FINNISH STUDENTS' APPROACHES TO LEARNING IN DIFFERENT EDUCATIONAL CONTEXTS

Enfoques de aprendizaje de estudiantes finlandeses en contextos educacionales diferentes

Prof. Gunilla Eklund-Myrskog

Abstract

The aim of this study was to investigate Finnish students' approaches to learning in different educational contexts. The phenomenographic approach, expanded towards grounded theory was taken as the point of departure. Data for the cross-section study were collected through individual interviews with student nurses (n = 60) and car mechanic students (n = 54) both at the beginning and at the end of the educational programs. As a result of the analysis, qualitative similarities and differences in students' approaches were found. In comparing groups of students within the programs, similar trends of development could be identified. Students within both programs used more developed approaches at the end than at the beginning of the programs.

The differences found within and between the student groups could be explained in terms of educational contexts. The result thus showed that approaches were to some extent contextually dependent.

Resumen

El objetivo de este trabajo fue investigar los enfoques de aprendizaje de estudiantes fineses en distintos contextos educacionales y comparar, luego, dichos enfoques. Para eso se basa en el enfoque fenomenográfico de Marton y en la teoría que toca tierra de Glasser y Strauss, dentro del paradigma cualitativo.

Es un trabajo descriptivo de corte longitudinal. Para la recolección de datos se aplicaron entrevistas tanto a estudiantes de enfermería (n = 60) como de mecánica automotriz (n = 54), preguntándoles (entre otras cosas) qué entendían por aprendizaje dentro de su propio contexto: programas, tareas, etc., al comienzo y al final del programa.

Como resultados del análisis, se encontraron semejanzas y diferencias cualitativas en los enfoques de los estudiantes tanto dentro de cada uno de los grupos, entre el comienzo y el final del programa, como entre los grupos: las enfermeras tienden más al enfoque profundo de aprendizaje y los mecánicos más al enfoque superficial. Los estudiantes dentro de ambos programas usaron enfoques más desarrollados al final que al comienzo de los programas, lo que demuestra que, a medida que el sujeto avanza en su programa de formación profesional, va desarrollando enfoques que tienden a construir significado.

Las diferencias encontradas tanto dentro de cada grupo de estudiantes como entre los grupos podrían ser explicadas desde un punto de vista de los contextos educacionales. El resultado, pues, muestra que los enfoques son hasta cierto punto dependientes del contexto. Eso quiere decir que, según cual sea la percepción del contexto que tenga el estudiante, va a ser diferente el enfoque de aprendizaje que adopte.

Los resultados del trabajo vienen al encuentro de otros estudios, que muestran resultados similares, como por ejemplo, homogeneidad intragrupos y heterogeneidad intergrupos, lo que subraya la influencia del contexto de aprendizaje en el comportamiento de los sujetos.

INTRODUCTION

In recent years there has been a substantial amount of research focusing on students' learning. To promote understanding of student learning, some research has focused on how students in this process interpret learning, i.e. their ways of conceiving learning. The pioneering work in research into students' ways of learning was done by Perry (1970). Within a phenomenographic approach studies have then been carried out aiming at describing individuals' conceptions of learning (see for example Säljö, 1979; Marton *et al.*, 1993; Eklund-Myrskog, 1996). A 'conception' can be defined as the fundamental way a person understands a phenomenon or an object in the surrounding world. It is not visible but can be seen as a qualitative relationship between an individual and some phenomenon (Marton, 1981, 1988).

In some studies (Van Rossum & Schenk, 1984) a relationship has been found between conceptions of learning and approaches to learning. Approaches refer to qualitative differences in the process of learning. They consist of both strategy and intention and can be described as something 'between' the student and the task (Ramsden, 1988, 20). In both qualitative and quantitative research, a surface and a deep approach to learning has been adopted in this area (Biggs, 1978; Entwistle, 1981; Marton, 1975). A conception according to which learning is seen as an increase in knowledge is related to a surface approach, while a conception according to which learning is seen as insight and understanding is related to a deep approach.

Different approaches to learning can in turn be related to qualitatively different outcomes of learning (Van Rossum & Schenk, 1984). According to previous research, students with a surface approach often acquire detailed and superficial knowledge, while students with a deep approach understand fundamental principles, relationships and wholes (Biggs, 1979; Marton & Säljö, 1976; Watkins, 1983).

