

Juhani Rautopuro & Pertti Väisänen

Experiencing studies
at the
University of Joensuu

Modelling a student cohort's satisfaction, study
achievements and dropping out

The context of this book is the emerging paradox between the growing student enrolment rates and the demands for a better quality of academic work and broadening duties of university faculties with decreasing funds. This dilemma is shared by most Western countries.

In an attempt to gain accurate knowledge of how students live through their academic education, a longitudinal study was carried out at the University of Joensuu during 1995–1998. The study surveyed whole student cohort of 1995 ($N = 916$). The research aimed at answering the questions:

How do the students experience the quality of teaching and tutoring?

- are there any changes during the studies?
- are there any differences between faculties?

Who are the drop-outs?

- what are the reasons and predictors for the drop-out phenomenon?

What are the outcomes of learning?

- are the students satisfied with their studies?
- how to predict study achievements?

How can we improve university teaching?

The results and the conclusions drawn from the study may be transferable also to other institutions of higher education in Finland and outside. This book will be stimulating reading for teachers, study advisers, administrators, researchers and those involved in developing higher education.



EXPERIENCING STUDIES AT
THE UNIVERSITY OF JOENSUU

SUOMEN KASVATUSTIETEELLINEN SEURA
SAMFUNDET FÖR PEDAGOGISK FORSKNING I FINLAND
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EXPERIENCING STUDIES AT THE UNIVERSITY OF JOENSUU

MODELLING A STUDENT COHORT'S
SATISFACTION, STUDY ACHIEVEMENTS
AND DROPPING OUT

JUHANI RAUTOPURO & PERTTI VÄISÄNEN

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ABSTRACT

The purpose of the study was to examine a student cohort's study experiences and emotions, satisfaction with the learning environment and changes in them during the four years of studies, on the one hand, and the influence of these factors and some background variables on learning outcomes and retention of studies, on the other. In addition, we wanted to find out how students' commitment to their studies and their study orientations influence the overall satisfaction and drop-out rates in different fields of education. The design and the problems were based on the previous research reviewed in the theoretical part and on the practical reasons to develop higher education policies. The answers to the problems are based on quantitative and qualitative data.

The data used in this four-year longitudinal study were collected by using large-scale, multi-dimensional questionnaires administered to those students (N = 916) who enrolled in the University of Joensuu in autumn 1995. The follow-up studies were conducted in 1996 and 1998. Part of the data, e.g. the students' demographic and social background information and course marks, were collected from the university's student records.

The results indicated an overall falling trend in the satisfaction of the students with their study experiences during the four-year study period. The results also indicated that we can model students' overall satisfaction, drop out of studies and study achievements by their commitment to studies and perceptions of the learning environment. The results seem to have some implications for student guidance, course scheduling and teaching, and student enrollment and retention policies.

Key words: commitment to studies, dropping out, higher education, satisfaction, study experiences, study achievements, university teaching

JUHANI RAUTOPURO & PERTTI VÄISÄNEN

OPINTOJEN KOKEMINEN JOENSUUN YLIOPISTOSSA. YHDEN
OPISKELIJAKOHORTIN OPISKELUTYYTYVÄISYYDEN,
OPINTOMENESTYKSEN JA KESKEYTTÄMISEN MALLINNUKSEEN.

TIIVISTELMÄ

Tämän nelivuotisen seurantatutkimuksen tarkoituksena oli selvittää Joensuun yliopiston yhden opiskelijakohortin opiskelukokemuksia, opiskelun herättämiä tunteita ja tuntemuksia, tyytyväisyyttä oppimisympäristöä kohtaan ja näissä tapahtuvia muutoksia sekä vaikutuksia eräisiin tulosuuttuihin, kokonaisvaltaiseen tyytyväisyyteen, opintomenestykseen ja opintojen keskeyttämiseen. Lisäksi selvitettiin, miten opiskelijoiden opintoihin sitoutuminen, tavoiteorientaatio ja taustatekijät (mm. sukupuoli ja vanhempien koulutustaso) selittävät näitä tulosuuttujia eri koulutusaloilla. Tutkimusasetelma ja ongelmat perustuivat alan keskeiseen kirjallisuuteen sekä toisaalta korkeakoulupedagogiikan kehittämisen keskeisiin lähtökohtiin. Tutkimusongelmiin haettiin vastauksia sekä kvantitatiivisen että kvalitatiivisen aineiston avulla.

Tutkimuksen kohderyhmänä olivat kaikki vuonna 1995 opintonsa Joensuun yliopistossa aloittaneet opiskelijat (N = 916). Pitkittäistutkimuksen seuranta-aineistot kerättiin samoilla mittareilla niitä tiettyillä lisäyksillä täydennettyinä toisena ja neljäntenä opintovuotena vuosina 1996 ja 1998. Osa aineistosta (taustatiedot ja opintomenestys) saatiin yliopiston opiskelijarekisteristä.

Tulosten mukaan opiskelijoiden opintokokemuksissa tapahtui opintojen aikana muutosta negatiiviseen suuntaan. Opiskelijoiden varmuudella oikeasta alasta oli merkitystä niin tyytyväisyyden ja opintomenestyksen kannalta kuin erityisesti opintojen keskeyttämisriskin pienentymisen kannalta. Opintojen myöhemmän vaiheen keskeyttämistä selittivät myös oppimisympäristötekijät, mm. tyytymättömyys opetukseen ja ohjaukseen. Laadullinen aineisto vahvisti tilastollisia löydöksiä.

Asiasanat: korkeakoulupedagogiikka, opintoihin sitoutuminen, opintojen keskeyttäminen, opintokokemukset, opintomenestys, opiskelutyytyväisyys, yliopisto-opetus

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ESIPUHE

Tämä tutkimus sai alkunsa Joensuun yliopistoon vuonna 1995 asetun opetuksen kehittämistyöryhmän aloitteesta. Työryhmän tehtävänä oli muun muassa käynnistää seurantatutkimus vuonna 1995 opintonsa aloittaneen opiskelijakohortin opintokokemuksista. Olimme työryhmän jäseniä muutaman muun ansioituneen yliopistopedagogin ohella. Työryhmä luovutti yliopiston hallinnolle hankkeen tiimoilta kolme erillistä selvitysluontoista raporttia, joissa tämän tutkimuksen tekijöiden lisäksi yhtenä kirjoittajana toimi psykologian liseniaatti Matti Kuittinen. Osaraportit toimitettiin myös laitoksille ja tiedekuntiin opetuksen kehittämishankkeita virittämään. Matin keskittyessä väitöskirjansa viimeistelyyn käynnistimme kahdestaan tutkimuksen teoreettisen kehikon rakentamisen ja tilastollisen mallintamisen, mikä on johtanut useiden tutkimusraporttien ja artikkeleiden julkaisemiseen. Tutkimushanke on saanut ansaitsemaansa huomiota niin kotimaisissa kuin kansainvälisissäkin seminaareissa ja konferensseissa.

Työnjako on noudatellut kummankin erityisasiantuntemusta. Tilastotieteilijä, kasvatustieteiden liseniaatti Juhani Rautopuro on toteuttanut aineiston tilastollisen käsittelyn ja raportoinnin. Kasvatustieteiden tohtori Pertti Väisänen on vastannut tutkimuksen teoriaustasta, laadullisen aineiston käsittelystä ja pohdintaosasta. Erityisvastuista huolimatta tutkimus on suunniteltu ja hiottu valmiiksi yhteisvoimin.

Lausumme lämpimät kiitokset työryhmän muille jäsenille tutkimuksen alkuideointiin osallistumisesta. Erityisesti kiitämme työryh-

mään puheenjohtajaa, yliopiston silloista rehtoria, professori Paavo Pelkosta ja työryhmän sihteeriä Maisa Kettusta, jotka loivat hankkeen taloudelliset ja käytännölliset edellytykset. Liisa Rouviselta olemme saaneet korvaamatonta apua aineiston keruussa opiskelijarekisteristä. Professori, KT Kyösti Julkunen ja lehtori, FK Pekka Koponen ansaitsevat parhaat kiitoksemme raportin kielen tarkastuksesta. Olemme myös kiitollisia tämän uuden julkaisusarjan julkaisutoimikunnalle raportoimme hyväksymisestä julkaistavaksi.

Kiitämme myös toinen toisiamme hyvästä ja rakentavasta yhteistyöstä, kun tämä urakka on vihdoinkin valmis. Uudet haasteet korkeakoulupedagogisen kehittämisen ja tutkimuksen parissa kuitenkin odottavat.

Omistamme tämän raportin Joensuun yliopiston vuoden 1995 opiskelijakohortille.

Joensuussa ja Savonlinnassa

10.10.2001

Juhani Rautopuro ja Pertti Väisänen

1 INTRODUCTION

1.1 THE AIM OF THE STUDY

The provision of good teaching in higher education has become important. At the same time, as the governmental requirements of quality assurance from publicly funded institutions increase, universities have also become prime targets of economic scrutiny. In addition to these accountability requirements, there has always been a more important and fundamental reason for having more systematic ways of paying attention to quality in educational environments. The provision of education of the highest possible quality is one of their primary purposes and obligations of universities to their customers, i.e., to the community and their students. Rapid social, technological and economic changes mean that educational institutions constantly need to evaluate their programmes, structures and processes, and to strive to ensure that they serve the changing needs of the community and the students. Stressing the importance of quality in developing higher education in Finland, Finnish Council of University Rectors started a common quality project of the universities in spring 1999 (Lajunen & Sohlo 2000).

The current climate in higher education suggests that students could be seen as primary customers (Hill 1995, 15) who are increasingly aware of their customer rights, one of which is regularly exercised through formal and informal feedback processes. If teachers in higher education are becoming framed as service providers, then one way to ensure the provision of a quality service is to know the expectations of customers as they enter into the service transaction.

However, the articulation of who the customers are (Cortada & Woods 1995, 106-107; Åhlberg 1997, 57) and what is to be regarded as high quality is a difficult but necessary task, which the educationists have to face (see Boyle & Bowden 1997).

According to Boyle and Bowden (1997), to show the overall picture of quality in higher education we have to identify and define, as clearly as possible, the different interest groups' (including society, employers, teachers, students) views of and criteria for judging quality. By and large, because of the multi-dimensionality of quality in education, we should use multiple forms of evaluation, i.e., student-evaluations, peer reviews, self- and co-evaluations, as suggested by Dochy & Segres (1999) and other research, to find out the needs and areas of development. Among the various kinds of evaluations taking place in universities in Finland, one increasingly recommended procedure is to obtain students' perceptions of their study program experience and their satisfaction with it, which is the focus of the present study.

Although there is an increasing demand for university teachers in Finland to do more/better teaching, research and public service, the higher education sector suffers at the same time from decreased financial resources – the dilemma shared in most western countries (see, e.g., Soliman & Soliman 1997). The context of this paper is the emerging paradox between the growing student enrollment rates and the demands for a better quality of academic work with the same or lower funds and its implications for student satisfaction with their university experience. Should we accept the possible decrease of quality as a given fact or try to find out better and more effective ways of teaching in higher education? The interest here is to describe how we have succeeded in meeting the needs of our students at the University of Joensuu.

A committee for improving pedagogy of higher education at Joensuu University (in Finnish 'JOPKE' – Joensuun yliopiston pedagogisen kehittämisen työryhmä) was set up in 1995. The aims of the committee were to evaluate teaching at the university, prepare a system of teaching merits as a criterion for university tenures, and conduct a follow-up research on the students' (enrolled in autumn 1995) study experiences at the university. The authors of the present report were members of the working group, which was chaired by the rector of the university.

As the quality of programmes and degrees completed at the universities may best be evaluated by the accountability or customer satisfaction studies with alumni, as argued, e.g., by Halstead and Hartman (1994), we aimed at examining with a longitudinal survey if changes could be found in the quality of teaching and learning experiences as perceived by the students during a four-year study period, not afterwards, but while this experience is in progress and authentic. Sander and others (2000) also suggest that university teachers should use the expectations and preferences of the current cohort of students to provide an educational “service” that is both effective and pleasing to those “student customers”. They suggest that addressing expectations can produce measurable improvements in students’ outcomes. Expectations and perceptions of “service quality” may change over time (Boulding et al. 1993). Other research on students’ expectations of higher education suggests that they are dependent on a number of factors. These include culture (Shank et al. 1996), gender (Walker et al. 1994), and mode of study (Stevenson & Sander 1998), for example. As to our study, this may imply some differences in the learning experiences in the different fields of education.

The purpose of this study was to examine the changes in study experiences of the whole student cohort 1995. Study experiences, such as satisfaction at teaching and tutoring, and emotional experiences during the first four years of studies were examined. The initial number of the participants in the study was 916. In this report we also try to establish statistical models for predicting the outcome variables, i.e., overall program satisfaction and study achievements of the student cohort in different phases of the studies, on the one hand, and the phenomenon of dropping out, on the other. This multi-method follow-up study with three measurements (in 1995, 1996, and 1998) comprised both quantitative and qualitative data.

The earlier bulletin reports of the project present some findings (Kuittinen, Rautopuro & Väisänen 1997a; 1997b; Rautopuro, Väisänen & Kuittinen 1999) which were not grounded on any firm theoretical basis. In this report we will present the main findings of the final phase of the study and discuss the meaning of the results in the frame of reference of recent research on teaching and learning in higher education and on students’ perceptions of their learning

environment. In chapters 1.2 and 1.3 we shall introduce the reader to the recent research on student satisfaction and dropping out as well as to our research problems more closely.

1.2 RESEARCH ON STUDENT SATISFACTION AND LEARNING OUTCOMES

In spite of its history as a world-wide research topic or variable, student satisfaction is frequently overlooked in contemporary discussions of higher education outcomes (Astin 1993). Given the considerable investment of time and energy most students make in attending university, Astin suggests that their perceptions of the value of their experience should be given substantial weight and that student satisfaction cannot be legitimately subordinated to any other educational outcome. Since the degree of satisfaction with the university experience is much less dependent on students' entering characteristics than is the case with other outcomes, Astin (1993) argues that satisfaction levels are much more susceptible to the influence of the university environment and thus provide a clearer reading of its effects.

As predictors of the outcome variables we apply attributes both used in the previous studies conducted within various research traditions (e.g., Astin 1995; Donald & Denison 1999; Entwistle 1998; House 1999; Ramsden 1992; Tinto 1993; Wilson & Lizzio 1997; Wintre & Yaffe 2000) and detected by us (see also Rautopuro & Väisänen 2000d). These variables include students' entry characteristics, career commitment and orientations, perceptions of the quality of the teaching and learning environment, and emotions and feelings which operate as indicators of the psychological well-being evoked by the study environments.

Although it is suggested in literature that student satisfaction with their educational experiences is an important dimension in the assessment of institutional effectiveness and the quality of teaching, students' ability to evaluate good teaching is often doubted by faculties (see McKeachie 1990). However, research has established students' evaluations as valid, reliable and useful indicators of teaching quality (see Marsh 1987). They also have the value of being a direct measure

of consumer satisfaction with higher education (Ramsden & Martin 1996).

According to Donald and Denison (1996), students are the ones who experience the curriculum as designed and implemented by the institutions and they are in the best position to describe how they interpret and experience the curriculum they are required to take. We agree with Donald & Denison that the importance of student satisfaction should not be questioned. However, while students may not be able to comment on all aspects of teaching, for example, on the accuracy of the content, there is no doubt that they can make valid comments on the effectiveness of teaching from their own perspective.

The students' own perspective has been emphasised particularly in a research paradigm that focuses on a student's subjective learning experiences as accounting for the outcomes of learning. Accordingly, research has revealed that students' learning environment perceptions account for appreciable amounts of the variability in their learning outcomes, often beyond that attributable to student background characteristics (see, e.g., Fraser 1994). It has also been reported consistently that the correlations between attitudinal outcomes and learning environment dimensions are stronger than those between the cognitive outcomes and the learning environment (Wong et al. 1997).

To conclude, it would be beneficial to take a closer look at the students' learning experiences and the determining factors in order to understand how to help facilitate the creation of an environment that best meets their educational and personal needs. Questions worth a closer study are: 1) what determines students' "fit" in the academic and social systems of their institution, 2) what are the prerequisites for student satisfaction and the high quality of learning outcomes, and 3) how can these be examined. Much of the recent literature used to explain student satisfaction and their learning achievements is also meaningful in predicting dropping out.

