen 2004).

Various factors affect students' high-quality learning outcomes. This doctoral dissertation has explored a restricted number of these variables, more precisely, students' approaches to learning, their conceptions of good teaching, their experiences of the teaching-learning environment and the disciplinary context. The results have shown a complex interaction of approaches, conceptions and experiences of the discipline-specific teaching-learning environment. This complexity has set challenges for the development of the questionnaire for the Finnish context. Despite these challenges, the instrument appears to be a sufficiently robust measurement instrument in different contexts. Moreover, its strength is its ability to be at the same time a valid research instrument and a practical tool for enhancing the quality of students' learning. To conclude, in order to enhance teaching and learning in higher education, various perspectives have to be taken into account. This study sheds light on the interaction between students' approaches to learning, their conceptions of good teaching, their experiences of the teaching-learning environment, and finally, the disciplinary culture.

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