Research into students' approaches to learning has often been characterized by a context-neutral way of thinking. Students' learning takes, however, place in a complex environment and many factors influence students' conceptions of learning, the ways they tackle a learning task, and what they finally learn. The aim of the present study is to investigate students' approaches to learning within nursing education and car mechanic education. Two groups of student nurses and two groups of car mechanic students are chosen as samples and these students are interviewed at the beginning and at the end of their educations. The aim is thus more specifically to investigate the influence of the educational context on student nurses' and car mechanic students' approaches to learning, i.e. to investigate in what sense and to what extent students' approaches are contextually dependent.

APPROACHES TO LEARNING. The initial research into approaches to learning partly originates from qualitative studies carried out at the Institute of Education at the University of Gothenburg in the beginning of the 1970s (see Marton *et al*., 1997). Marton (1975) identified two levels of processes, later called approaches to learning; a surface and a deep approach. In the case of a surface approach students directed their attention toward the text itself (the sign) and paid attention to separate facts and details. They were passive in the learning process and their only intention was to reproduce the text. In a

deep approach students were directed toward the intentional content of the learning material (what was signified) and they tried to understand what the author wanted to say about a certain problem or principle. They were active in the learning process and looked for relations in the text and between the text and the world around (Marton & Säljö 1976, 1984). Svensson (1976) described the variation in students' cognitive approaches in terms of an atomistic and a holistic approach and his categorization has similarities with the categorization of Marton.

In research into student approaches to learning, some researchers have used a more "quantitative" approach, typified by large sample sizes, structured questionnaires, and sophisticated multivariate techniques (Biggs 1987; Entwistle & Ramsden 1983). Within this quantitative approach, Entwistle (1981) has developed the Approaches to Study Inventory (ASI). Based on studies in Great Britain, four orientations to studying have emerged from factor analyses and the result supports the categorization of Marton into a surface and a deep approach. Entwistle also identified an achieving approach, according to which students switched between a surface and a deep approach depending on what was the most advantageous in every situation. Biggs (1987) has developed a Study Process Questionnaire (SPQ) for tertiary students and a Learning Process Questionnaire (LPQ) for secondary students, and based on factor analyses he also identified a surface, a deep, and an achieving approach. The result of Entwistle's analysis thus fits closely into Biggs' framework.

In line with both qualitative and quantitative research, a fundamental difference between a surface and a deep approach can be found in learning in different content domains and in different contexts (Ropo 1993). Although the fundamental difference is the same, it seems that differences in the emphasis within the surface and the deep approach have to be understood in terms of the content in which the approaches are realized (Prosser & Millar, 1989: Trigwell & Prosser 1991).

AIM OF THE STUDY. The aim of this cross-section study is to investigate students' approaches to learning in two different educational contexts, nursing education and car mechanic education. Within these contexts, students' approaches are investigated at the beginning and at the end of the educational programs. Qualitative similarities and differences between the students are related to the contexts, i.e., the programs. The variation between the contexts means that the programs have different goals, contents, and structures. Within these contexts, student nurses are given a school-text concerning the essence of caring, and car mechanic students a text about angles of wheels. When students are asked to talk about their learning within these different contexts, the contexts thus differ both with respect to the program and the task. Students' approaches to learning are thus further described and explained in relation to these surrounding contexts. The specific aims of the cross-section study are to investigate:
  1) *student nurses'* approaches to learning at the beginning and at the end of the educational program,
  2) similarities and differences between student nurses' approaches to learning at the beginning and at the end of the educational program,
  3) *car mechanic students'* approaches to learning at the beginning and at the end of the educational program,

4) similarities and differences between car mechanic students' approaches to learning at the beginning and at the end of the educational program, and

5) *similarities and differences* between student nurses' and car mechanic students' approaches to learning.

METHOD

In the present study, the phenomenographic approach is taken as the main point of departure. Within the phenomenographic approach the aim is to investigate how individuals conceive different phenomena in the world around them (Marton, 1981, 1988; Marton & Booth, 1997). A fundamental feature of the approach is the distinction between a first-order and a second-order perspective. In a first-order perspective, the intention is to describe the world 'as it is', while in a second-order perspective, the aim is to describe how individuals conceive phenomena in the world around them, i.e., to describe phenomena as they appear to those individuals (Johansson, Marton, & Svensson 1985, 247; Marton 1978, 2-8). In phenomenography, the term 'conception' is thus of fundamental importance.