1.3 RESEARCH ON DROPPING OUT OF STUDIES

The selection of a university is a major life decision with personal, social, and economic consequences which reverberate throughout the lifetime of an individual. Selecting an institution should represent a serious commitment from both the individual student and the institution in question. A premature withdrawal can be an unfortunate and costly event. Accordingly, research about student attrition from university and college has long been of great interest to researchers and administrators of these institutions. Losing students before their graduation is of particular interest due to the loss of human potential and wasted resources in the form of money invested and work done for these students. At the same time, as the total number of new students and especially adult students with their special needs has increased, the real level of funding has not increased at the same pace. This may mean that we as teachers have not enough resources to meet the changing demands of the larger student populations and especially to meet students as individuals. As a matter of fact, many students who have dropped out of higher education say that a lack of staff support was a decisive factor for them. Others have described feelings of being lost in a large, impersonal institution. To sum up, total dropping out of higher education, or moving, in the course of studies, to another section of the higher education or to a lower level institution of education is of great importance to study.

There is a fair amount of literature on the subject, but it mainly comes from countries outside Finland. Although we cannot transfer the findings of these studies directly into Finnish culture, they may provide new insights and suggest some variables which are relevant to Finnish university education and to the present study, too. In the USA, for instance, this topic has long been a subject of extensive study because drop-out rates are quite high there and it is expensive for an institution to lose students. Researchers are then asked by the institutions to explain why so many students withdraw, when the phenomenon is most prevalent, which students are most at risk, and, critically, how can retention be improved.

Rather than examining the effect of different atmospheres on the completion of studies and the drop-out rate, recent Finnish research on study environments has mostly concentrated on comparing

different educational units, including universities, faculties and study programmes (e.g., Häyrynen et al. 1990), and their impact on students' study orientations and cultural adaptation (e.g., Aittola 1990; 1992; Väisänen 1993).

The scarcity of theoretically grounded in-depth studies of the dropping out phenomenon is surprising in view of the fact that the total number of drop-outs and students switching study fields is quite large. Some research findings show that 20–25 percent of the students, with some variation between study fields, drop out without taking a degree. In addition, some 10 percent of the students change their study field or higher education establishment or both before their graduation. In other words, drop-outs and switchers of study programmes comprise a good third of those enrolled in Finnish universities and colleges. (Liljander & Määttä 1994.)

The drop-out phenomenon in the Finnish higher education has been mainly studied by Liljander and Määttä (1994) and Liljander (1998). Their perspective is mainly sociological and based on statistics of the macro level student flows through the university system. In a more recent study "*Pitkä tie maisteriksi*" (A long way to get a Master's Degree) conducted by Pajala and Lempinen (2001), it was found that 17,5 % of those students who had begun their studies in the Finnish universities in 1985 had dropped out before 1998. After thirteen years of studying 9,6 % still continued their studies. In our study the point of view is psychological or pedagogical focusing on the institutional and individual levels.

Students in higher education always operate in a specific academic environment where the prevalent culture is linked either with the completion of studies or with dropping out. In this content dropping out can be seen as a result of a clash between an individual student's various dispositions, expectations, and goals, and the institution's culture.

A student's intent, motivation, and goal orientation, among other factors, have also been noted as important in predicting persistence and academic success (Santa Rita 1996). Consequently, we hypothesise here that students who have a clear intent and a strong goal orientation in their studies, which may increase their commitment to the institution, will persist in university. The importance of commitment and goal orientation for the students' study processes

has also been emphasised and studied more closely in Rautopuro & Väisänen (2000e).

Although in literature there exist a few conceptual models of student progress (e.g., Bean and Metzner 1985; Kember 1995; Tinto 1975), we aim not at testing them as such but to use their suggestions of the relevant variables to produce our own prediction models. This part of our study attempts to identify and describe 1) the self-reported reasons for and 2) the best predictors of students' dropping out from the first to the fourth years of studies. In this study the purpose is not to develop a theoretically grounded model that would seek to explain the processes that bring individuals to leave their universities.

2 THE THEORETICAL BACKGROUND

2.1 UNIVERSITY TEACHING

2.1.1 GOOD TEACHING IN UNIVERSITY

In the first section of the literature review we aim to describe good teaching and good learning in the context of higher education, the prerequisites for their realization and the consequences for students' learning experiences. Current movements towards quality assurance in higher education have led to attempts to define high quality teaching. A great deal of research has focused on the themes of effective teaching or "good teaching/teachers" (see e.g., Forest 1998; Patrick & Smart 1998; Ramsden 1992; Ramsden & Martin 1996; Watkins 1998) with a noticeable overlap in definition, but there appears to be a lack of clarity because of the difference in emphasis researchers place on the various aspects of effective teaching (e.g., organization and presentation skills, interpersonal rapport and genuine respect for students, intellectual stimulation and challenge, and personality characteristics).

In Ramsden's (1991) study conducted in Australia (N = 1083) perceptions of good teaching measured by the CEQ (*Course Experience Questionnaire*) instrument, which in Australia and in the UK is widely used as a measure of the quality of the students' learning experiences and the quality of teaching (see Wilson & Lizzio 1997), correlated moderately (Pearson's correlation, $r = .60$) with students'

overall satisfaction with their department. A study of Wilson & Lizzio (1997) conducted in the UK with three different samples of university students lends support to the original findings of Ramsden concerning overall course satisfaction ($r = .64$). Significant positive correlations, though lower than the former, were also found between all scales of the CEQ and academic achievement (GPA) and generic skills. Because of their well demonstrated construct and criterion validity and feasibility in use (e.g., Ramsden 1991; 1992; Wilson & Lizzio 1997), the CEQ instrument, its forerunner CPQ (Entwistle & Ramsden 1983) and a Finnish version used in the doctoral thesis of Väisänen (1993) were applied as a basis for the development of the questionnaire in our study.

Good university teaching is important. It is undeniable that good teaching improves the quality of students' learning, encouraging the development of both specialist knowledge and more general competences asked by the modern society and the demands of the working life (see Enkenberg 2000). When students find teaching good and relevant for their goals, they will be satisfied and motivated to do better work. Through helping students to develop skills of lifetime learning, such as self-directed and autonomous learning, independent and critical thinking and capacity to learn, it enhances the capacity of graduates to contribute to the working life and the well-being of the society in which they live. While all interest groups in the Finnish universities admit the importance of good university teaching, there are, however, some negative trends that give cause for concern. In the last few years higher education has expanded to include a wider range of students; at the same time, there has been an unprecedented demand for a better quality of education provided.

According to Chickering and Gamson (1991), good practice in higher education 1) encourages student-faculty contact, 2) encourages cooperation among students (sharing backgrounds, use of study groups, peer tutoring), 3) encourages active learning (students may summarize to the class, use role playing or simulations, use field trips or internships), 4) gives prompt feedback (prompt, detailed evaluations on performance), 5) emphasises time on task (clarify class expectations, emphasise the need for studying), 6) communicates high expectations, 7) respects diverse talent and ways of learning (create a safe environment where students can ask questions,

discourage uncivil remarks, use diverse teaching activities to encompass different learning styles). The above principles were based on research findings and widely used as criteria of good teaching in evaluating higher education in the USA. (See also McKeachie 1999).

Bringing together the findings from various studies, we may conclude that there are real differences in teaching quality and that these variations can be measured. Concern for and availability to students, enthusiasm and interest of teachers, clear organisation and goals, feedback on learning, the encouragement of student independence and active learning, an appropriate workload and relevant assessment methods, the provision of a suitably challenging academic environment, co-operative and collaborative learning, vocational and personal relevance – these are among the key factors defining “good teaching” in higher education. On most of these factors students are able to make valid comments.

2.1.2 FROM TEACHING TO LEARNING

Theories of learning and theories of teaching often originate and operate independently from each other. Until recently, theories of teaching have taken little account of the results of research on learning processes (e.g., Duffy, Lowyck & Jonassen 1993). In many instructional theories, the teacher is the directing agency who prescribes to a high degree what learners should do to reach the goals given by the teacher. This view of teaching, which is founded on the idea that teaching essentially comes down to the transmission of knowledge (Trigwell, Prosser & Taylor 1994) from an external source to the learner, has come under increasing pressure (e.g., Biggs 1996). Models focusing on the learning process of the students call for theories of teaching that are firmly based on an analysis of student learning processes (e.g., Duffy et al. 1993; De Corte 1995). The model and principles of teaching which try to promote congruence between teaching and learning is called *process-oriented teaching* by Vermunt & Verloop (1999), and Simons (1999), who discusses it more extensively.

The literature on students’ learning processes is extensive, and different researchers use different concepts for similar or partly overlapping learning activities. Pintrich (1994) compares several taxonomies of learning components and concludes that the common

elements of these taxonomies are students' knowledge base, procedural skills, self-regulation of learning, and motivational and affective factors. The distinction between cognitive, metacognitive and affective/motivational components of learning can also be found in the work of several other researchers (see e.g., Boekaerts 1997, 164; Vermunt & Verloop 1999).

Learning activities are also influenced by students' approaches to learning, their learning conceptions and learning orientations (Entwistle 1998; Lonka & Lindblom-Ylänne 1996). The orientations refer to the whole domain of students' **personal goals, intentions, motives, expectations, attitudes, concerns and doubts**. They seem to have an influence on the learning activities students employ mainly through affective processes, especially the values students attach to a learning situation or task. (Vermunt & Verloop 1999.)

2.1.3 FROM KNOWLEDGE CONSUMPTION TOWARDS ACTIVE LEARNING

In the discussion about university teaching, a problem cited quite often is the inertness of knowledge (Tynjälä & Laurinen 1999, 204). Knowledge domains acquired through education are often studied in isolation from one another and the context of their use, and are therefore difficult to access. Inertness of knowledge refers to the problem, also known in working practice, that, although students have indeed acquired a lot of knowledge, they may not have acquired the capacity to apply this knowledge to solving problems in practice.

According to Simons (1999), new learning outcomes, as described by politicians and company representatives should be durable, flexible, functional, meaningful, generalizable, and application-oriented. Furthermore, new learning and the requirements of the modern "learning society" (see Cochinaux & de Woot 1995) ask for new kinds of learning outcomes, i.e., generic outcomes, like lifelong learning, learning to learn, thinking, collaboration and regulation skills. These kinds of skills will be needed to tackle the information overflow and the exponential increase of information. What people can do with information is far more important than the information itself. (Simons 1999.)

To reach the learning outcomes mentioned above, new kinds of learning processes are needed. As a synthesis from modern pedagogical views, Väisänen (2000) has suggested in his article *Learning centred education – A challenge for teacher education* that high quality learning (Åhlberg 2000) should be self-directed, collaborative, experiential, contextual, interactional, lifelong, and authentic in assessment processes. The focus of the learning process is on what a learner needs to learn more effectively and a teacher's task is to foster this learning process. The article also gives some practical guidelines for educators on how these requirements could be reached in higher education (see for active learning, e.g., in Niemi 1999). However, the shift in the teachers' role towards that of a facilitator of students' learning may be difficult and require prolonged supporting measures (Chaney-Cullen & Duffy 1999).

Simons (1999) suggests that the learning process should be active, i.e., constructive, reflective, discovery-oriented, contextual, and problem-oriented. Although there are many reasons why active learning ('action learning') could be seen as important, Simons argues that learning cannot or should not always be active, cumulative, and goal-directed, because of the many arguments against it. Most of them are of a practical nature, e.g., lack of time, and too large student groups. Other arguments stem from the conceptions of teaching and the assessment criteria used by teachers and students themselves (see for assessment, e.g., in Edwards & Knight 1995; Knight 1995). Besides, students are not always enthusiastic about more active forms of learning. There are situations when a lecture is the most effective way of fostering learning. After all, as Lonka (1991) argues, a lecture can also be active by engaging students to use learning diaries as a way to reflect on their own learning.

2.2 STUDENT SATISFACTION AND THE OUTCOMES OF LEARNING

2.2.1 AN OVERVIEW

Research on students' satisfaction with their study programme has paid considerable attention in recent years to the various facets of the learning experience. Students' learning experiences in the context of university learning environment are cumulatively influenced by (a) different instructors in university and their personality and teaching styles, (b) different types of courses, and (c) requirements and assessment criteria (Finaly-Neumann1994).

It has been proposed that there are many factors that promote or hinder the success of students in higher education. Among these factors, achievement motivation and satisfaction with the study experiences have been linked to students' attrition and performance, i.e. study achievements (Lamport 1993). However, although substantial research has been completed on achievement motivation and satisfaction with the study experiences, the results have been inconsistent as researchers have used various operational definitions as the basis of investigation (see Donohue & Wong1997).

It has been theoretically argued that student satisfaction is necessary for continued motivation. Furthermore, Bean and Bradley (1986, 403) demonstrated that "satisfaction had a greater influence on performance than performance had on satisfaction" indicating that satisfaction with university studies can be a predictor of academic success.

In his review of literature on students' learning experiences and satisfaction, House (1999) summarized some **entry factors** of students affecting their learning in the university setting. According to House, the importance of students' affective characteristics, such as academic self-concept, motivation, and achievement expectancies for instructional design, has been much discussed. However, it has been suggested that there is a need to explore the effects of student motivation on subsequent instructional outcomes. Furthermore, on the basis of his review, several studies have found out that both academic background and cognitive-motivational characteristics are related to performance – and to withdrawal from university as a measure of student satisfaction. With regard to students' academic

background, research has shown that achievement in high school is a significant predictor of several types of outcomes, including grades in specific courses, overall grade point average (GPA), and withdrawal. Similarly, admissions test scores have been found to be significant predictors of course performance and withdrawal. In addition, several types of student goals are related to student success. Thus, according to House (1999), these results indicate that an assessment of the effects of student characteristics on instructional outcomes should simultaneously consider both prior achievement and cognitive-motivational variables.

Recent research has also examined the effects on students' academic outcomes of several aspects of the **university environment, i.e., academic and social environment**, such as instructional activities, quality of teaching, ethos, and social interaction with the faculty, staff and other students as well as extracurricular activities and out-of-class experiences, e.g., getting a job, (e.g., Astin 1993; 1995; Donald & Denison 1996; Finaly-Neumann 1994; House 1999; Kuh 1993; Milem & Berger 1997). Research has found strong ties between the faculty characteristics, student satisfaction, and the academic success of students in their studies. These studies have identified the following faculty factors that influence student satisfaction and academic performance in course work: presentations and lectures, tests and assignments, human relations with teachers, and techniques of teaching. Participation in cooperative learning activities, or learning activities that require individual student involvement, for example, are related to improved performance and continued persistence in university (Astin 1993); teachers' feedback, task clarity, and task identity explain instructional satisfaction (Finaly-Neumann 1994).

Furthermore, involvement in social activities appears to be related to students' satisfaction with the college and with their intention to continue their studies (Milem & Berger 1997). Also social support from other students and the faculty often has been noted as an essential component of student satisfaction (Pascarella & Terenzini 1991). According to Lamport (1993), peer groups continue to be the primary source of satisfaction, but interaction with faculty members is also significant. Particularly social support is one of the most

important protective factors for the new students' adjustment to university (Solberg & Villarreal 1997). Support is positively associated with greater life satisfaction and fewer negative feelings, such as loneliness, anxiety, and depression (Hunsberger et al. 1994). Although previous research has accumulated considerable knowledge about social support, many questions still remain to be answered.

In a Finnish study of first-year university students' (n = 583) study experiences (Tiilikainen 2000) it was found that the accumulation of credits during the first study year could be explained by the students' satisfaction with their tutoring, teaching and teachers, their own study skills and the community of students. No gender or age differences were found, but the accumulation of credits by the working students and students who had not gained entry in the field of education of their primary choice was smaller than that of the other students.

Some subjective, "hard-to-measure" attributes also have an impact on students' perceptions of the environment and their outcomes of learning. These include the ethos of the institution, i.e., the belief and value systems, educational mission and philosophy, and student and faculty cultures (Kuh 1993) and the teaching/learning cultures (Ramsden 1991) or cognitive-epistemological systems (Ylijoki 1998) of different fields of education or disciplines of university.

In summary, judgments of satisfaction or dissatisfaction with educational programmes are likely to be influenced by two major factors: students' entry characteristics and university performance characteristics. These findings suggest that learning activities and social involvement have positive impacts on student satisfaction and achievements while activities which draw students away from their academic efforts have negative impact on them. But how can these factors be modelled theoretically? In the next two sections we shall look more closely at the Input-Environment-Outcome model by Astin (1995), which is grounded on the Northern American research tradition, on the other hand, and at the Students' Perceptions in Learning Environment model originated mainly in Europe and Australia (e.g., Entwistle & Ramsden 1983; Entwistle 1998), on the other.

2.2.2 THE INPUT-ENVIRONMENT-OUTCOME ASSESSMENT MODEL

The **input-environment-outcome (I-E-O) assessment model** by Astin (1995) has been proposed as a framework for analysing the unique effects of students' entering characteristics and college environmental factors on subsequent outcomes. Briefly, input variables represent the characteristics that the student brings to the instructional setting while environmental variables represent the breadth of experiences (instructional, social, and personal) that occur during university studies. The I-E-O assessment model enables the researcher to simultaneously evaluate the effects of input and environment variables on student outcomes. A limited number of previous studies have used the I-E-O model to consider input and environment variables.