Qualitatively different conceptions of a phenomenon are described in terms of different categories of description. By comparing similarities and differences between individuals' statements, these are relegated to qualitatively different categories. The categories of description are content-specific and formulated in such a way that they characterize the specific content of the conceptions as well as possible. Each category represents a unique way of understanding the phenomenon in focus, and the categories found together define a category system. A crucial feature is thus the fact that the categories of description and the category system are constructed by the researcher, and are verbal descriptions of the individuals' interview answers.

As has been made evident, the aim of this study is to describe and explain students' approaches to learning in relation to surrounding contexts. In order to do this, the study will be expanded towards grounded theory (Glaser 1978, 1992; Glaser & Strauss 1967; Strauss 1987) with the emphasis on the conditional matrix. The conditional matrix can be represented as a set of concentric circles, one inside the other, each level corresponding to a different aspect of the world. In the center of the matrix is the phenomenon, which can be conditionally related to levels above and below it. The conditional matrix thus opens up the analysis to a wide range of possible conditions that bear upon a given phenomenon, and the matrix makes it possible to relate a certain phenomenon specifically to those conditions (Strauss & Corbin 1990, 158-175).

Grounded theory and its conditional matrix is used in this study in so far as students' approaches to learning are described and explained in terms of different contexts. The outermost ring represents two educational programs - nursing education and car mechanic education. Within these, groups of students are interviewed both at the beginning and at the end of the educational programs. Finally, a microcontext in the form of an interview situation is created as the level closest to the phenomena under study.

SUBJECTS. Data for the cross-section study were collected through individual interviews with student nurses at a nursing school and car mechanic students at a vocational school.

In the nursing school, 27 student nurses were interviewed at the beginning and 33 at the end of the period of education. In the vocational school, 24 car mechanic students were interviewed at the beginning and 30 at the end of the car mechanic educational program. A total number of 55 female and 5 male student nurses and 54 male car mechanic students thus participated in the study.

DATA COLLECTION. In order to estimate the influence of the educational context on students' approaches to learning, one context-related text in relation to each educational program was used as the basis of the interviews. The student nurses read a text concerning the essence of caring and the car mechanic students a text about angles of wheels. The choice of context-related texts was based on the assumption that readers always create and construct meaning in response to a text. Individuals' prior knowledge and experience play a central role in guiding and shaping the interpretation and understanding of a text, and in this way reading can be seen as a constructive process. By choosing texts representing the core of the educational programs and by discussing with students matters in relation to such texts, students' interpretations and understanding of the texts could be seen as influenced by their previous knowledge and experience.

The students were initially asked to read the context-related text and, after they had read it, the researcher asked questions about its content, the way they generally learn new things, and how they know when they have learnt something. These main themes did not vary between the subjects and were, among other things, intended to also reveal students' approaches learning in relation to the educational contexts. Within the selected themes, the aim was to carry on the conversation with the students and encourage them to express their thoughts about learning. In addition to the main themes, the interviewer also asked other questions, aiming at clarifying the researcher's own understanding of the students' thoughts. These questions were, however, adapted to the students' discussion with respect to the fact that the students themselves defined the content, i.e., delimited and treated the content from the point of view of their own understanding of the same content. The interviews lasted about 45 minutes and all interviews were tape recorded and transcribed word by word.

A QUALITATIVE ANALYSIS OF THE DATA. The qualitative analysis of the written interview protocols was carried out in several stages. In the beginning, the researcher perused all interview protocols and marked the parts where students expressed their thoughts about learning. The researcher perused the selected part in every interview protocol, underlined the most essential sentences and wrote down key words characterizing the student's view of the item in question. The sentences underlined and the key words in the protocols were then compared with each other in order to find qualitative similarities and differences between the students. No sentence or key word was, however, analyzed as independent of the rest of the interview protocol. The researcher worked all the time with the whole set of interview protocols in order to stay close to the educational contexts as defined by the students' statements during the entire interviews.

Content specific similarities and differences between students' utterances concerning the phenomenon were noted and then described and categorized in terms of qualitatively different categories of description. 'Qualitatively different' meant different ways of conceiving the phenomenon, not in terms of the amount of detail provided but rather in

relation to their structural meaning. Each category thus represented a unique way of understanding the phenomenon in focus. These categories together defined a category system.

The qualitative analyses of the student nurses' and the car mechanic students' responses were carried out independently of each other. The categories of description and the category systems originated from the empirical data were content-specific by their nature. Since the aim of the study was to investigate student nurses' and car mechanic students' approaches to learning, the qualitative analysis finally resulted in two different category systems. These will be presented below.

RESULTS

STUDENTS NURSES' APPROACHES TO LEARNING. As a result of the analysis of student nurses' ways of learning, five different approaches could be distinguished. The approaches were classified into the categories of description below.

Reading in order to Remember
In the first category, the approach to learning was characterized by students' strategy to mainly read what was important in a text and remember it. Students did not try to gain any deep insight into the text and their only ambition was to remember and keep the most important parts in mind.

> Well, first I only read the text through and then I underline the most important sentences and finally I read the sentences and try to remember them. . . I read them again and again and try to learn them by heart. . .

Reading in order to Understand and be able to apply
The approach to learning in the second category was marked by students' efforts to read what was important in a text in order to understand and learn it. Differences were found between students in that some of them explicitly said that they picked out what they thought was important in a text and then tried to understand it in order to facilitate their learning. Others, however, tried to understand a text more generally in order to learn it. Some of the students also tried to understand what they learnt in order to be able to apply it later.

> The first time I see a new text, I read it very carefully. I want to get an idea of it and I want to understand what I read. I don't only read through the text, but I read it carefully and underline the most important parts. I always return to the text and go through what I've underlined once again if something has remained unclear to me.

Reading and relating to one's own experience in order to Understand and be able to apply
In the third category, the approach to learning was characterized by students' strategy to read and relate new facts to their own experience in order to understand and learn it. At the end of the program students often related learning to working life and they tried to find examples from their own practice in hospitals. Although understanding was the

central feature of learning, some of the students also emphasized the importance of understanding something in order to be able to apply it in practice.

> Well. . . often I relate the text to some situation I've participated in, some practical caring situation, and then I think. . . Well I associate it with the situation at the same time as I read and think, oh, this was maybe what we were doing. . . So I put it into my own reality or associate it with something I've experienced in practice. . . and so I remember it more easily.

Reading and describing in one's own words in order to Understand and be able to apply

The approach to learning in the fourth category was characterized by students' strategy to read what was important in a text and describe it in their own words in order to understand it. According to these students it was easier for them to understand and learn new stuff if they translated and rewrote it in their own words. One student also emphasized that she wanted to understand something in order to be able to apply it in practice later on.

> For me it's better if I can describe what I read in my own words, because it's so important that I really understand it. So it's not directly from the book, in the form somebody else has said it. Of course it must have the same meaning, but it's written in my own words.

Reading and grasping the whole in order to Understand and be able to apply

The characteristic feature of the approach in the fifth category, was that students tried to read so as to form an idea of what was important in a text as a whole. Students emphasized that it was easier for them to understand parts and relations between parts when they related them to an overall whole. Forming a whole in turn facilitated their understanding and learning of the content and meaning of a text. Some students also emphasized that they tried to form a whole of the new content in order to understand and be able to apply it.

> I always try to see the whole of a chapter . . . because without the whole, it's nothing! If I only have a little here and a little there. If I don't understand the whole, then I don't understand anything.

In relation to previous research it is obvious that the approach according to which students pick out what they think is important and try to remember it had a close relation to a surface approach. The other approaches had in turn relations to a deep approach. Table 1 displays the distribution of student nurses' approaches to learning.

On comparing the total number of student nurses categorized into the two main approaches, it can be seen that 77% of the students were classified as favoring a deep approach and 23% a surface approach. At the beginning of the program, most students (70%) emphasized understanding in their learning processes and were classified as favoring a deep approach. In the same way, most students (82%) at the end of the program mainly tried to understand what they learnt and were thus categorized as favoring a deep approach. At the beginning, eight students (30%) used a surface approach to learning, while six of the students (18%) used this approach at the end of the program. Consequently, students at the end of the program used a deep approach to a greater extent than students at the beginning of it.