Using this model, House (1999) investigated the contributions of entering characteristics and academic experiences on student **satisfaction and achievement**. The sample of the study included 594 fifth-year students, who were surveyed for information regarding their study experiences. A number of specific input and environmental variables, for example, grades in high school, self-ratings of overall academic ability and expectations of graduating with honours as well as working in a group project in a classroom, correlated significantly with student satisfaction and achievement.

Furthermore, when the input and environmental variables were considered in a multiple regression model, it was found that several environmental variables were significantly related to student satisfaction and achievement even after controlling the effects of students' entering characteristics. The overall multiple regression models were significant for explaining students' satisfaction with their studies at university and their achievement outcomes when the effects of both input and environmental variables were considered.

These results suggest that the distinct effects of students' entering characteristics and their study experiences on subsequent instructional outcomes should be considered simultaneously, and the I-E-O model provides a useful method for assessing these effects.

2.2.3 FOCUS ON STUDENTS' LEARNING EXPERIENCES – THE LEARNING ENVIRONMENT PARADIGM

Studies of learning environments, particularly during the past 25 years, have been the interest of many educational researchers and theorists. A large number of studies of learning environments concerned with conceptualization and theory development, measurement, unit of analysis issues, meta-analyses, and utilization of research findings for curriculum development and for monitoring and improving education have been carried out in recent years. The emerging diversity of approaches and the use of multiple methodologies provide new and enriched understandings. (See, e.g., Biggs 1988; 1996; Entwistle 1998; Forest 1998; Ramsden 1992; Wilson & Lizzio 1997.)

From the perspective of the research tradition of students' learning experiences, it is important to look at teaching from the learners' point of view, and ask what aspects of teaching and the overall learning environment contribute to effective and high quality learning. This tradition introduces a coherent set of concepts derived from the research on student learning, carried out mainly in Europe and Australia. There are also many other alternatives to examine study experiences based on other theories, concepts, and research results (see, e.g., Janssen 1996).

The leading principle in the model of learning experiences is that learning outcomes depend on an interaction between 1) the characteristics of the student, 2) the teaching style and methods of the teacher, 3) the policies, practices, and the ethos of the department or institution (Entwistle 1998, 73) and 4) learning tasks (contents) (Biggs 1985). According to Entwistle (1998, 73), this approach is more fruitful when trying to explain students' outcomes of learning than the use of traditional variables such as the personality, abilities or motivation of students.

In this paradigm, which can be traced back to Lewin's ideas of a person in a situation, it is thought that behaviour is a function of the interaction between the environment and the person. The model suggests that a person's perceptions within a certain environment will lead to specific behaviours and that new behaviours often modify existing perceptions, as happens in a longitudinal process. According to Wong and Young (1997), the person-environment fit perspective

postulates that students learn better when there is congruence between the actual and the student preferred learning environment.

Just as students do not enroll in universities with similar motivational readiness, university environments do not all have the same readiness to nurture student development. Some environments may be more conducive than others to producing certain outcomes, and students in the same environment may have entirely different experiences of that environment. (Côté & Levine 1997; Väisänen 1993.)

Because research has provided evidence that students' achievements can be regarded as a function of the person-environment fit, we have to focus on students' subjective perceptions and interpretations of their teaching-learning environments, i.e. elements of the learning context, rather than some 'objective' measure (Ramsden 1992, 62-63). These mediating interpretations and perceptions lead to the learning activities students employ and to outcomes of learning (Entwistle & Tait 1990; Ramsden 1992). It is important to notice that the students' perception of the aspects of a course or their studies can often differ considerably from or contradict the intentions of the curriculum designer or the expectations of the teacher.

Figure 8 (Appendix 1) describes a heuristic model of student learning (see also, Rautopuro & Väisänen 2000a, 66) developed on the basis of a synthesis of the literature cited in the above two sections (e.g., Astin 1995; Entwistle 1998; House 1999; Ramsden 1992). In this model students' learning outcomes are assumed to result both directly from the personal entry characteristics (input variables) and indirectly from the interplay between the learning environment and students perceptions of it (environment variables). These perceptions are supposed to be affected by students' expectations, goals, and orientations, thus causing different mediating interpretations that lead, on the one hand, to the learning activities and approaches to learning students employ, and on the other hand, to students' experiences of meaning and relevance and congruence/incongruence with the learning environment and, as a consequence, to satisfaction or dissatisfaction with it. Finally, these cognitively charged learning activities (e.g., deep approach/surface approach) and more emotionally tuned experiences of satisfaction/dissatisfaction lead to different learning outcomes. Of course, in this cyclical and accumulating process the outcomes have an influence on students' future learning activities.

2.3 DROPPING OUT IN HIGHER EDUCATION

2.3.1 CLARIFYING THE CONCEPT

A tentative review of the literature indicates that the causes of attrition and the models and methodologies used to explain these causes – including, for example, students' background variables, pre-entry skills and abilities, initial intentions, motivations and goal commitments, institutional experiences and satisfaction, and academic/social integration – vary, and the strategies designed to reduce attrition produce different results at different institutions (Astin 1995; Bean & Metzner 1985; Cabrera et al. 1992; Murtaugh, Burns & Schuster 1999; Pascarella & Terenzini 1991; Tinto 1975; 1987; 1993). Consequently, we wanted to conduct this research because the results should allow the administrators and faculty to develop a better understanding of the problem within the teaching and counselling cultures of our own institution. In this way, the findings can be used by the administration and faculties to design comprehensive institution wide or department-specific persistence plans with appropriate interventions (see, e.g., Perez 1998 for different intervention strategies).

On the basis of previous research (Terenzini & Pascarella 1991; Tinto 1987), it seems that there is a need also to identify factors which affect student persistence beyond the first year of studies. Despite the progress made in understanding the dynamics of persistence/attrition, particularly over the last two decades, we hope to establish a need to explicitly consider one major variable or factor that seems to be almost totally neglected (see also Tinto 1997) in current models. This factor is students' perceptions of teaching/learning environments, i.e., the quality of teaching/learning experiences, satisfaction with teaching methods, and the students' overall satisfaction, which also reflects their feelings and emotions.

A short review of literature shows that there is no general consensus on the term used to describe students' leaving a university before taking a degree. Terms for this phenomenon, called 'wastage' by Johnes (1990), include *non-retention*, *non-completion*, *non-graduation*, *non-persistence*, *attrition*, *failure/dropping out* and *failure/withdrawal*. Similarly there is no agreement on the definition of the above terms.

Some students may stop their studies temporarily and come back later. Withdrawal from a university can mean *transferring* to another university where the student completes his degree. However, in many countries other than Finland we have to make a difference between the students who withdraw voluntarily, in the USA comprising 85 % of the departures estimated by Tinto (1987), from those who drop out due to academic reasons, i.e., students who fail their examinations. Therefore, in interpreting and comparing the results of various studies we have to be careful. In reporting the results of our study we use the term **drop out** (comprising “stop-outs”, transfer students, and total “drop-outs”) to refer to the students enrolled in autumn 1995 who have not been present after the first, second or third year of their studies. The number of these students was 29.7 % of the population (see Rautopuro & Väisänen 2000c).

2.3.2 WHOSE PROBLEM IS IT?

The reasons for leaving an institution without a degree may be very complicated and mean different things to different students. From the point of view of an individual the selection of a career is a process that may take new turns even after one has begun studies in a certain field. Secondly, even though the students had a clear picture of their future careers, it may be difficult to realise those dreams. Many students end up first in a line of studies of their secondary choice, but they may continue to strive for a transfer to their preferred field of education. Thirdly, some students take university basic courses in order to prepare themselves for another field of education. Thus, attrition from studies can, in fact, mean gaining entry to another educational institution. (Cf, Liljander & Määttä 1994; Liljander 1998.)

Of course, there are students who may be disappointed with their studies or the requirements of academic study can prove to be too hard for an individual and therefore cause withdrawal from university. It is the intensity of the push and pull of certain events over time that helps to shape persistence, as suggested by Terenzini et al. (1994).

Because of these reasons, the problem of attrition cannot be completely removed. We agree with some views (Liljander & Määttä 1994) that a certain basic level of it has to be accepted. Also a fluctuation of the basic level within certain limits between various

fields of education and between the university units of the same field is fairly easy to understand. However, when the reasons for withdrawal are due to the university's teaching and learning environments, i.e., a weak quality of education, lack of effective supporting and tutoring systems for the students, for example, teachers and other staff should have a serious look at themselves. In the previous research it has been suggested that students' perceptions of the college experience have both negative and positive effects on their attrition and persistence. It has been argued that student satisfaction is necessary for continued motivation and persistence. (Hatcher et al. 1992.) In addition, the degree of commitment is variable in time and may be influenced by both personal and institutional factors.

From the sociological point of view, leaving an institution of higher education without completing a degree – moving to studies below the university or college level or entering the labour market without the status conferred by a degree – means a downward-turning career (Liljander 1998). The status loss is, however, only a part of the total losses. According to Johnes (1990), psychic costs caused by dropping out can mean feelings of guilt and shame leading to depression and lack of self-esteem. By contrast, transfers within the higher education field are counted as gains or losses of the individual concerned, depending on the direction of his/her moves within a status hierarchy based on the esteem accorded to different educational units and study fields.

From the point of view of the basic units or university departments, transfer to another educational field or university as well as total dropping out can be regarded as a loss or wastage. That is because the number of drop-outs is nowadays considered a measure of the efficiency of a university. The degree completion rates form the basis for allocating resources.

The total loss involving a third of the student population in Finland is great or small in the international perspective, depending on what it is compared with. According to Liljander (1998), the Finnish drop-out rate is approximately twice as high as in the UK. However, a comparison with Sweden and especially Germany, the most relevant points of comparison because of the similar degree systems, shows that drop-out rates are not exceptionally high in Finland. The highest drop-out rates can probably be found in the USA: in the eighties Tinto (1987) and Hatcher and others (1992) calculated that about

40 % to 50 % of those who start their studies drop out. These figures, of course, vary between institutions. At a number of colleges and universities attrition rates range from 10 % to 80 % (Tinto 1987; 1993). In a recent study (Murtaugh, Burns & Schuster 1999) that focused on Oregon State University student population, these figures were confirmed. The attrition rate was roughly 40 % over four years varying, of course, between different groups of students and fields of education. The survival analysis used in the research revealed that the drop-out rate is highest after the first year of studies. Similarly, according to Tinto (1993), approximately 75 % of those students who depart will leave during the first two years of college.

2.3.3 GENERAL AND SPECIFIC MODELS OF STUDENT PERSISTENCE

Research into student dropout has tended to be of two sorts. On the one hand, there have been many surveys asking students why they dropped out. There have also been studies that look at progress in relation to one variable such as gender, learning style, personality characteristics, etc. Then there have been some theoretical models that have been developed to explain the influences on students' decision to complete their university (or college) studies. The congruency models, as formulated by Thompson and Fretz (1991), are centred around the fit between students' needs, attitudes, goals and expectations, on one hand, and the institutional environment, on the other. This environment is partly characterised by its demands, supports, and the people involved.

The most widely used persistence models are the longitudinal-process models. The **student integration model** by Tinto (1975, 95) and the **student attrition model** by Bean (Bean 1982; Bean & Metzner 1985) are two prominent examples of this category. Cabrera and others (1992) integrated the models established by Tinto and Bean, finding that both provided unique insights but also measured similar constructs. Typical constructs in one or both of these models include parental approval, financial attitudes, opportunity to transfer, courses, encouragement of friends, institutional quality and fit, academic integration, social integration, institutional commitment, goal commitment, and interest to persist. The expected overlap between these models could be explained by the fact that the

academic and social integration, as well as the institutional and goal commitment of the longitudinal process models, can be related to constructs of the congruency models. In fact, Tinto's (1993) explanatory model of the college persistence/withdrawal process, which he elaborated from his original (Tinto 1975) model and consecutive studies that tested this model, substantiate the importance of this person-environment fit.

As to theoretical approach, Tinto drew upon the work of Spady (1970) who was the first to apply Durkheim's theory of suicide, depending on the level of integration into society, to dropout. In Tinto's model, persistence is influenced by a student's pre-entry attributes, goals and commitment, and academic and social integration (Tinto 1975; 1987; 1993). The student's background characteristics at university entrance indirectly influence the decision to drop out through their impact on the student's social and academic integration. Tinto conceptualized two aspects of influence: (a) the initial intentions and commitment to the goal of completing a degree and to the institution, and (b) subsequent intentions and commitment resulting from the interaction of student background characteristics and student goals along with the structural and normative features of the institution, i.e., a student's institutional experiences. These combine to influence the quality of a student's integration and adjustment into the college system. (Tinto 1987, 39-46.) Persisting students are supposed to be more integrated both academically and socially than non-persisting students while those leaving the college have difficulties in adjustment and academic performance, and also feelings of isolation and incongruence (Tinto 1987, 47-64).

In their model of non-traditional undergraduate student attrition, Bean and Metzner (1985) developed a model conceptualizing student persistence as dependent on 1) four sets of variables, including: (a) the student's background, (b) academic variables, (c) environmental variables such as employment and finances, and (d) "intent to leave" factor, and 2) two sets of outcomes, which are: (a) academic - 'college GPA', and (b) psychological - utility, satisfaction, goal commitment and stress. All these variables, in turn, affect intent to leave. One of the primary variables predicting dropping out was the lack of institutional fit in the study. Specifically, the findings demonstrated the importance of peer socialisation in preventing dropping out.

Also Solberg and Villarreal (1997) suggested that social support is one of the most important protective factors for first-year students' adjustment to university. According to the authors, support is positively associated with greater life satisfaction, and fewer negative feelings, such as loneliness, anxiety, and depression.

Several researchers have used the models of Bean and Metzner or Tinto to assess the impact of various factors on student persistence in different populations and circumstances. These include, for example, traditional/non-traditional students (Cleveland-Innes 1994), distance education (Eisenberg & Dowsett 1990), remedial education (Hoyt 1999; Murtaugh, Burns & Schuster 1999), high-risk students (Ryland, Riordan & Brack 1994), and commuter college students (Johnson 1997; Voorhees 1993). Conflicting findings exist among many of these studies as to whether gender, students' goals, need for remedial education, students' grade point averages, contact with the faculty, or hours studied can be related to students' persistence. Although not quite relevant for the Finnish context of higher education drop out issue, these studies have revealed that older students, part-time students, minority students, and working adults have higher drop-out rates.

As to explaining adult students progress, until the late 1980s researchers used mainly models developed for traditional university students. It was not until 1995, when Kember published his research on adult learners studying at a distance, that a comprehensive, generic model of adult student progress could be said to exist (Roberts 1995). Kember's (1995) linear process model of student progress is derived from the seminal work of Tinto (1975), a synthesis of his own research and a throughout review of the literature that was used to theoretically link the variables in the model.

Kember's (1995, 55) model identified four key constructs: social integration and academic integration (borrowed from Tinto), external attribution, and academic incompatibility. Kember built these constructs, together with background characteristics, into a causal model and then tested it using a path analysis. He concluded that the model was robust, accounting for 80 % of the variance in adult student persistence. The model shows students entering a course of study with a number of predetermined personal traits (e.g. gender and prior education) which guide the student down one of the two

tracks in the model. It is suggested that those students with positive attributes tend to proceed down the positive path in the model. These students will be able to integrate socially (i.e. able to integrate study with employment, social life, and family) and academically (i.e. affiliation between a students and a course). Other students will move through the study process on the negative path, and these students will have difficulty achieving social and academic integration. According to Kember, those who experience external attribution (i.e. insufficient time, distractions, etc.) and academic incompatibility (i.e. negative course evaluation) will be less likely to perform satisfactorily in their final grade point average score.

When looking at the Kember's model from a critical point of view, we may see that although it seemed to fit in his own data very well, the empirical foundations are questionable due to the weak reliability estimates of the scales (9/15 under 0.70 and four not reported), some methodological shortcomings, and the restriction to a quite uniform culture of students (distance learning institutions in Hong Kong). Moreover, Woodley et. al (2001) concluded in their study using Kember's model that few of the causal relationships achieved statistical significance, i.e. Kember's path model did not fit the data derived from the Open University of the UK.

Cabrera and others (1992) published an extensive statistical study and comparison of Tinto's (1975) and Bean's (1982) models. This work of Cabrera and others (1992) recommends a synthesis of the Tinto and Bean models for a better understanding of student persistence in college. Specifically, this study shows that seventy percent and forty percent of the hypotheses of the models were verified. Interestingly, it also shows that 36 % and 60 % of the variance were explained by the models. Further, it summarises some interesting points which have direct relevance to a further development of the models, and to our study, too. They include the following: (1) there is a direct effect of academic integration on persistence, in addition to the indirect or mediated one that is generally recognised, (2) academic and social integrations are related, and so are the institutional and goal commitments, and (3) there is a direct effect of performance variables ('college GPA') on persistence.

The major contribution of Tinto to the field of student attrition was to demonstrate that it was both a complex multivariate

phenomenon and a process that needed to be understood longitudinally. However, it seems that Tinto's model leaves a great deal of variance unexplained and these variables are external to the institution. This finding agrees with Bean and Metzner's (1985) work and Tinto's (1987) later suggestions. This emphasises the need to look at studies with specialised models in order to find out what other factors that may influence attrition rates are suggested.

In their book based on a large number of studies, Pascarella and Terenzini (1991) synthesise empirical findings concerning the characteristics of American universities that influence commitment to studies and their successful completion. Some central characteristics are: (a) the quality of the educational unit, (b) the size of the unit, (c) the activity culture of the study environment (contacts between students, interaction between students and teachers, student counselling), and (d) living in a hall of residence.

According to Pascarella and Terenzini (1991), the effect of the small size of the unit and living on the campus indirectly enhances academic and/or social integration. Also Johnes's (1990) results of a study she conducted at Lancaster University lends support to the importance of social integration and involvement in university life. She found that students whose homes are near the university are at a significantly higher risk of not graduating than those whose homes are not within an easy travelling distance of the university. The other risk groups of students include, according to Pascarella and Terenzini's (1991) review, students whose goal orientation is weak, or whose choice of educational unit was haphazard, or whose study prerequisites are otherwise poor.

In a more recent research review, Hoyt (1999) suggests several variables that may explain attrition. These include (a) the fulfilment of a student's expectations, his sense of accomplishment rather than frustration, (b) his career decision-making self-efficacy, (c) the institutional environment or organisational characteristics, e.g., institutional communication, classroom environment, academic climate, and size of the institution, and (d) the inter-institutional differences, e.g., the regional employment per capita and the spending on instruction and academic support per student as a ratio of the regional mean income.

To summarise the previous research, there seem to be three main clusters of variables that appear to be the most relevant in explaining attrition: firstly, **academic-related characteristics**; secondly, **socio-economic and personal characteristics**; and thirdly, **involvement, motivation and commitment**. We can conclude that student attrition is a complex phenomenon. It is complex because it involves human behaviour, it is complex because it involves so many types of withdrawal, and it is complex because it varies over times. The results of the studies may be conflicting and unexpected because of the differing samples of populations, the operational definitions of the relevant terms, and the methodologies used in them. Furthermore, inter-cultural differences, complex interactions between the variables, and differences between research designs (cross-sections vs. longitudinal data) may confound the comparison of the findings of the studies. Therefore, we must conclude that the efforts to confirm theoretical models of student attrition or predict student persistence may be incomplete, and much of the variation in persistence rates may remain unexplained.

3 THE RESEARCH PROBLEMS AND THE DESIGN

The purpose of the study was to examine a student cohort's study experiences, satisfaction with the learning environment and changes in them during the four years of studies, on the one hand, and the influence of these factors and some background variables on learning outcomes and persistence in studies, on the other. In addition, we aimed at finding what the impact of students' commitment to their studies and of their study orientations is on their overall satisfaction and dropping out. The research problem can be divided into four areas with subsequent side problems. The problems are based on the previous research reviewed in the theoretical background section and on the practical reasons to develop university teaching. To answer the problems we use both quantitative and qualitative data. The problems of the study are as follows:

Problem area 1

Study experiences and changes in them during the four years of studies (measurements in 1995, 1996 and 1998)

- 1.1 Are there any changes in students' emotional and affective study experiences?
- 1.2 Are there any changes in students' experiences of their learning environment, e.g., satisfaction at teaching and integration into their departments?
- 1.3 Are there any changes in students' overall satisfaction?

Problem area 2

Predicting students' satisfaction and study achievements

- 2.1 What are the predictors of students' satisfaction with the reception to the university at the beginning of studies (in 1995)?
- 2.2 What are the predictors of students' overall satisfaction at the beginning of studies?
- 2.3 What are the predictors of students' overall satisfaction at the end of studies?
- 2.4 What are the predictors of students' study achievements at different fields of education?

Problem area 3 Predicting dropping out

- 3.1 What are the predictors of dropping out after the first year of studies?
- 3.2 What are the predictors of dropping out after the second and third years of studies?
- 3.3 What are the students' self-reported reasons for their dropping out?

Problem area 4 Improving university teaching

- 4.1 What are the problems and weaknesses that students have encountered in their teaching and tutoring services?
- 4.2 What are the students' suggestions to improve teaching at Joensuu University?

The design of the study is presented in Figure 1.

In the figure we can find four sets of variables and the time of the measurements of our longitudinal study. The variables were grouped into 1) the background variables, 2) students' entry variables, 3) variables of study experiences and 4) outcome variables. The arrows are used to describe both the main and sub-problems of the study.

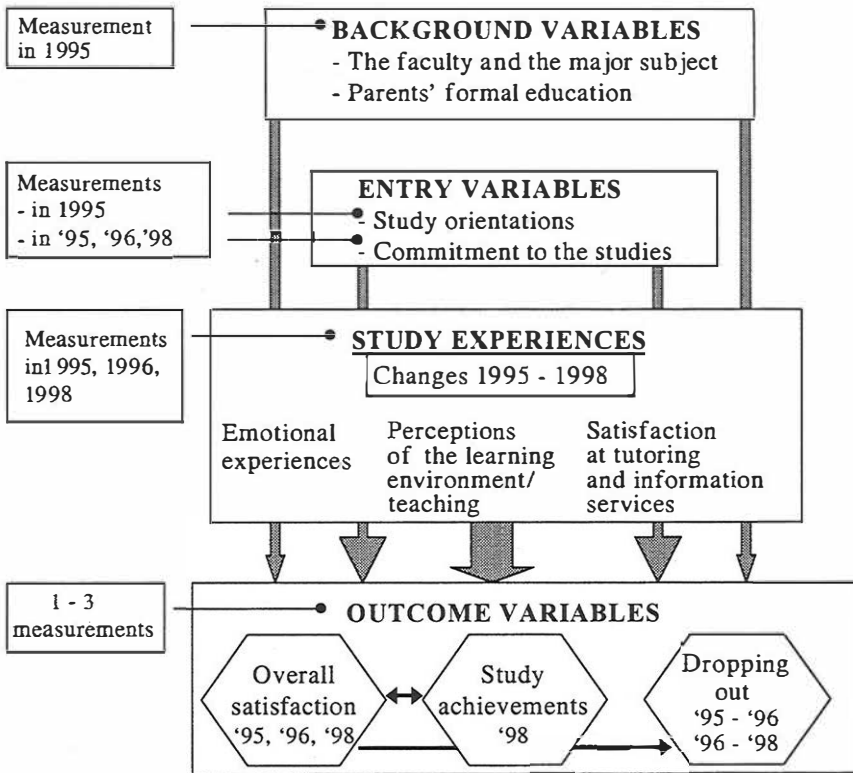


FIGURE 1. THE DESIGN OF THE STUDY.

In particular, we are interested in explaining and predicting the outcome variables, i.e., students' overall satisfaction, study achievements and dropping out with other groups of variables. Some of the relationships between the variables are supposedly reciprocal and can be presented with two-headed arrows, for example, overall satisfaction and study achievements. In addition, some of the relationships are ignored here although we have theoretically implied these relationships, students' commitment to the studies and their study experiences, for example.

4 THE RESEARCH PROCEDURE

4.1 THE SUBJECTS

The data used in this study were collected by using a large-scale, multi-dimensional questionnaire administered to those students (N = 916) who started their studies at the University of Joensuu in autumn 1995. In addition, some background information of the students was picked up from the university student register. The first phase of the study was carried out in autumn 1995 and the follow-up questionnaires were given to the same students in autumn 1996 and in autumn 1998.

The University of Joensuu is a small university in Eastern Finland consisting of five faculties. The main campus is in the town of Joensuu and another campus is in the town of Savonlinna. The number of students at the university is 6100 full-time students, of whom 1000 students study in Savonlinna.

In the first phase of the study 732 students (almost 80 %) answered the questionnaire. 596 of the remaining students (76.5 %) responded to the follow-up questionnaires in autumn 1996 and 405 students (65.6 % of the remaining population) in autumn 1998.

As we can see from Table 1, over 50 % of the enrolling students at the University of Joensuu begin their studies at the Faculties of Education and Humanities. These two faculties which are mainly concerned with teacher education have a great majority of female students. At the Faculties of Science and Forestry the situation is quite the opposite. Only the Faculty of Social Science seems to follow the general trend of the whole university. From the table we can also see that most of the students (over 50 %) start their studies

TABLE 1. THE SEX AND AGE DISTRIBUTIONS (BY FACULTY) OF BEGINNING STUDENTS IN AUTUMN 1995

Faculty f (%)	Sex		Age (years)			Missing
	Male f (%)	Female f (%)	18-20 f (%)	21-25 f (%)	Over 25 f	
Education	48	251	115	93	45	46
N = 299 (32.6 %)	(16.1)	(83.9)	(45.5)	(36.8)	(17.8)	
Humanities	56	161	101	51	24	41
N = 217 (23.7 %)	(25.8)	(74.2)	(57.4)	(29.0)	(13.6)	
Social sciences	50	80	42	32	19	37
N = 130 (14.2 %)	(38.5)	(61.5)	(45.2)	(34.4)	(20.4)	
Science	133	102	115	56	10	54
N = 235 (25.7 %)	(56.6)	(43.4)	(63.5)	(30.9)	(5.5)	
Forestry	21	14	17	7	2	9
N = 35 (3.8 %)	(60.0)	(40.0)	(65.4)	(26.9)	(7.7)	
Total	308	608	390	239	100	187
N = 916	(33.6)	(66.4)	(53.5)	(32.8)	(13.7)	

immediately after their matriculation and there is not very much variation between the faculties. The number of the “non-traditional” students is about 13 % of the whole population. In this group of students the variation between the faculties is marked, ranging from 5.5 % at the Faculty of Science to 20.4 % at the Faculty of Social Sciences.

4.2 THE METHODS OF DATA COLLECTION

The questionnaires used in this study (see appendices in Kuittinen, Rautopuro & Väisänen 1997a; 1997b; Rautopuro, Väisänen & Kuittinen 1999) consisted of 5-point structured (Likert-scale) questions and open-ended questions. The structured questions (operationalised as sum-scales) dealt with students' opinions about their studies and could be classified into four categories: **orientation to studying** (13 items), **emotions** (19 items), **study experiences and atmosphere** (32 items) and **satisfaction with information and guidance**. In addition, students' **overall satisfaction** (cf., Hatcher et al. 1992) and **satisfaction in the beginning** (by using Finnish school grades from 4 to 10) as well as the level of **commitment** to studies were measured. Students' demographic and social background information, e.g., their mothers' and fathers' level of formal education, as well as grades as indicators of academic success, were collected from the university's student register.

The information of the large questionnaires was reduced to a smaller number of scales according to the previously mentioned four categories. These scales were constructed on the basis of previous research (e.g., Astin 1993; Bean & Metzner 1985; Cabrera et al. 1992; Entwistle & Ramsden 1983; Hoyt 1999; Pascarella & Terenzini 1991; Ramsden 1992; Tinto 1975; 1987) and with the help of the principal component analysis (Afifi & Clark 1990). The principal component analysis was mainly used in an explorative way to find out the structure of the scales to be constructed. Consequently, the sum scales were constructed by using the items with main loadings in the component matrix. The reliability of the scales was measured by using the Cronbach's α -coefficient (Ary, Jacobs & Razavieh 1996) and will be reported later.

Students' orientations to studying (cf., Beaty et al. 1997; Santa Rita 1996) consisted of two main sub-scales. First, the scale **occupational orientation** included three reasons for selecting the field of study: "I wanted an occupation", "a well paid job in the future" and "a secure post". Second, the scale **academic orientation** consisted of items "science is interesting", "education itself" and "self-enhancement".

The level of students' **commitment** to their studies was measured with the question "How sure are you about having chosen the right

career". The item was keyed 1-4 to express the firmness of the choice of the field of education.

The items used to measure emotions and affects were computed as the scale **positive study experiences**, consisting of positive emotions like "delight", "happiness" and "self-confidence", and the scale **negative study experiences**, consisting of emotions like "disappointment", "stress" and "despair". The relevance of these scales is based on some researchers' (Tinto 1993; Wintre & Yaffe 2000) suggestion that psychological well-being is directly and positively related to social adaptation and academic achievement.

Students' experiences of the academic environment and organisational characteristics, i.e., satisfaction at teaching and the atmosphere of their departments (cf., Tinto 1997), were reduced into three sub-scales. First, **traditionality of teaching** included opinions to the effect that the teaching in the students' own department is too theoretical and lectures without modern teaching methods are overvalued. Second, the scale **students' integration to their department** included the students' opinions about encouragement to critical thinking and the students' integration into research projects of the department. Third, the scale **satisfaction at teaching** consisted of opinions like "teachers are inspiring", "teachers are able to select the right level of teaching" and "teaching is well organised".

The scale **satisfaction at teachers' tutoring** included "the tutoring of the teacher", "the teacher's willingness to help students" and "the teacher can be reached", for example. The scale **satisfaction at information services** consisted of items concerning general information services of the institute like "information of the subject" and "information of library services" and "information of studies abroad".

4.3 THE DATA ANALYSIS

The scales of study orientations, emotions, study experiences and satisfaction were mainly described by descriptive statistics, such as arithmetic mean and standard deviation. The statistical significance in changes in these experiences during the research period was measured by the analysis of variance for repeated measures (Hand & Taylor 1987). When predicting the **students' satisfaction at**

different stages of their studies (satisfaction with the reception to the university, overall satisfaction at the beginning and overall satisfaction at the end of the studies), the multinomial logistic regression analysis (Hosmer & Lemeshow 1989) was applied. In order to carry out the multinomial logistic regression analysis, the dependent variables (the variables measuring student satisfaction) were classified into three-level (low-moderate-high) ordinary scale variables. The scales constructed for students' study orientations, study experiences and commitment and the background information collected were used as explanatory variables. When predicting the overall satisfaction at the end of the studies the three measurements of study experiences were combined as mean experiences (mean commitment and mean positive study experiences, for example) within the study period.

In the recent research on predicting **the risk of dropping out** various methods have been used. The phenomenon has been analysed by using the logistic regression analysis (e.g., Cleveland-Innes 1994), discriminant analysis (Ryland, Riordan & Brack 1994), survival analysis (Murtaugh, Burns & Scuster 1999), and partial order structuple (scalogram) analysis (POSA) for non-metric data analysis (Eisenberg & Dowsett 1990), among others.

In this study the relationships between qualitative variables (parents' education and the dropping out, for example) were measured by using the "ordinary" chi-square test (Siegel & Castellan 1989). Because the scales used in the study were constructed on the basis of Likert-scale questions, the analyses of the differences between "the persisting group" and "the drop-out group" was done by using the non-parametric Mann-Whitney U test (Siegel & Castellan 1989).

When modelling the risk of dropping out using the scales of study experiences and the background information as predictors, the logistic regression analysis with forward selection method (Hosmer & Lemeshow 1989) was applied. The logistic regression analysis was also used to study the effect of the non-response on the results of the questionnaires. Dropping out after the first year (autumn 1996) was predicted with variables obtained from the first questionnaire in autumn 1995. Dropping out between the second and fourth years (until autumn 1998) was predicted with variables obtained from the second questionnaire in autumn 1996.

The students' study achievements were measured as a grand mean of their main subject course grades. In this research two different methods were used to build a model for predicting study achievements: the multiple linear regression analysis (Weisberg 1985) and the logistic regression analysis mentioned above. When the linear regression analysis was applied (with the Enter method), the predictors were constructed as mean scales (all three measurements) of study experiences, emotions and satisfaction. When the logistic regression analysis was used, the grand mean of study achievements was classified into two categories ("satisfactory/good" and "excellent"). The predictors in the logistic regression analysis were partly the same (mean scales) as in the linear regression analysis but some categorical predictors (respondents' sex and parents' education, for example) were also added to the model.

In each phase of the study the possible influence of the non-response on the results was analysed by using the logistic regression analysis. In these analyses no factors that systematically had predicted the non-response could be found, thus indicating that the results presented in this research are non-biased.

4.4 THE VALIDITY OF THE STUDY

The link between the theoretical problem and the empirical findings involves the question of validity. Traditionally the internal validity of a study is referred to as a measure of the extent to which we are measuring what we think we are. The "types of validity" have traditionally been named as content validity, criterion-referenced validity and construct validity. Some researchers (e.g., Linn & Gronlund 1995, 47–50; Nummenmaa et al. 1997, 203), however, view validity as a unitary concept, which subsumes all traditional types of validity. Instead, we can distinguish between different ways of providing evidence about validity and these means are to be seen as complementary and interrelated rather than distinct validation methods.