Table 1

The distribution of student nurses´approaches to learning at the
beginning and at the end of the educational program

Approach	Beginning of program		End of program		Total	
	n	%	n	%	n	%
A surface approach:						
Read - Remember	8	30	6	18	14	23
A deep approach:						
Read - Understand	9	33	7	21	16	27
Relate - Experience	4	15	6	18	10	17
Describe - own words	2	7	7	21	9	15
Grasp the whole	4	15	7	21	11	18
	27	100	33	100	60	100

CAR MECHANIC STUDENTS' APPROACHES TO LEARNING. As a result of the analysis of car mechanic students' ways of learning, six different approaches could be distinguished. The six approaches to learning were classified into the categories of description below.

Reading in order to Remember
The approach to learning in the first category was characterized by students' strategy to read texts mainly in order to remember facts and information. The students had no ambition to understand or to gain a deeper insight into the texts they referred to. Some of them also clearly explained that they learnt in order to remember and be able to reproduce their knowledge, for example in a test. No students at the end of the program were, however, classified into this category.

(In order to learn something new)… I read it. . . two or three times… and I know it when I get the test (if I have learnt it) , (in what way). . . if I can fill in the test.

Reading in order to Understand
In the second category, the approach to learning was marked by the fact that students read texts in order to understand. Understanding was the main feature of learning and all students tried to understand what they learnt. The students did not, however, relate learning and understanding to any practical situation or to the ability to apply something in practice. As in the previous category, no students at the end of the program were classified into this category.

Well, if I read, I try to sit and read it through, I read a little and then I think of how it works so there's then nothing I've missed or not understood.

Following someone's instruction and Doing in order to be able to Apply
The approach to learning in the third category was characterized by students' desire to apply in practice what they had learnt. All students related learning to practical

situations and they explained that they had learnt when they were able to apply knowledge in practice. The students tried to follow someone's instruction and on the basis of the knowledge and information received, the students then tried to apply the new insights in practice themselves in order to facilitate their own learning.

> Well, if I'm at home, I ask my dad and listen to him when he explains. . . I prefer to listen to my dad or to some teacher, in practice. . . I hate to read, I don't learn very well if I read….I like more to screw. If I can do it directly after somebody has explained it to me, then I remember more. It's then easier for me to remember it, when I've done it. . . If I watch somebody do it and I do it directly after that, then I remember it much longer.

Following someone's instruction, Reading, and Doing in order to be able to Apply
The approach to learning in the fourth category was also characterized by students' desire to apply in practice what they had learnt. In order to facilitate their learning, however, they emphasized the importance of reading. Students at the beginning of the program saw reading as the main strategy of learning and they read books or texts in order to learn how to do something in practice.

> Well, first I read, but not so much, and then I try to do it on a car. So first I read in order to know something about it, I read a little again and then I try to screw… for example when I change the cylinder on the moped. . . First I look it up in some book in order to see how it should be done. . . and then I see it more exactly when I screw it.

Students at the end of the program also read in order to learn to apply something in practice. In contrast to the beginners, they explained that they tried to follow the teacher's instruction, and read texts or books mostly for the test. These students thus related reading mainly to test preparation.

Following someone's instruction and Doing in order to Understand and be able to apply
In the fifth category, the approach to learning was marked by students' desire to understand and be able to apply what they learnt. All students explained that they learnt by following the teacher's instruction. On the basis of his teaching, they tried to understand the new knowledge in order to be able to apply it in practice. Understanding was thus the main feature of the approach and permeated the students' learning, both in theoretical and practical contexts.

> Well, if we're sitting in the classroom, then of course I try to follow the teacher's instruction. And I try to reflect on what he says and not only accept it but think about it and decide by myself whether it's really correct. And if we get some homework then I try to think of what he said and if it squares with the facts. If it works in practice in that way. . . The best thing would be if I then could be in the garage and test it and see how it works, and apply it in order to see how it works in reality…. Then I see it and I can do it with my hands. I get information in two different ways. First I see it and understand it, and then I must be able to apply this theory and be able to do it, do it with my hands.

Following someone's instruction, Reading, and Doing in order to Understand and be able to apply

In the sixth category, the approach to learning was also characterized by students' desire to understand and to be able to apply what they had learnt. The students related learning to practical situations and they explained that they tried to follow the teacher's instruction and read in order to facilitate their understanding and learning. The knowledge and information they received, the students then tried to make use of in practice, learning to understand how to apply their knowledge. As in the previous category, understanding was the main feature of the approach and permeated students' learning. However, students in this category also clearly emphasized reading as an important learning strategy.