So, validity concerns the plausibility of the relationship between the indicator variables that constitute the findings and the concept variables that constitute the problem. All research should incorporate

an argument which attempts to establish this relationship. This argument may or may not include statistical measures of validity, depending on the type of the argument we are interested in. (Brown & Dowling 1998, 143.)

Nummenmaa and others (1997, 203) have noted that validity is not only an attribute of the instrument of the study but it describes the conclusions we draw from our data. By definition, validity means appropriateness, meaningfulness and usefulness of the inferences we draw from the results of the study. In other words, the question to be put here is how the research justifies the empirical measurement of its theoretical propositions, or alternatively, how the research justifies the theoretical interpretation of its empirical findings.

Construct validity, perhaps the most problematic of validity considerations, is used extensively in the validation of different types of questionnaires used to measure students' study experiences (e.g., Ramsden 1991; Wilson & Lizzio 1997). Construct validity refers to the degree to which an instrument measures the particular theoretical construct it purports to measure and not any other constructs. We have constructed our instruments on the basis of previous research, which finds these measures quite reliable and valid. On the other hand, when an instrument has construct validity, the results of the study should be consistent with the predictions or hypotheses made on the basis of theory (Cronbach 1990, 179; Kline 1986). The results of our study will show that we can roughly find the anticipated interrelationships between the variables we used to measure students' entry characteristics, their perceptions of the learning environment and outcome variables, i.e., general satisfaction, academic success and dropping out. However, some of the relationships were difficult to model and indicate statistically.

In order for an instrument to be valid, it must be reliable. High reliability is a necessary but not a sufficient condition for the study to be valid (Linn & Gronlund 1995, 82). In our study the reliability estimates are, with a few exceptions, quite good, so we can be quite confident of the results and conclusions drawn upon them.

4.5 THE RELIABILITY OF THE STUDY

Various authors (e.g. Nunnally 1978) have offered guidelines regarding minimum levels of acceptable reliability coefficients. Nunnally (1978) argued that relatively low reliability coefficients around 0.60 are tolerable in early stages of research, but that coefficients of 0.70 and above are required when the measures are used to determine differences among groups. Reliability estimates of the scales for each stage of the study are presented in Table 2. From the table we can see that the Cronbach's alpha coefficients (Cronbach 1990; Nummenmaa et al. 1997) as measures of the internal consistency of the scales are quite satisfactory ranging from .60 to .89. We can also see that alpha coefficients are quite permanent over the research period. The measurement of emotional study experiences, i.e., positive and negative emotions aroused by the learning environments, was the most reliable while that of study orientations was the least reliable.

TABLE 2. RELIABILITY ESTIMATES OF THE SCALES IN 1995, 1996, AND 1998 MEASUREMENTS

Scale	Reliability coefficients (Cronbach's alpha)		
	1995	1996	1998
Occupational orientation	0.62	-	-
Academic orientation	0.60	-	-
Positive study experiences	0.86	0.89	0.89
Negative study experiences	0.87	0.87	0.88
Traditionality of teaching	0.70	0.69	0.63
Integration to department	0.72	0.70	0.70
Satisfaction at teaching	0.84	0.81	0.85
Satisfaction at tutoring	0.65	0.65	0.69

5 THE RESULTS

5.1 THE CHANGES IN STUDY EXPERIENCES

In the first part of the results we concentrate on the changes in students' study experiences. Some of the results have been reported and discussed in Rautopuro & Väisänen (2000b). The changes in positive and negative study experiences in different faculties during the study period are shown in Figures 2 and 3. In Figure 2 we can find that there is a slight decrease in positive experiences, only the Faculty of Sciences has an opposite trend. However, the changes are very small and the only statistically significant change ($p = 0.005$) has occurred at the Faculty of Education after autumn 1996.

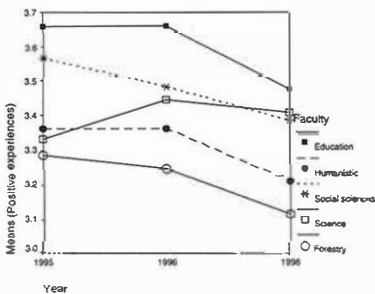


FIGURE 2. CHANGES IN POSITIVE STUDY EXPERIENCES

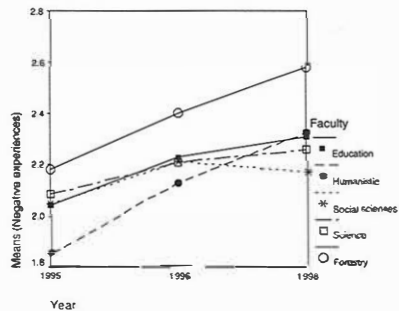


FIGURE 3. CHANGES IN NEGATIVE STUDY EXPERIENCES

The changes in negative study experiences (Figure 3) confirm the trend in positive experiences. There seems to be a slight increase in negative experiences during the study period. As in the case of positive experiences the changes are quite small. The change that has taken place at the Faculty of Education during the period is statistically significant ($p = 0.003$). Also the change at the Faculty of Humanities is significant ($p = 0.007$).

In his study of perceived stress among university students, Rocha-Singh (1994) suggested that there are many factors that “create a picture that is overwhelming to the first-year graduate student”. These include time constraints, financial strain, academic workload, and interpersonal difficulties with faculty, peers, and significant others. The affective learning activities, which the students employ to cope with emotions that arise during learning, lead to a mood that may have a positive, neutral or negative effect on the learning processes. One way of improving learning is to generate, maintain and restore positive feelings of self-confidence and commitment, and to help people cope with negative emotions, such as anxiety, fear, anger, stress, uncertainty, doubt, frustration, and helplessness. (See Snow, Como & Jackson 1996.)

The changes in students’ opinions concerning **traditionality of teaching** are shown in Figure 4. In the figure we can see that students have found teaching more and more traditional during the studies,

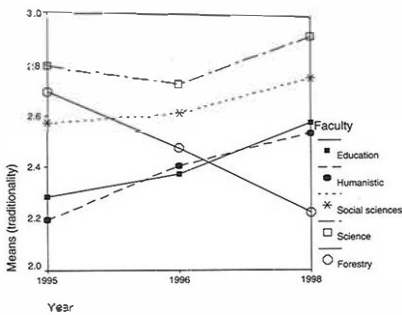


FIGURE 4. CHANGES IN THE TRADITIONILITY OF TEACHING

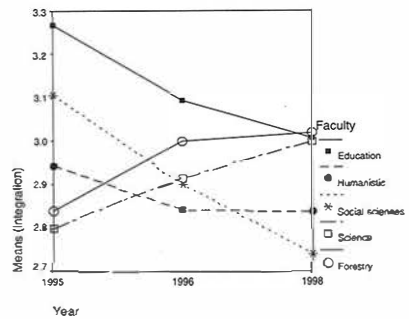


FIGURE 5. CHANGES IN INTEGRATION TO DEPARTMENT

with the exception of the Faculty of Forestry. Once again the only statistically significant changes occur at the Faculty of Education ($p = 0.000$) and at the Humanities Faculty ($p = 0.000$). The seemingly obvious change at the Faculty of Forestry is not statistically significant due to the small number of students at the faculty.

The changes in students' **integration into their own departments** (Figure 5) do not show as clear a trend as the other scales of study experiences. At the Faculties of Forestry and Science the students' integration seems to increase during studies and at the other three faculties the trend is the opposite. Statistically significant changes (decrease) have occurred at the Faculty of Education ($p = 0.011$) and also at the Faculty of Social Sciences ($p = 0.010$). The increasing trends in integration into one's department at the Faculty of Science ($p = 0.072$) and at the Faculty of Forestry ($p = 0.187$) are not statistically significant.

The changes in **satisfaction at teaching** are shown in Figure 6. Although the changes, once again, are quite small, some statistically significant changes can still be found. The declining trend during the whole research period (from 1995 to 1998) at the Faculty of Education is statistically significant ($p = 0.006$). At the Faculty of Humanities the decline during 1995 and 1996 is significant ($p = 0.018$). Also the decline in the whole research period (from 1995 to 1998) is significant

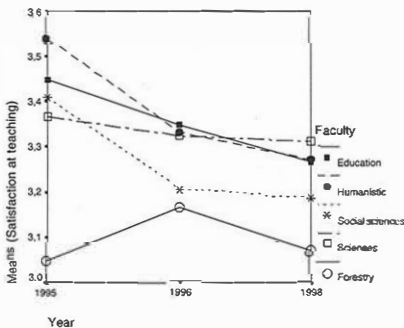


FIGURE 6. CHANGES IN THE SATISFACTION AT TEACHING

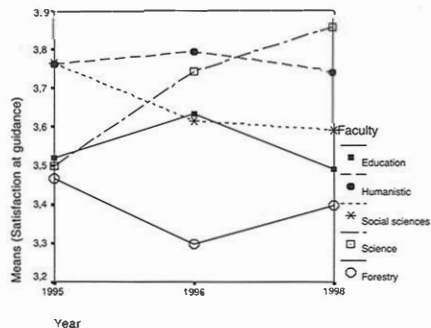


FIGURE 7. CHANGES IN THE SATISFACTION AT TUTORING

($p = 0.006$). The changes that have occurred at other faculties are not statistically significant.

The changes in students' **satisfaction at tutoring** (Figure 7) show that the only statistically significant change ($p = 0.003$) is the increasing trend that has taken place at the Faculty of Science during the whole research period (from 1995 to 1998). Otherwise, the changes are negligible. At the Faculties of Education and Humanities, for example, the satisfaction is almost permanent during the research period.

Although the comparison of the study experiences and emotions between the different faculties is a complex task due to the differences in student and faculty cultures (Kuh 1993), some obvious differences can be seen. Because of this complexity we considered statistical testing of the differences between the faculties irrelevant. Despite of the clear decrease (see Figure 2) in the positive study experiences at four of the five faculties (statistically significant at two faculties), for example, the mean scores are highest at the Faculty of Education and lowest at the Faculty of Forestry during the whole research period. The mean scores, however, remain on the "positive" side of the theoretical mean (scale mean equals to 3.00) at every faculty.

Different kind of trend can be seen in Figure 5. The students' integration to their own department increases remarkably at the Faculties of Science and Forestry. At the other faculties the development is totally opposite. At the beginning of studies the students' sense of integration is clearly highest at the Faculty of Education (mean = 3.28) and lowest at the Faculty of Sciences (mean = 2.80) and at the Faculty of Forestry (mean = 2.82). At the end of the research period (fourth study year) the mean scores at all these faculties equal (mean = 3.00).

5.2 STUDENT SATISFACTION AND STUDY ACHIEVEMENTS

5.2.1 THE PREDICTORS OF STUDENT SATISFACTION

To predict the students' satisfaction with the reception to the university and the overall satisfaction at the beginning and at the end of their studies the multinomial regression analysis (see chapter 4.3) was applied. The results of the analysis (the final models) are shown in Tables 3–5.

TABLE 3. PREDICTING THE SATISFACTION WITH THE RECEPTION TO THE UNIVERSITY

<u>Dependent variable:</u> Satisfaction with the reception to the university (reference category: high satisfaction)				
Independent variables	Coefficient	Std. Error	p-value	Odds-ratio
<u>Low satisfaction:</u>				
Faculty				
Education	0.476	0.939	0.612	1.610
Humanities	1.812	0.932	0.052	6.125
Social sciences	1.112	0.959	0.246	3.041
Sciences	0.634	0.907	0.485	1.885
Forestry	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Positive study experiences	-0.634	0.299	0.034	1.883
Satisfaction at teaching	-1.352	0.377	0.000	3.861
Traditionality of teaching	0.635	0.264	0.016	1.886
Academic orientation	0.517	0.283	0.068	1.676
Satisfaction at guidance	-0.773	0.276	0.005	2.164
<u>Moderate satisfaction:</u>				
Satisfaction at teaching	-0.517	0.282	0.067	1.678
Overall Classification Percentage = 56.3%				

On the basis of Table 3 we can draw the conclusion that the main factors of satisfaction at the beginning of the studies are the satisfaction at teaching ($p = 0.000$), the satisfaction at information services ($p = .005$) and positive study experiences ($p = 0.034$). When studying the multinomial regression coefficients more closely we can see that those students who have positive study experiences and who consider that their teaching and information services are sufficient are not very likely to have low satisfaction with the reception to the university. Those students who find their teaching traditional ($p = 0.016$) and those who are research orientated ($p = 0.068$) are more likely to rate their satisfaction with the reception to the university low. The regression coefficients for each faculty also have an interesting pattern. Although the differences between faculties are not statistically significant it seems that the students at the Humanities Faculty ($p = 0.052$) are more likely to rate their satisfaction low at the beginning.

From Table 4 we can see that some factors that predict the overall satisfaction at the beginning are partly the same as those that predict the satisfaction with the reception to the university, i.e., satisfaction at teaching and the traditionality of teaching. However, some interesting differences can also be seen. According to these data, those students whose mothers have less formal education, are less likely to give low or moderate scores in overall satisfaction at the beginning of their studies than the students whose mothers have a university degree. According to the odds ratios, students with highly educated mothers have an over three times greater risk to give lower scores in satisfaction than students whose mothers have less education.

The results in Table 5 are quite interesting when we compare them with the conclusions drawn from Tables 3 and 4. The differences between the faculties in overall satisfaction at the end of the studies are obvious and statistically significant. Students studying at the Faculties of Education, Humanities and Social Sciences are much more likely to give low or moderate scores in satisfaction than the students at the Faculties of Sciences or Forestry. The main factor that predicts the overall satisfaction is the satisfaction at teachers' tutoring. Those students who are satisfied with the tutoring are not likely to give low or moderate scores.

TABLE 4. PREDICTING THE OVERALL SATISFACTION AT THE BEGINNING

<u>Dependent variable:</u> Overall satisfaction at the beginning (reference category: high satisfaction)				
Independent variables	Coefficient	Std. Error	p-value	Odds-ratio
<u>Low satisfaction:</u>				
Faculty				
Education	2.215	1.194	0.064	9.157
Humanities	1.270	1.178	0.281	3.560
Social sciences	0.812	1.204	0.500	2.253
Sciences	-0.473	1.129	0.675	1.605
Forestry	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Mother's education				
Elementary school or less	-1.542	0.713	0.030	18.903
Less than high school	-1.410	0.678	0.037	15.458
High school	1.433	1.346	0.287	4.190
University	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Satisfaction at teaching	-4.093	0.550	0.000	59.916
Traditionality of teaching	0.768	0.331	0.020	2.156
<u>Moderate satisfaction:</u>				
Mother's education				
Elementary school or less	-1.204	0.551	0.029	3.330
Less than high school	-1.103	0.511	0.031	3.102
High school	-1.177	1.106	0.287	3.247
University	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Positive study experiences	-0.576	0.317	0.070	3.202
Satisfaction at teaching	-1.705	0.386	0.000	11.57
Overall Classification Percentage = 67.7 %				

TABLE 5. PREDICTING THE OVERALL SATISFACTION AT THE END OF THE STUDIES

<u>Dependent variable: Overall satisfaction at the end</u> (reference category: high satisfaction)				
Independent variable	Coefficient	Std. Error	p-value	Odds ratio
<u>Low satisfaction:</u>				
Faculty				
Education	4.256	1.581	0.007	70.540
Humanities	6.193	1.752	0.000	489.323
Social sciences	5.081	1.896	0.007	160.929
Sciences	3.198	1.643	0.052	24.482
Forestry	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Positive study experiences (mean)	-1.807	0.882	0.040	1.082
Satisfaction at tutoring (mean)	-3.656	1.051	0.001	38.759
<u>Moderate satisfaction:</u>				
Faculty				
Education	4.200	1.397	0.003	176.648
Humanities	4.518	1.547	0.003	556.827
Social sciences	4.924	1.675	0.003	366.939
Sciences	2.314	1.451	0.111	61.398
Forestry	r*	r*	r*	r*
<i>(r* = parameter is redundant; set to zero)</i>				
Satisfaction at tutoring (mean)	2.616	0.946	0.006	13.676
Overall Classification Percentage = 71.7%				

5.2.2 THE PREDICTORS OF STUDENTS' STUDY ACHIEVEMENTS

Predicting the students' study achievements turned out to be a very difficult task. In this presentation the students' study achievements are measured as mean grades of the main subject courses (continuous variable scaled from 0.75 to 3.00). First, the multiple linear regression analysis (Weisberg 1985) was applied. The predictors were the means of the scales of study orientations, study experiences and emotions during the study period. Second, some categorical predictors (respondents' sex and parents' education, for example) were added to the model, and the mean grades were classified into two categories (0 = satisfactory/good, 1 = excellent). In this situation the dependent variable is a dichotomy and the logistic regression analysis (Hosmer & Lemeshow 1989) was applied. The results of the linear regression analysis are shown in Table 6 and the results of the logistic regression analysis in Table 7.