> In fact we've also everything in the book, so I can read all by myself... But sometimes I do read if it's something I don't really understand. Then I can read in order to be able to grasp it.

In relation to previous research it is obvious that the approach according to which students read in order to remember had a close relation to a surface approach. The other approaches had in turn relations to a deep approach. Table 2 displays the distribution of car mechanic students' approaches to learning.

On comparing the total number of car mechanic students categorized into the two main approaches, it can be seen that 63% were classified as favoring a surface approach and 37% a deep approach. However, significant differences ($chi^2=4,864$, df=1, p<.0274, with continuity correction, p<.0546) were found between students at the beginning and at the end of the educational program At the beginning of the program, most students (79%) learnt in a quite superficial way and were classified as having a surface approach, while only some beginners (21%) used a deep approach and emphasized understanding in their learning processes. At the end of the program, the relation between the surface and the deep approach was, however, different. The approaches were used by the students to a similar extent (50% and 50%) and, consequently, the deep approach was more common among students at the end than at the beginning of the program.

Table 2

The distribution of car mechanic students´approaches to learning at the
beginning and at the end of the educational program

Approach	Beginning of program		End of program		Total	
	n	%	n	%	n	%
A surface approach:						
Read - Remember	5	21			5	9
A deep approach:						
Read - Understand	3	12			3	6
Follow, Do-Apply	9	38	6	20	15	28
Third cat+Read	5	21	9	30	14	26
Third cat+Understand	1	4	5	17	6	11
Fourth cat+Understand	1	4	10	33	11	20
	24	100	30	100	54	100

DISCUSSION

SOME METHODOLOGICAL REFLECTIONS. The aim of the study was to investigate qualitative similarities and differences in students' approaches to learning. The study was descriptive in character and the phenomenographic approach was taken as the main point of departure. Because the aim of the approach is to find new meanings of phenomena, the ambition is to gain heterogeneity and as great variation as possible in relevant aspects of the group studied. The study was based on interviews with 60 students in nursing education and 54 students in car mechanic education. The choice of the different programs was directed by the ambition to find two programs within Finnish vocational education that in some respects were as different as possible. The programs chosen differed from each other both in aim, content, and structure.

When choosing these specific educational programs, one point of departure was the fact that students could be accepted for both programs on similar grounds. Both students who began to study nursing and those who enrolled in car mechanic education had been accepted to the programs on a quota-basis after finishing their compulsory education, and in this respect the students could, theoretically, choose either of the programs. Despite this theoretical possibility there was a selection to the different programs, which means that there were natural differences between the two student groups from the very beginning of the programs.

The two educational programs proved to be highly gender-differentiated. Almost only female students (except for five male students) participated in the nursing education, and only male students participated in the car mechanic education. However, the fact that the student groups in this study are to be considered as natural groups, means that the gender-differences and the high degree of concentration of girls/boys belong to the contextual characteristics. Consequently, the gender-differences are not problematic, as the essential gender-differences between the student groups are a natural characteristic of the contexts, a typical female- and a typical male-dominated education.

Because this was a cross-section study and different groups of students were interviewed at the beginning and at the end of the educational programs, there were differences between the groups within the programs that cannot be related to the educational context. Consequently, it cannot be assumed that the differences between the groups within the programs were only a consequence of the educational contexts. A number of factors influence students' approaches to learning which lead to differences between students both within and between the programs. However, while the educational contexts are homogeneous within a group, one can with good reason assume that differences between groups were related to differences in the contexts.

Students' approaches were characterized not only by the educational contexts in focus during the interviews, but also by the interview situation. Consequently, the interview is also a context one has to take into consideration. Differences in students' utterances were not only due to the different general contexts, nursing education and car mechanic education, but also to the interview situation. Differences between students, within and between the student groups, can thus be ascribed to the educational contexts, at the same time as differences in the interview situations cannot be neglected. The variation in the interview situations was, however, assumed to be of negligible importance in relation to the existing differences between groups, both within and between the educational programs.