The main predictors (statistically significant and nearly significant) for mean grades are presented in Table 6. However, the linear regression analysis does not work very well in predicting study achievements. As the table shows, the goodness-of-fit statistics (R-squares) are quite low and statistically significant and "reasonable" predictors can hardly be found. The interpretation of the results is quite confusing, too. According to the results, the academic orientation, for example, seems to have a positive association with study achievements at the Faculty of Education and a negative association at the Faculty of Science. The only statistically significant predictors can be found at the Faculty of Education. However, since there are a lot of students at the faculty their "practical significance" is quite small.

The confusing results of the linear regression analysis may be due to the multicollinearity (e.g., Berry & Feldman 1985, 43) between predictors (in fact, some quite high correlations can be found), but the another reason for the failure of the analysis is that the relationship between study achievements and predictors may not be linear in nature. This analysis was, however, used for comparison between the present and the previous research.

The logistic regression analysis seems to fit the data better than the linear regression analysis although the classification of the mean

TABLE 6. THE RESULTS OF THE LINEAR REGRESSION ANALYSIS

<u>Dependent variable: Mean grade of main subject courses</u>			
<u>Independent variable</u>	<u>Coefficient</u>	<u>Std. Error</u>	<u>p-value</u>
Whole university (F = 1.907, p = 0.045, R-square = 0.077)			
Positive study experiences (mean)	0.054	0.038	0.150
Integration into department (mean)	-0.069	0.042	0.104
Satisfaction at teaching (mean)	0.095	0.058	0.103
Faculty of Education (F = 1.815, p = 0.072, R-square = 0.191)			
Academic orientation	0.037	0.020	0.067
Occupational orientation	-0.052	0.025	0.039
Integration to own department (mean)	0.102	0.044	0.024
Satisfaction at teaching (mean)	-0.142	0.064	0.028
Commitment (mean)	-0.122	0.044	0.006
Faculty of Humanities (F = 0.923, p = 0.519, R-square = 0.139)			
Satisfaction at tutoring (mean)	0.133	0.089	0.140
Overall satisfaction (mean)	0.093	0.064	0.150
Faculty of Social Sciences (F = 0.892, p = 0.556, R-square = 0.288)			
Traditionality of teaching (mean)	-0.188	0.111	0.106
Overall satisfaction (mean)	-0.147	0.104	0.171
Faculty of Science (F = 2.602, p = 0.015, R-square = 0.388)			
Academic orientation	-0.123	0.069	0.081
Negative study experiences	-0.134	0.088	0.134
Integration into department (mean)	-0.280	0.145	0.060

TABLE 7. THE RESULTS OF THE LOGISTIC REGRESSION ANALYSIS

<u>Dependent variable:</u> Classified grade of main subject courses			
Independent variable	Coefficient	p-value	Odds ratio
Whole university (overall classification percentage = 84.1%)			
Traditionality of teaching (mean)	0.814	0.083	2.257
Satisfaction at teaching (mean)	1.334	0.141	3.779
Parents' education		0.036	
Education (low)	-0.375	0.525	0.687
Education (medium)	-1.959	0.017	0.141
Faculty of Education (overall classification percentage = 93.2%)			
Academic orientation	-1.904	0.028	0.149
Integration into department (mean)	2.731	0.069	15.343
Commitment (mean)	-3.295	0.019	0.037
Faculty of Humanities (overall classification percentage = 86.7%)			
Satisfaction at teaching (mean)	4.513	0.109	91.179
Sex (male)	3.311	0.107	27.422
Parent's education		0.163	
Education (low)	-3.291	0.063	0.037
Education (medium)	-5.017	0.143	0.007
Faculty of Social Sciences (overall classification percentage = 88.9%)			
Positive study experiences (mean)	5.704	0.068	30.020
Satisfaction at teaching (mean)	2.890	0.089	15.313
Satisfaction at tutoring (mean)	3.160	0.075	22.481
Faculty of Science (overall classification percentage = 89.2%)			
Negative study experiences (mean)	-2.638	0.034	0.072
Traditionality of teaching (mean)	1.753	0.039	5.770
Commitment (mean)	2.348	0.125	3.224

grade is arbitrary. The overall classification percentages are generally quite high and statistically significant predictors (qualitative and quantitative) can be found. Most of the statistically significant (or almost significant) predictors also have some practical significance.

According to the logistic regression coefficients and odds ratios in Table 7, positive study experiences, integration of students into their own department, the satisfaction at teaching and satisfaction at tutoring seem to increase “the risk” of excellent grades. Negative study experiences, on the other hand, reduce “the risk” of excellent grades.

A few other interesting predictors can also be found. At the Faculty of Humanities, for example, it is more likely that male students get excellent grades than females. Those students whose parents have high formal education also seem to get excellent grades more likely than those students whose parents have less education. The same trend with the parents’ education can be seen at the level of the whole university, too. On the basis of research in the USA (Teachman et al. 1997), students’ study achievements and dropping out are clearly correlated with their families’ economical status, which in turn interrelates with the social and human capital of the family. Both social and academic adaptation to education and the resulting involvement with studying have proved to be important predictors of study achievements (Olkinuora & Mäkinen 1999, 11; Rumberger & Larson 1998).

The influence of commitment is also interesting. At the Faculty of Science the commitment increases the probability of getting excellent grades, but at the Faculty of Education the connection is quite the opposite. The result at the Faculty of Education was interpreted in a more detailed analysis (Rautopuro & Väisänen 2000e) to be related to the fact that those teacher education students who are not committed to their studies at the Faculty are more academically oriented than the committed students whose orientation is more vocational.

In interpreting the above results in Tables 6 and 7, however, a possible source of error to be taken into account is the measurement of study achievements. The course grades were taken from the student records which do not include number of trials or failures in exams, for example. Only the final grades are registered.

5.3 DROPPING OUT

5.3.1 THE PREDICTORS OF DROPPING OUT AT THE BEGINNING OF STUDIES

The rates of presence and dropping out of the student cohort of 1995 are shown in Table 8. As we can see from the table, 141 students (15.4 %) dropped out during the first year, which is in line with previous research (Murtaugh et al. 1999; Tinto 1993). Dropping out in the first year of the studies was most likely to occur in the Faculties of Science and Social Sciences. The difference between the faculties is statistically significant ($p = 0.000$).

The same trend that was observed after the first year continued in the next two-year period. Out of those 775 students who continued their studies after the first year, 111 (14.3 %) dropped out during the second and third years of the studies. Also during this period, the difference between the faculties was statistically significant ($p = 0.000$). Once again, dropping out was most likely to take place in the Faculties of Science and Social Sciences. In addition to these two faculties, the Faculty of Humanities had quite a high percentage of drop-outs. As compared to the drop-out rate of 27 % of the student cohort of 1985

TABLE 8. THE PRESENCE OF THE STUDENT COHORT OF 1995 IN AUTUMN 1996 (N = 775) AND IN AUTUMN 1998 (N = 584)

Faculty	Presence 1996		Presence 1998		Graduated
	Present	Drop-out	Present	Drop-out	
Education	280	19 (6.4 %)	187	22 (7.9 %)	71 (25.4 %)
Humanities	188	29 (13.4 %)	155	29 (15.4 %)	4 (2.1 %)
Social sciences	103	27 (20.8 %)	82	17 (16.5 %)	4 (3.9 %)
Sciences	172	63 (26.8 %)	132	39 (22.7 %)	1 (0.6 %)
Forestry	32	3 (8.6 %)	28	4 (12.5 %)	0 (0.0 %)
Total	775	141 (15.4 %)	584	111 (14.3 %)	80 (10.3 %)
	Chi-square = 47.1 df = 4 (p = 0.000)		Chi-square = 118.8 df = 4 (p = 0.000)		

at the university of Joensuu (Pajala & Lempinen 2001), the figures are quite the same in this study.

The means and standard deviations of the variables used in predicting dropping out during the first year of the studies are presented in Table 9. The range of study experiences, orientations and emotions is 1–5. The indicators of satisfaction are expressed by numbers 4–10 (the Finish scale of school marks). The differences between the “present” group and the “drop-out” group in single predictors are measured using the Mann-Whitney U test, and the p-values are reported in the table. From Table 9 we can quite clearly see that the most important factors that decrease dropping out are positive study experiences ($p = 0.000$) and the students’ integration to their own department ($p = 0.003$). Those students who drop out have fewer positive study experiences and feel less integrated academically (cf., Tinto 1975; 1987) than the students who continue their studies at the university. The difference, however, is relatively small.

In Table 10 the relationship between dropping out and the students’ commitment and the parents’ education is presented. The relationship between commitment and dropping out is obvious ($p = 0.000$). Students with a high commitment are more likely to continue their studies at the university than those who have a low commitment

TABLE 9. THE MEANS AND STANDARD DEVIATIONS FOR THE SCALES OF STUDY EXPERIENCES IN AUTUMN 1995

Variable	Mean		Standard deviation		p-value
	Present	Drop out	Present	Drop out	
Overall satisfaction	7.91	8.03	0.95	0.79	0.366
Satisfaction with the reception	8.34	8.19	0.97	1.03	0.344
Occupational orientation	3.43	3.30	0.84	1.09	0.477
Academic orientation	3.88	3.67	0.66	0.85	0.063
Positive study experiences	3.47	3.07	0.63	0.73	0.000
Negative study experiences	1.99	2.17	0.66	0.79	0.085
Traditionality of teaching	2.46	2.54	0.72	0.77	0.449
Integration into department	3.01	2.78	0.62	0.64	0.000
Satisfaction at teaching	3.42	3.33	0.58	0.60	0.325
Satisfaction at tutoring	3.59	3.55	0.62	0.63	0.880

TABLE 10. THE LEVEL OF COMMITMENT AND THE LEVEL OF PARENTS' EDUCATION FOR THE STUDENT COHORT OF 1995

Commitment	Present		Drop-out		Parents' education	Present		Drop-out	
	Low	72	(11.5 %)	38		(40.9 %)	Low	279	(58.6 %)
Medium	215	(34.3 %)	31	(33.3 %)	Medium	147	(30.9 %)	16	(23.2 %)
High	340	(54.2 %)	24	(25.8 %)	High	50	(10.5 %)	4	(5.8 %)
Missing	196				Missing	371			
Total	916				Total	916			
Chi-square = 58.7, df = 2 (p = 0.000)					Chi-square = 4.1, df = 2 (p = 0.130)				

(cf., Bean & Metzner 1985; Tinto 1975; 1987). The influence of the parents' education on dropping out is not so obvious. Although it seems that dropping out is more likely when the parents' educational level is low (cf., Liljander & Määttä 1994, 115) or they are first-generation students in higher education (Hoyt 1999), the influence is not statistically significant in the present data ($p = 0.130$).

All the variables presented in Tables 9 and 10 were used as covariates (independent variables) when the logistic regression analysis was applied to predict dropping out after the first study year. The results of the analysis are shown in Table 11.

TABLE 11. THE RESULTS OF LOGISTIC REGRESSION ANALYSIS

Dependent variable: Dropping out during the first study year				
Variable	Coefficient	Standard error	p-value	Odds ratio
Commitment				
(Redundant: High commitment)				
Low	1.294	0.393	0.001	3.649
Medium	0.530	0.338	0.118	1.699
Positive study experiences	-0.488	0.211	0.021	0.613

From Table 11 we can see that the most important variables to predict dropping out after the first year are the students' commitment and their positive study experiences. In spite of some other significant differences between the groups (see Table 9) in single variables, these were excluded from the prediction model because of the strong interrelationships between the predictors. Compared with the students with a high commitment the odds ratio for dropping out for the students with a low commitment is 3.649, which means that they are more likely to drop out. This factor is statistically significant ($p=0.001$). The influence of positive study experiences is also statistically significant ($p=0.021$). Positive study experiences reduce the risk of dropping out (cf, Tinto 1993).

5.3.2 THE PREDICTORS OF DROPPING OUT AFTER THE SECOND YEAR OF STUDIES

The same variables were also measured (and the same scales were built) in the second phase of the study autumn 1996 and were used to predict dropping out during second and third study years. The ranges for these scales were the same as presented in Table 9. The means, standard deviations and p-values (Mann-Whitney U test) for each predictor are shown in Table 12. The students' level of

TABLE 12. THE MEANS AND STANDARD DEVIATIONS FOR SCALES OF STUDY EXPERIENCES IN AUTUMN 1996

Variable	Mean		Standard deviation		p-value
	Present	Drop out	Present	Drop out	
Overall satisfaction	7.84	7.43	0.82	0.93	0.000
Positive study experiences	3.47	3.05	0.68	0.73	0.000
Negative study experiences	2.20	2.32	0.69	0.77	0.240
Traditionality of teaching	2.51	2.72	0.67	0.71	0.031
Integration into department	2.96	2.56	0.57	0.69	0.000
Satisfaction at teaching	3.28	3.05	0.57	0.59	0.006
Satisfaction at tutoring	3.64	3.43	0.66	0.57	0.006

commitment and parents' education for the remaining 775 students are shown in Table 13 and the results of the logistic regression analysis are presented in Table 14.

As we can see from these tables, the variables that predict dropping out during and after the first year are not exactly the same.

On the basis of Table 13 it seems quite obvious that the reasons for dropping out during the second and third years are more closely connected with teaching (satisfaction with teachers and guidance, for example) than during the first study year. This result was also supported by the qualitative data as we can see in the chapter 5.3.3.

Some similarities can also be found between the year courses. Those students who are still present have a higher commitment and feel greater integration to their own department than the students in the "drop-out" group (Tables 13 and 14).

TABLE 13. THE LEVEL OF COMMITMENT AND THE LEVEL OF PARENTS' EDUCATION FOR THE STUDENTS IN AUTUMN 1996

Commitment	Present	Drop-out	Parents' education	Present	Drop-out
Low	39 (8.5 %)	16 (26.3 %)	Low	211 (58.0 %)	35 (58.3 %)
Medium	141 (30.7 %)	29 (47.4 %)	Medium	110 (30.2 %)	21 (35.0 %)
High	279 (60.8 %)	16 (26.3 %)	High	43 (11.8 %)	17 (6.7 %)
Missing	255		Missing	351	
Total	775		Total	775	
Chi-square = 21.3, df = 2 (p = 0.000)			Chi-square = 1.61, df = 2 (p = 0.446)		

Table 14 shows the results of the logistic regression analysis where dropping out during the second and third years is the dependent variable and variables introduced in Tables 11 and 12 are used as independent variables.

TABLE 14. THE RESULTS OF THE LOGISTIC REGRESSION ANALYSIS

<u>Dependent variable: Dropping out during the second and third study year</u>				
Variable	Coefficient	Std. Error	p-value	Odds ratio
Commitment				
(Redundant: High commitment)				
Low	1.817	0.445	0.000	6.156
Medium	0.837	0.382	0.028	2.309
Integration into department				
	-0.925	0.298	0.019	0.396

As we see, those students who have a low or medium level of commitment are more likely to drop out of their studies at the university. This factor is statistically significant. On the basis of the odds ratios we can see that the students with a low commitment have an over six times greater probability to drop out and the students with a medium commitment an over two times greater probability to drop out than the students with a high commitment. The conclusion is quite the same as the one made in the first phase of the study (Table 11). Another statistically significant variable to predict dropping out is the students' integration to their own department ($p = 0.019$). According to the regression coefficient and the odds ratio, the students who feel integrated in their own departments are less likely to drop out than the students with weak feeling of integration (cf, Bean & Metzner 1985; Cabrera et al. 1992; Tinto 1987; 1993).

Worth a notice here is also Pascarella and others' (1993) study of the degree persistence of 825 students from 85 different community colleges over a nine-year period. Academic and social integration were significant predictors of persistence for males and females. The socio-economic status was an important factor for females, and institutional commitment or satisfaction was significant for males. Less than 26 % of the variation in degree attainment was explained in the study.

5.3.3 SELF-REPORTED REASONS FOR DROPPING OUT

In autumn 1998 the drop-out students were sent a questionnaire consisting of two open-ended questions: *“Do you carry on your studies at the moment? If you do, what and where do you study?”* and *“What were the reasons that influenced your decision to change the institution or quit your studies at the University of Joensuu?”*

In this part of the report we try to describe qualitatively the students' self-reported reasons for dropping out. As many as 84 (33.3 %) of the students classified as drop-outs ($n = 252$) answered our questionnaire. Eighty-seven percent ($f = 73/84$) of them were studying at the given moment and thirteen percent were outside education. The following **reasons for not studying** were mentioned: going out to work, economic situation, lack of motivation, and maternity. Two of these students could be classified temporary **“stop-outs”** because they were going to come back to university to complete their degrees. One student's reason for not studying was his intention to clarify his motives: *“I don't know whether I stopped out or dropped out, we will see”*.

Sixty-two (85.0 %) of the students who were studying ($f = 73$) at the moment, the so called **transfer students**, studied at another university while 15 % studied in polytechnics. About half of the students (48.3 %) who studied at another university had the same major as before their transfer.

To the question what their reasons for leaving the University of Joensuu were we got 102 answers, which means that there were one or two causes for dropping out per respondent. The causes can be classified into four clusters: **1) academic reasons** (about 55 %), relating to a) the quality of teaching and learning, lack of opportunities to study a subject of interest, etc., and b) the university or the field of education having been a “wrong choice”, **2) external reasons** (25 %), e.g., location, infrastructure, dislike for the atmosphere of the city, and **3) personal/social/family reasons** (20 %). Also in a study by Bragg (1994), adjustment difficulties, in particular those relating to personal and academic adjustment, and dislike for the university or environment within the university were major impacts for (the new) students to drop out.

A few statements from the data illustrate the point: for example, a student of classroom teacher education writes about his reasons

external to the institution: *"My partner. Joensuu was too far from my home and travelling between home and Joensuu was too expensive for a student."*

A science student described his experience in the following way: *"... besides, I felt Joensuu was not the right town to live in, night life made me depressed, I felt isolated from the outside world"*.

There were also more equivocal students. One student puts it like this: *"In some respects, Joensuu was a nice town; I liked the nature and surroundings, too, but it was so far away from everywhere... The quality of teaching was rather good."*

Similarly, in a study by Bragg (1994) 30 % of the students in a sample offered the university or environment and homesickness as reasons for considering withdrawal.

The university or field of education was a wrong choice for eight students. A student of computer science writes: *"I was disappointed in my major. I was surprised at the theoretical emphasis of the training."* One student was annoyed at not having *"energy to study so vigorously"* that he *"would have progressed on the level required at the university"*. A student of the Faculty of Humanities was disappointed in the university because *"its atmosphere is so dull and dry, while people in polytechnics are much more friendly and social"*.

From these quotations we can see that these students were disappointed. This is in line with Bean's (1985, 61) findings that learning experiences that lead to a sense of accomplishment rather than frustration should help increase persistence. Kember (1995) found in his adult learner model that those students who experience external pressures and competing motives, on the one hand, and academic incompatibility, on the other, will be less likely to perform satisfactorily in their final grade point average score and drop out of studies.

When we took a closer look at the **academic causes** (f = 49) for dropping out, causes related with the teaching and opportunities to study the desired subjects, we found that 1) twenty-six students (53 %) wanted to change their major or their field of studies; 2) more suitable minors and a much wider supply of courses tempted seventeen students to move (35 %), and 3) six students (12 %) had found the teaching and atmosphere poor.

Most of those students who had changed their majors had at first taken a secondary choice because they had not gained entry in the

field of studies they had originally desired, or because they had enrolled in the university of Joensuu to prepare for other studies. A student of physics wrote about his dreams that came true: *"I managed to get in the faculty of medicine, which was my primary aim from the very beginning. I came to Joensuu to prepare myself for its (medicine) entrance examination."*

In addition to these "pull effects," we could interpret some statements as reflecting both pull and "push effects" (e.g., Terenzini et al. 1994) caused by the student's previous studies. A student of translation and interpretation studies declared: *"I got extremely interested in my present field of education (cultural anthropology). My previous department gave me the impression of an institution with provincialism where the opportunities to study minor subjects were very restricted. To study languages did not give me satisfaction – I wanted to learn about human beings."*

Students who left the university of Joensuu to have a wider choice of minor subjects and optional courses in other universities came primarily from humanities and teacher education. A student of classroom teacher education wrote, *"It was not possible to study communication and arts education at Joensuu. It is wise to take your degree out of an institution that offers the best choice of optional courses."*

The last category of academic causes for dropping out reflects the students' dissatisfaction with their departments. As a complaint against instruction one student wrote, *"The study style and atmosphere were oppressive, and teachers were arrogant. In order to get students to stay at the University of Joensuu, it must offer something that is lacking elsewhere."*

Also in a study of Solis (1995) it was found that satisfaction with instruction and academic experiences were related to a student's commitment to attend.

5.4 HOW TO DEVELOP UNIVERSITY TEACHING

5.4.1 PROBLEMS AND WEAKNESSES IN TEACHING AND TUTORING

When defining good teaching, which is not an unambiguous conception as was found in the literature review of this study, the key notion between the teacher and students is one of 'rapport'. This embodies a wide range of research findings on the factors which foster student learning. For example, respect for students, clarity of teaching, constructive feedback, teacher enthusiasm, and intellectual challenge have all been linked with the building of an effective relationship between teachers and students (see, e.g., Ramsden 1992).

When asked what kind of **problems and weaknesses** students (n = 407) saw in their information services and tutoring, there were only 10 % of the students who did not see any problems. In addition, 35.4 % did not answer or give reasons for their answer. Mostly students from the Faculties of Education, Social Sciences and Humanities reported problems in these areas. This problem area was mentioned by 112 students. Typical problems were lack of time for tutoring (f = 30), busy or unattainable tutors (f = 26) and lack of interest and understanding in tutoring (f = 17), for example. In spite of the lack of time and working under pressure, some tutors seem to be quite interested in tutoring students, as a student of teacher education states it: *"Generally the lack of time, i.e. money, teachers are attainable quite well, but they are always busy with too many responsibilities and don't have time enough for individual tutoring. Usually they do not lack willingness to do it"*.

The experience of another teacher education student was somewhat different: *"In our department tutoring is good as long as you manage to get it. Usually teachers are, however, bad-tempered when you want to consult them or they don't have time for tutoring"*.

A student of social sciences wrote as follows: *"Teachers don't seem to be interested in their students' affairs; on the contrary, they are interested in their own projects"*.

The teachers' difficulties in finding the same language with the students and understanding the students' points of view were quite common as a student of humanities and a student of sciences said: *"It is difficult for professors to explain things clearly to students without*

hiding behind the roles and terminology or slang of their profession". The problem is that nobody understands the pressures of students. Some teachers simply are competent tutors, while others are not."

Another group of problems, the problems with information services, was mentioned by 109 students and could be divided into the following categories: late announcements of changes, e.g., in classes (f = 19), crammed and cluttered notice boards (f = 19), weak electronic (e.g., e-mail) communication (f = 12) and general confusion in information (f = 55), e.g., incoherence and lack of coordination and cooperation between responsible people.

5.4.2 THE IMPROVEMENT OF TEACHING

In the data there were 414 suggestions as to how to **improve teaching** at the university. These statements were analysed qualitatively and classified into thirteen categories. Some of the most frequently mentioned issues are presented here with a few illuminating examples from students free comments (Patton 1990). The requirement of students (f = 104) to increase the number of **optional courses and the variety of course provision** was the most general wish (25 %). A student of translation studies writes: *"More optional courses. More courses on translation in literature and media translation. What kind of professionals will we be if we pass the courses by just reading books?"*

Also the wishes to promote **vocational relevance** (13 %) and **practicality or usefulness** (12 %) of teaching were very common: *"Have been talking with my friends many times. Such a useless course, but still compulsory and difficult. Teaching should be more concrete, less focussed on research."* (a student of computer science).

The **improvement of teaching methods** (12 %) and the pedagogical competence of the teachers (10 %) were quite common wishes: *"I wish to find more teacher-student interaction. Modern methods should be used."* (biology). *"Transparency courses (drills) should be forbidden by law. Real learning instead: discussion, different points of view, criticism."* (teacher education). *"More inspiring and socially gifted teachers."* (teacher education).

In addition, the respondents wanted more flexibility in curricula and their personal needs to be taken into account (7.0 %), organisation

of teaching to be improved (7.0 %) and teachers to deal more extensively with their topics and integrating them (5.6 %). The improvement of tutoring (3.4 %) and cooperation between the departments (1.7 %) were also mentioned.

6 CONCLUSIONS AND DISCUSSION

6.1 STUDENT SATISFACTION AND CHANGES IN STUDY EXPERIENCES

This study tried to summarise the main findings of a larger research and development project that aimed at providing background information for developing teaching at the University of Joensuu. The scientific purpose of the study was to examine a student cohort's study experiences, satisfaction with the learning environment and changes in them during the four years of studies, on the one hand, and the influence of these factors and some background variables on learning outcomes and persistence in studies, on the other. The results are shown as arithmetic means concerning the whole faculties, so the influence of one single teacher or even one single department does not show in them. The most obvious result concerning the changes in study experiences is that they show a slightly negative trend during the study period. Although the study experiences measured in this research are on the "right side of the mean" and some differences between the faculties exist, the changes cannot be ignored. When interpreting the results, the reader has to bear in mind that we are dealing with the students' own perceptions of teaching and tutoring, and not with 'objective' facts. This differential, reciprocal response between person and context is the focus of research efforts informed by the goodness-of-fit model. Because of different expectations, intentions and motivations, students may have

different perceptions of the learning environment – and these perceptions may vary between different discipline cultures (Ramsden 1991) – as was found in the results. The overall falling trend in satisfaction with studies could also be explained by the increase of students' criticalness towards the end of the studies, and decrease in financial resources of the university departments, which means larger student groups and unfavourable teacher/student ratio in instruction. In fact, according to the KOTA 1999 database (p. 21) the number of students has risen 67,5 %, from 90700 to 151900, during the period 1985–1999, while the number of teaching staff has remained almost unchanged, rising from 7200 to 7300, in the same period of time.

In fact, the above interpretations were partly confirmed by the students' free comments on the questions: "What are the weaknesses and shortcomings of teaching and tutoring?" and "How would you improve teaching at your university department?"

It could be assumed that close to their graduation students begin to mirror their studies against the requirements of the working life and employment, and consequently this influences their ratings of teaching and satisfaction. In fact, in the free statements of students 13 % of all responses dealt with the wishes to promote the vocational relevance of studies. The above interpretation is also supported by House (1999) who writes that regardless of the nature of the comparison standard, i.e., expectations as desires vs. expectations as predictions of future performance, research has found that students' expectations of the effect of their university education on career preparation appear to be well formed, unambiguous, and of critical importance in the determination of their satisfaction.

Donald and Denison (1996) suggest, however, the use of alumni evaluations in attempting to improve university teaching because graduates are more aware of the strengths and shortcomings of their formal education than undergraduates. Their argument is that alumni can provide valuable insights, since they have the benefit of hindsight and can evaluate university and work experiences and their relative importance. In contrast with undergraduates, who can only speculate about the utility or significance of various aspects of their educational experience, graduates can report their actual significance in relation to their current employment or life status. Donald and Denison conclude that, for these reasons, the use of feedback from graduates

in reviews of academic programmes is increasing. We also do agree that retrospective evaluations which relate undergraduate experience to subsequent employment or further study may provide more concrete and operational advice to improve some aspects of undergraduate education than have specific measures of instruction, but it does not diminish the value and importance of reflection on authentic and ongoing study experiences. In order to provide the retrospective evaluations (Rautopuro & Väisänen 1999), we also administered the questionnaire to students who had already taken their degrees. Despite, students' evaluations have been found to correlate positively with the ratings by alumni as cited by Wachtel (1998) in his review on student evaluations of university teaching.

The downward trend found in the positive study experiences and the opposite trend in the negative experiences between the first and second year of studies could be explained with a **discrepancy between the university studies and expectations about them**, as suggested by Pancer and Hunsberger (2000). On the level of the whole university, especially the negative affects (Figure 3), such as disappointment and stress, increased more between the first and the second year of studies (mean score 2.02 → 2.20) than from the second to the fourth year (2.20 → 2.29). Although many of the expectations of the students are certainly realized, the positive affective tone that characterizes their pre-university expectations is often replaced by feelings that are more negative after the student has spent some time at a university. In order to understand this problem more accurately, it would be necessary to sort out different kinds of expectations. According to customer research (Thomson & Sunol 1994), ideal expectations (what a customer would ideally like to occur) must be distinguished from predictive (what the customer assumes is probably going to occur) and normative expectations which evolve from experience of service provision by other similar service providers.

Quoting from the literature, Pancer and Hunsberger (2000) use the term "freshman myth" to describe the "naive, enthusiastic and boundless idealism" which is claimed to characterize students' expectations about university. It is suggested and also supported by research that these ideal expectations are a myth because students' positive expectations are rarely realized. Their experiences in the

first weeks and months of university are usually much more stressful and challenging than they ever anticipated. In order to prevent students' disappointment, it would be appropriate to have those expectations managed to a more realistic level (Hill 1995).

The greatest decline in students' feelings about university life seems to occur during their first study year, when the perceived discrepancy between the expectations and reality is likely to be the most salient. All in all, this process of academic adaptation, consisting of phases of separation, transition, and incorporation, as described by Tinto (1993), creates foundation for successful study experiences and persistence in higher education. Although some students experience this transition as a challenge to personal growth, others are overwhelmed by the changes and experience emotional maladjustment and depression (Wintre & Yaffe 2000). The importance of psychological well-being (measured, for example, by perceived stress, depression, and self-esteem) for social adaptation and academic achievement in the first year of university studies is well demonstrated in research. (Tinto 1993; Wintre & Yaffe 2000.)

Rocha-Singh (1994) have used the model of cognitive appraisal of stressful events developed by Lazarus to explain perceived stress among university students. This model suggests that a person's perceptions play a substantial role in what some may call objectively stressful events and behaviour is a function of the interaction between the person and her environment and the appraisal of potentially threatening or challenging events. This perspective assumes that stress occurs when both (a) the situation is appraised as challenging and demanding and (b) insufficient resources are available to cope with the situation. The causal event is cognitively mediated emotional response to the objective event, not the objective event itself. As important elements of the sociopsychological environment, Rocha-Singh (1994) stressed, like many other authors cited in our research, the quality and nature of faculty-student relations, the sense of community within a department and the evaluation of student performance. Our qualitative data concerning the perceived problems in tutoring by the students, for example, showed that there is much to be improved in this respect.

Liuska (1998) has recently published a study about university students' (n = 238) personal resources to manage stress factors in

their study life. The study was carried out from an ecological point of view and especially the ecological stress factors by Hobfoll (1988) were employed. She found in her study that there are different stress factors present in a student's life and study situation also after the first year of studies. Students manifest stress and find fresh resources to carry on with their lives and studies in a variety of ways. We may argue that if university personnel are to effectively promote student adjustment to university, they need to be aware how students perceive their experience and to find out what they see as stressful, how strong is their experience of stress and what are the most stressful phases of the studies.

Halstead and Hartman (1994) provide another possible interpretation for the cautiousness of the beginning students' ratings of their learning experiences and their "neutral" satisfaction with studies found in our study. According to Halstead's and Hartman's (1994) quotations from customer satisfaction literature, the intellectual environment offered in university may represent an attribute that is referred to as an "experience property" of a merchandise or a service. Experience properties are those attributes that the customer can only evaluate after purchase or during consumption. In other words, they cannot be discerned before the experience itself. Similarly, beginning students' ratings about the learning environment may be just opinions without actual experience of all its various aspects. Services that are high in experience properties are more difficult to evaluate due to the absence of predetermined attribute expectations.

The overall decreasing trend in positive emotions and increasing trend in negative affects, such as stress and powerlessness, throughout the four years of studies could be explained against the nature of academic studies. At the beginning of the university experience, studies are composed of general and basic studies which are not so demanding as the subject and advanced studies of the minors and majors. Consequently, for many students the increasing requirements towards the end of studies usually cause more work and more stress. Among the practical implications of this study, there is the importance of maintaining the psychological well-being of the students. The theoretical nature of emotions and its implications for adult education have been examined more closely in Finland by Juha Varila (1999), for example.

There is some criticism in the students' answers concerning teaching and tutoring that we have to take into serious consideration. This criticism seems to be consistent with the previous research (e.g., Entwistle & Ramsden 1983; Franz & Ferreira 1996; Väisänen 1993), which has highlighted several factors which are likely to impede deep approach and meaning orientation to learning. These were included and found also here: for instance, a perceived lack of relevance, lack of tutorial support, heavy workload and otherwise inconvenient learning environments. Also Rosenthal and others (2000) found in their study that college students believed that one-to-one interaction effected their performance and their satisfaction.

Over several decades one of the most consistent criticisms against the quality of teaching provided by universities has been the over-dependence on one way of teaching and learning, the formal lecture (see Väisänen 2000). The results of the study indicated that students, on average, "somewhat agreed" that teaching is traditional at their department. Besides, this trend generally strengthened to the end of studies as perceived by the students, except in Forestry.

Consistently, a slightly opposite trend was found in students' academic integration, which included both the encouragement of students into critical thinking and independent learning, and integration into the departments' research projects. Here again, especially at the Faculty of Forestry, but also at the Faculty of Science, the trend was opposite to the other faculties. This maybe reflects the differences between the discipline cultures. Anyway, as stated in literature (Ramsden 1992; Vermunt & Verloop 1999), good teaching occurs when students are actively engaged and use deep approaches to their learning. Students are less likely to adopt a deep approach when 'the teaching flow' is one-way, as is usual in the formal lecture.