CONCLUSIONS AND REFLECTIONS ON THE RESULTS

In most research into approaches to learning, a fundamental difference between a surface and a deep approach has been found. Although students' approaches to learning in this study were described in terms of both content and context, it was clear that behind these, the fundamental difference was the same as in previous research. However, the aim of relating individual approaches to surrounding contexts has also shown that the meaning of the terms used has to be understood in relation to the contexts, within which the approaches are realized.

When investigating relations between students' approaches to learning at the beginning and at the end of the educational programs, only small differences were found on a *category level*. Within nursing education, the overlapping was total, in so far as all approaches were similar in both groups of students. Consequently, the students used similar approaches to learning both at the beginning and at the end of the program. Within car mechanic education, four of six approaches could be identified in both groups of students. At the end of the program, all students related learning to practice, and none of them used the approaches 'reading in order to remember' and 'reading in order to understand'.

However, in comparing student nurses' and car mechanic students' approaches to learning, only one of the approaches could be identified in both student groups. On a category level, big differences were thus found between students' approaches to learning in the two programs. *The differences among students' approaches to learning between the programs were thus bigger than the differences in approaches among students within the programs. The greater the distance between the contexts, the smaller the overlapping.*

When investigating relations between students' approaches to learning at the beginning and at the end of the educational programs, essential differences were found on an *individual level*. Within nursing education, most students were classified as favoring a deep approach to learning. A number of 19 students (70%) at the beginning and 27 students (82%) at the end of the program thus emphasized understanding in their ways of tackling different learning tasks. In contrast to the student nurses, most car mechanic students were classified as favoring a surface approach to learning. A number of 19 students (79%) at the beginning and 15 students (50%) at the end of the program mainly tried to read in a superficial way or mechanically apply what they had learnt.

Essential differences were thus found between students' approaches to learning at the very beginning of the programs. Most student nurses were classified as favoring a deep approach, while most car mechanic students were classified as favoring a surface approach. The differences found between the student groups at the beginning of the programs were quite similar to the differences identified at the end. Most student nurses also used a deep approach to learning at the end of the program, while half of the car mechanic students still mainly used a surface approach. The difference between the student groups at the beginning of the programs could be assumed to be related to the natural selection to the educations. The fact that almost only female students participated in the nursing education, and only male students in the car mechanic education, means that there are essential gender-differences between the student groups. When discussing similarities and differences in students' approaches between the two programs, these gender-differences cannot be neglected. However, while natural contexts, in terms of nursing education and car mechanic education, were chosen for this study, the selection and the gender-differences have to be seen as a part of these natural contexts.

Although the two student groups were initially different, *a similar trend of development could be identified within the student groups*. When comparing how the approaches to learning were related to the groups of students, more student nurses and car mechanic students were classified as favoring a deep approach at the end than at the beginning of their programs. The trend of development can be characterized as a 'cognitive jump' or *a change from a surface to a deep approach*. The results of this cross-section study show that during the educational programs, some students seem to abandon a surface approach to learning in favour of a deep approach.

Within nursing education, students at the end of the program emphasized the importance of understanding to a higher degree than students at the beginning. They deliberately used different kinds of strategies with the aim of facilitating their learning and understanding of the matter in focus. Some of the students also pointed out that they wanted to understand what they learnt in order to be able to apply it in practice later. During the program, it seemed that some student nurses had got a better insight into the importance of connecting learning with understanding and using deep approaches. Consequently, a change from a surface to a deep approach had taken place. Within car mechanic education, students at the end of the program also connected learning with understanding to a larger extent than students at the beginning. The ability to apply and mechanically do something in practice was emphasized by students in both groups. However, in contrast to the beginners, the latter group of students realized the importance of connecting the ability to apply with understanding. Understanding for these students was thus the main feature of their approaches and permeated their learning, both in theoretical and practical contexts. During the program, some car mechanic students thus seemed to have realized the importance of understanding and using deep approaches to learning.

The fact that differences were found between students' approaches to learning within the programs could be related to the learning environments - nursing education and car mechanic education. In previous research, both personal and situational variables have been shown to influence students' approaches to learning. As a result of this study, it was clear that students' educational experience was of importance to and influenced their approaches to learning. Students' different ways of tackling learning tasks were thus assumed to be contextually colored.

Abo Akademi University
Faculty of Education
P.O. Box 311, 65101 Vasa, Finland
e-mail: geklund@abo.fi

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