Many writers have emphasised the importance of ethos or climate (Kuh 1993) or various "cultures" (Lampton 1993) of the university departments to the learning of the students. As found both on the level of the whole university and in each faculty, students' satisfaction with their teachers, teaching and the atmosphere of the department (Figure 6) was on the "better side" of the mean score (3.00) throughout the studies. The trend, however, pointed slightly downwards (3.43 → 3.32 → 3.26). In their extensive review of literature consisting of over 2500 studies, Pascarella and Terenzini

(1991, 652–653) conclude that students are more often positively affected by their learning environment when the faculty and students share common attitudes and values, where interpersonal exchanges are frequent, friendly, and not rigidly hierarchical, and where there is a departmental “esprit de corps”. It is suggested in the literature that the role of the instructor should shift from the more traditional imparter of information into that of a mentor and a supporter.

In addition to these change patterns in the study experiences of the student cohort we examined, the results of the study indicate that we can model the students’ overall satisfaction with the studies moderately. The overall classification percentage of the statistical models rose from 56.3 % at the beginning of studies to 71.7 % at the end. The predictors of the satisfaction scores somewhat varied during studies but the results strongly show the importance of the academic learning environment, e.g., quality of teaching and tutoring, as suggested by previous research drawing from different paradigms (Astin 1995; Entwistle 1998; House 1999; Ramsden 1992).

When predicting students’ study achievements the logistic regression analysis seemed to fit to the data better than the linear regression analysis although the classification of the mean grade is somewhat arbitrary. The overall classification percentages were generally quite high and statistically significant predictors (qualitative and quantitative) could be found. Most of the statistically significant (or almost significant) predictors also have practical significance.

According to the logistic regression coefficients and odds ratios (Table 7), positive study experiences, integration of students to their own department, satisfaction at teaching and satisfaction at tutoring seemed to increase “the risk” of excellent grades. Negative study experiences, on the other hand, reduce “the risk” of excellent grades. Previous research has also found strong ties between the faculty characteristics, student satisfaction, and the academic success of students in their studies (e.g., Astin 1993; 1995; Donald & Denison 1996; Finaly-Neumann 1994; House 1999; Kuh 1993; Milem & Berger 1997).

This study also confirmed the finding that has been reported consistently in research that the correlations between attitudinal outcomes, i.e. satisfaction, and learning environment dimensions are stronger than those between the cognitive outcomes and the learning environment (Wong et al. 1997).

To conclude, we cannot generalize these results without any caution but we believe that similar patterns could be found elsewhere, too. The consistency of the findings with previous research also sustains this conclusion and lends some further support for the construct validity of the study. After all, there is a need for further research in order to find out what the main obstacles for quality teaching and quality learning in higher education are, and how we can remove these obstacles. Different kinds of methodological approaches are also needed in predicting the outcome variables as was showed by our study (see Rautopuro & Väisänen 2001b) that used AMOS-modelling.

6.2 DROPPING OUT

The results of this study indicate that dropping out can be predicted by the students' initial commitment to their studies and integration to their department as was suggested in the general student persistence models of Tinto (1975; 1987) and Bean and Metzner (1985), and other research findings (e.g., Pascarella & Terenzini 1991). Consequently, students who have a clear intent, and a strong goal orientation with positive emotions toward their studies, which also increases their commitment to the institution, will persist in their university. Although we did not test these models as such due to the differences in research methods and educational systems and cultures, our findings lend some further support to both of them. Thus, we can agree with Carbera and others' (1992) recommendation to synthesise the Tinto and the Bean models for a better understanding of student persistence at university.

Also the general pattern of dropping out (e.g., Murtaugh et al. 1999; Tinto 1993), i.e., the fact that most of the dropouts leave their university during the first year of studies, is supported by the findings of our study. We also found that the causes of dropping out partly change according to the phase of studies. While the students' goal and institutional commitment continues to be a significant predictor throughout their studies, we could find that reasons for dropping out during the second and third years are more closely connected with the learning and teaching environments (integration to department

and satisfaction with teachers and guidance, for example) than during the first study year. According to Tinto (1997), this is one major variable or factor that has been almost totally neglected in the current models. Thus, our special contribution to the models of student persistence seems to be in directing researchers' attention to the importance of students' perceptions of their learning/teaching environments.

Surprisingly, the sum-scale of negative emotions consisting of items such as stress, disappointment, and powerlessness (cf., Bean & Metzner 1985; Solberg & Villarreal 1997) did not prove to be a significant predictor of dropping out. Rather, it was the positive emotions and study experiences which explained students' persistence in their university. One reason for this may be the strong reverse correlation between the positive and negative emotions.

The drop-out phenomenon may be different for the traditional and non-traditional (age over 23 or 25 years at enrollment) students, as suggested by Cleveland-Innes (1994). The issue of adults in university studies also has a wider sphere of interest because adults now make up a majority of the university population in many countries (Bowl 2000). However, Bowl continues that we do not have a clear picture of which adults are entering university, how they are distributed or how they experience university life. Nor has there been a full exploration of whether and how universities are changing to meet the needs of this growing group of students. This could be a topic worth a further examination in our research population (including about 16 percent of students aged 25 years or older). Actually, we (Rautopuro & Väisänen 2001a) have conducted a pilot study that aimed at comparing traditional aged and non-traditional aged student's learning experiences and dropping out of studies in this particular data.

However, special attention should be paid also to the traditional first-year university students (defined as 19–22 years of age), who face transition from adolescence into adulthood, separating themselves from high school friends and family, and adjusting themselves to the new social and academic environments at university, which incorporates a great deal of stress. These concerns are coupled with additional psychological concerns with academic and social adjustment, development of autonomy, and identity development. (Wintre & Yaffe 2000.)

Tinto (1987) also argues that in order for a student to persist, (s)he must successfully make the adjustment to university and become integrated into the institution. As he suggests, many students encounter academic difficulties and fail to complete their degrees. Even students who are successful in completing their degrees may undergo significant stress during their university studies. It is important to learn to deal with stress and to get support from the personnel and other students of the institution; this was also found to be important in Bean and Metzner's model (1985) of student attrition.

Although we did not directly measure the social support to students from other students, teachers, and others involved, which has often been noted as an essential component of student satisfaction, it was implicitly included in the questionnaire items concerning the climate and the tutoring given to students in their departments. According to Pascarella and Terenzini's review (1991), effective student-faculty interaction as well as teachers' encouragement and support promote students' persistence when difficulties are experienced. In advocating a developmental approach to tutoring, Astin (1984) argues that administrators and teachers must recognise that tutoring can affect the way students spend their time and the amount of effort they devote to academic pursuits. A meaningful contact seems to increase students' involvement and motivation and reduce attrition rates (Astin 1984; Tinto 1987).

The results of the study indicate that the same reasons found in international studies have also explanatory power in the Finnish data. However, we have to be careful in generalising the results because of the limitations of the study. First, the study was conducted in a single institution with certain fields of education represented in Joensuu University and only within one student cohort with specific background and other attributes of that student population, and second, the models used to predict dropping out were not cross-validated in other sets of data.

When comparing the qualitative and quantitative data (see data triangulation from, e.g., Patton 1990), we can conclude that the student accounts are consistent with Tinto's (1975, 105–107; 1987) discussion of incongruence (for different persistence models, see, e.g., Thompson & Fretz 1991) between a student's dispositions and the intellectual/social climate of the institution. However, these accounts fill in a

missing detail, which is essential for assessing accurately the impact of incongruence on student departure. There are also other factors influencing student attrition. These factors include many of the entry attributes which trigger student intention and commitment but which, except for the students' social background (cf., Liljander & Määttä 1994), were not studied in the present data.

Interestingly, we found that students' self-reports of the reasons of dropping out of their studies stressed much more the poor quality of the academic environment and teaching than could be expected on the basis of research of ratings made by staff of higher education institutions. Vuorinen & Valkonen (2001) found that only 7 % of the respondents (102 heads of the departments of Finnish polytechnics) saw that students drop out their studies due to their dissatisfaction with teaching and studying. They argue that this discrepancy between the ratings of students and staff has been found also in other studies and should be paid more attention.

Finally, as was shown by the partly conflicting findings in the literature, and also in our study, we must conclude that student persistence remains a difficult and complex subject of study. Many possible factors can directly and indirectly influence a student's decision to leave and these vary in different fields of education as also found in a study of dropping out in Finnish polytechnics (Vuorinen & Valkonen 2001). For this reason, it would be helpful if the institutions could use several types of interventions in their attempts to reduce drop-out rates. An effective student persistence program requires a campus-wide effort and can involve several different student sub-populations as suggested by Hoyt (1999). However, further research needs to be conducted, for example, to identify if there are different patterns of dropping out in the other fields of education than those represented at the University of Joensuu (see e.g., Pajala & Lempinen 2001). Subsequent research also must attempt to define and measure the different types (dropout caused by different reasons) of student dropout and model each type separately.

6.3 CONCLUDING REMARKS

Tynjälä (1998) suggests that the constructivist view of learning offers an approach to create a learning environment that requires students to engage actively in their studies. However, comparative studies between different forms of teaching have, according to Tynjälä (1998), not proved particularly effective in explaining the differences in students' learning outcomes. She concludes that this may be due to the problems connected with the assessment methods rather than to the absence of real differences between the outcomes of learning. If we change teaching methods, we should also change assessment methods accordingly. This includes assessment methods that are integrated into the learning process itself and, as a result, lead to qualitative changes in students' learning and knowledge structures that meet the requirements of professional expertise of the modern working life.

Much of the student learning in higher education takes place privately, outside the doors of lecture halls or demonstration classes. The recent shift of focus from teaching onto the learning process (or from teacher-centred to student/customer-centred model) does not mean that teaching is unimportant. Rather, this means a new kind of balance between different theoretical and practical approaches to teaching (i.e., teaching as conveying knowledge and teaching as facilitating the students' independent learning). Admitting that teaching is a complex task, combining both content and process, yields the best quality in education. The learning process is not seen as an end in itself, but an important vehicle for the assimilation of the content. (See Patrick & Smart 1998.) It also means new roles, challenges and responsibilities for teachers and students. It is the students, not the teachers, who do the learning. The role of the teacher is to provide the subject expertise, the course design and management, the teaching, support and the assessment in such a way that students are encouraged to develop the skills and values that will foster independent learning and intellectual independence (Candy et al. 1994).

When the aim of education is understood to be the development of the whole person rather than the acquisition of knowledge, the central element of good teaching becomes the provision of care and sustenance of psychological well-being of students, which has been a neglected area in universities, we believe. From research we know

that students' psychological well-being creates prerequisites for academic integration and learning. The role of the mentor-teacher is to stand behind the students as a fellow learner providing them with a supporting learning environment. Is this a reality or a dream in higher education? How can the teachers take on these new roles, which focus on interaction with individual students, when, at the same time, the student enrollment rates rise and the funding at universities falls? Thus less time may be devoted to individual students' support and tutoring, which results in students' experiencing it as a peripheral activity. In fact, tutoring has been identified as one of the weakest links in the university experience (Broadbridge 1996; Tiilikainen 2000), which was also noticed here. By these notes we hope to deliver a message to be taken into serious consideration among the policy makers and administrators as well as among teachers at universities.

To conclude, some implications for student guidance, course scheduling and teaching, and student persistence policies in general can be given. Just to mention a few principles on which curricula and university policies should be based on, we can give the following recommendations. First, in student selection procedures we should already make it sure that the applicants have a clear idea of what they want to achieve in higher education and that they are in the right place to do it as well as have a clear motivation to carry on their studies (a frequently mentioned reason for withdrawal was the choice of the wrong field of studies). Second, we must ensure that the beginning students get sufficient guidance to what is expected in higher education and which would be the realistic expectations (students may need training in study habits and in the planning of their studies). Third, students must be encouraged to be active in their studies by sustaining, throughout the curriculum, activities such as seminars and tutorials that require committed engagement in the subject matter and the university. Fourth, students must be encouraged to have social interaction with peers by sustaining study in groups; and fifth, we must improve the quality of teaching, for example, by using lectures only when there is a positive educational reason for doing so, by increasing the vocational relevance of the curriculum, by increasing the number of optional courses in the curriculum, and by paying more attention to the interpersonal relationships with the students.

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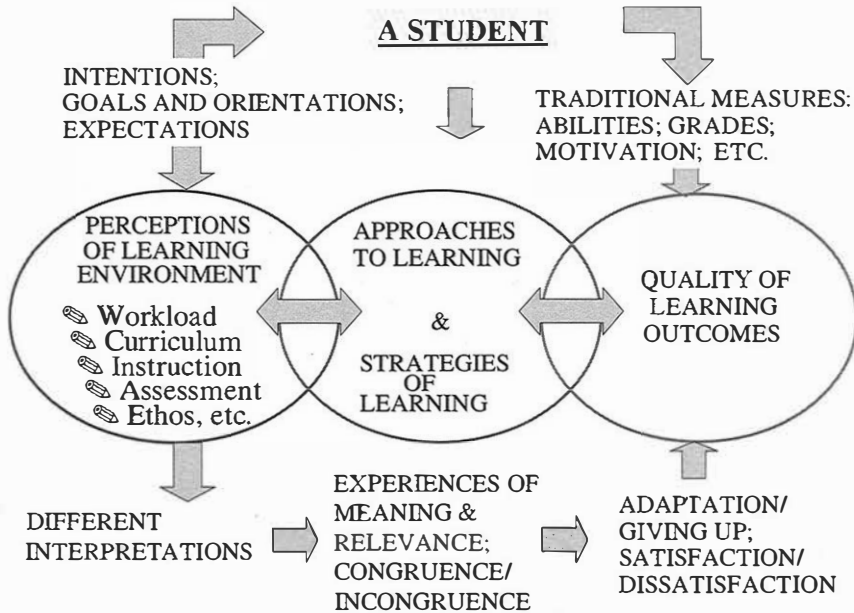
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APPENDICES

APPENDIX 1

FIGURE 8. A HEURISTIC MODEL OF STUDENTS' LEARNING EXPERIENCES AS DETERMINANTS OF OUTCOMES.



KASVATUSALAN TUTKIMUKSIA – RESEARCH IN EDUCATIONAL SCIENCES

1. *ARTO JAUHAINEN, RISTO RINNE & JUHANI TÄHTINEN (TOIM.)*
KOULUTUSPOLITIIKKA SUOMESSA JA YLIKANSALLISET MALLIT
(EDUCATIONAL POLICY IN FINLAND AND GLOBAL MODELS)
2. *RAIJA HUHMARNIEMI, SIMO SKINNARI & JUHANI TÄHTINEN (TOIM.)*
PLATONISTA TRANSMODERNISMIIN – JUONTEITA IHMISYYTEEN, IHMISEKSI
KASVAMISEEN, OPPIMISEEN, KASVATUKSEEN JA OPETUKSEEN
(FROM PLATO TO TRANSMODERNISM – REFLECTIONS ON HUMANITY,
GROWING UP TO BE A HUMAN BEING, LEARNING, EDUCATION AND TEACHING)
3. *ERKKI OLKINUORA, MIRJAMAIJA MIKKILÄ-ERDMAN,
SAMI NURMI & MARIA OTTOSON*
MULTIMEDIAOPPIMATERIAALIN TUTKIMUSPOHJAISTA ARVIOINTIA
JA SUUNNITTELUN SUUNTAVIIVOJA
(RESEARCH-BASED ASSESSMENT OF MULTIMEDIA LEARNING
MATERIAL AND MAIN LINES OF PLANNING)
4. *SARI HUSA & JARMO KINOS*
AKATEEMISEN VARHAISKASVATUKSEN MUOTOUTUMINEN
(FORMATION OF ACADEMIC EARLY CHILDHOOD EDUCATION)
5. *REIJO BYMAN*
CURIOSITY AND EXPLORATION: A CONCEPTUAL OVERVIEW AND
STRUCTURAL MODELING
6. *LEENA KOSKI*
HYVÄN LAPSEN JA KASVATTAMISEN IDEEAALIT – TUTKIMUS AAPISTEN JA
LUKUKIRJOJEN MORAALISEN KOSMOLOGIAN MUUTOKSISTA ITSENÄISYYDEN AIKANA
(THE IDEAL OF THE GOOD CHILD AND CONCEPTION OF IDEAL
CHILD REARING – A STUDY OF THE CHANGES IN THE MORAL COSMOLOGY
OF ABC BOOKS AND ELEMENTARY READERS IN FINLAND)
7. *JUHANI RAUTOPURO & PERTTI VÄISÄNEN*
EXPERIENCING STUDIES AT THE UNIVERSITY OF JOENSUU.
MODELLING A STUDENT COHORT'S SATISFACTION, STUDY ACHIEVEMENTS
AND DROPPING OUT