Internet Based E-learning, Pedagogy and Support Systems

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Abstract:

The author's main aim is to identify and discuss the areas of Internet based e-learning that are important in describing the state of the art, specifically related to the need for systems and actions for student support. As a basis for defining the necessary support systems the article presents different theoretical approaches to distance teaching and learning such as student independence and autonomy, industrialization of teaching, guided didactic conversation, continuity of concern for students and cooperative learning and constructivism. The article further discusses the conflict of interest between students who prefer cooperative learning methods and students who both prefer and need a high degree of flexibility to be able to enrol and succeed in e-learning programmes. The article also discusses different models explaining drop out from distance education. High quality distance education systems have traditionally emphasised student support and continuous concern for students from enrolment to completion. It is the author's view that theory and practices from distance education are valid for e-learning and should be implemented into e-learning practice. Finally, the author presents a theoretical framework for student support services in online distance education with his own institution, NKI, as an example.

Introduction

This article is based on analyses to build a theoretical foundation of the EU Socrates Minerva project, Student Support Services in E-Learning. The project deals specifically defining and integrating student support services into Internet based e-learning solutions to produce online distance education that can offer complete educational experiences for individual students and groups of students. To transform an e-learning programme into a complete educational experience, one needs high quality systems for distribution and presentation of content, for two-way and many-way communication, for individual and group based student activities and all kinds of personal, academic, technical and administrative student support services.

The article intends to identify and discuss the areas of e-learning that are important in describing the state of the art, specifically related to the need for systems and actions supporting the learner and helping him/her to succeed and reach learning goals, whether these learning goals are set by the institution, employer and/or the learner. The main background for this discussion is the challenge of changing a "traditional" distance teaching institution into a professional high quality organisation for Internet-based education and training. In our view, theories and practices from the distance education field with high emphasis on continuous student support, are still valid and should be given focal attention when developing Internet-based e-learning for the future. High quality e-learning on the Internet will be possible only if support systems and structures developed in distance education are taken into account and are further developed in the light of the new possibilities that are opened as a result of technological advance.

Definitions of Online Education and E-learning

Online Education: There are many terms for online education. Some of them are: virtual education, Internet-based education, web-based education, and education via computer-mediated communication.

Our definition of online education is developed from the definition of Keegan (1996):

> Distance education is a form of education characterized by:
>
> - the quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);
> - the influence of an educational organization both in the planning and preparation of learning materials and in the provision of student support services (this distinguishes it from private study and teach yourself programmes);
> - the use of technical media – print, audio, video or computer – to unite teacher and learner and carry the content of the course;
> - the provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and
> - the quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals rather than in groups, with the possibility of occasional meetings, either face-to-face or by electronic means, for both didactic and socialization purposes. (p. 50)

If we accept that online education represents a subset of distance education we may define online education by accepting Keegan's definition and changing the third and fourth points to the following:

- the use of *computers and computer networks* to unite teacher and learners and carry the content of the course;
- the provision of two-way communication *via computer* networks so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education).

Most proponents of online education would exclude Keegan's 'quasi-permanent absence' of the learning group, since collaborative learning, where students may communicate throughout the length of the learning process is seen as one of the greatest advantages of online learning relative to previous "generations" of distance education (McConnell, 2000). On the other hand, there is good reason to stress that most adult students need to organise their studies according to demands of work, social life and family responsibilities. These needs must be balanced against a possible didactic ideal of collaborative and/or co-operative learning. Thus, the flexibility of the institution in adapting course requirements so that students may organise their learning independent of a study group is a key quality aspect for many online students (Rekkedal, 1999). This does not at all exclude learning methods exploiting the advantages of being part of a group or learning community.

'Distance education' and *'distance learning'* as defined by Keegan (1996) are well-established concepts. The *'distance learner'* is a person who, for some reason, will not or cannot take part in educational programmes that require presence at certain times or places. Terms such as *'e-learning'* and also *'m-learning'* have entered the scene more recently. To us, learning is an activity or process and shown as a change in a person's perceptions, attitudes or cognitive or physical skills. It cannot be *'electronic'* (if that is what e-learning is supposed to stand for). The terms e-learning and d-learning deserve to be analysed. For instance, the term, e-learning, seems often to be used to convince users that some supernatural things happen with your brain when you place yourself in front of a computer screen, and you learn easily and efficiently. However, in the real world this miracle is very unlikely to happen, as learning is mainly hard work. Most examples of e-learning programmes seem to be extremely costly to develop and most often cover low-level knowledge and facts based on a simplistic view of what learning is (cf. Dichanz, 2001).

However, as the term seems to have become part of accepted terminology (also cf. Brindley, Walti & Zawacki in this volume), it is imperative for educational researchers and serious providers to define it and assign meaning that is in accordance with our views on teaching and learning. Seen from a university perspective, Dichanz (2001), professor of education at the German FernUniversität ends his critical analysis of the term e-learning with the following definition:

> E-learning is the collection of teaching – and information packages – in further education which is available at any time and any place and are delivered to learners electronically. They contain units of information, self-testing batteries and tests, which allow a quick self-evaluation for quick placement. E-learning offers more lower level learning goals. Higher order goals like understanding, reasoning and (moral) judging are more difficult to achieve. They require an individualised interactive discourse and can hardly be planned. (slide 6)

Even though we do not totally agree with Dichanz that higher level learning goals cannot be planned, we agree that such goals are much more difficult to plan, and that most so-called e-learning programmes do not demonstrate attention to higher level learning objectives.

For our purposes here *e-learning is defined as interactive learning in which the learning content is available online and provides automatic feedback to the student's learning activities.* Online communication with real people may or may not be included, but the focus of e-learning is usually more on the learning content than on communication between learners and tutors.

Unfortunately, the term e-learning is often used as a more generic term and as a synonym for online education. Kaplan-Leiserson (n.d.) has developed an online e-learning glossary, which provides this definition:

> Term covering a wide set of applications and processes, such as Web-based learning, computer-based learning, virtual classrooms, and digital collaboration. It includes the delivery of content via Internet, intranet/extranet (LAN/WAN), audio- and videotape, satellite broadcast, interactive TV, and CD-ROM, and more.

In the glossary of *elearningeuropa.info* (n.d.) e-learning is defined as:

> The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.

The term e-learning is, as one can see, not very precise, and it should be pointed out that learning is just one element of education. So, the term online education should cover a much broader range of services than the term e-learning. One may also claim that e-learning companies often focus on course content, while *online education institutions cover the whole range of educational services of which student support most often is given major emphasis*.

During the last 10 years a great many institutions worldwide have embarked on developing and offering online distance education. Institutions with a historical background from traditional on-campus education often seem to transfer teaching/learning philosophies, theories, concepts and metaphors from this environment. Keegan (2000) argues:

> ... that web based education is best regarded as a subset of distance education and that the skills, literature and practical management decisions that have been developed in the form of educational provision known as 'distance education' will be applicable mutatis mutandis to web based education. It also follows that the literature of the field of educational research known as distance education, is of value for those embarking on training on the web. (p. 18)

We agree with Keegan's position that the skills, research literature, and management solutions developed in the field of distance education is of specific value when developing online distance education systems of high quality. The great emphasis on student support measures developed by leading distance education institutions should be acknowledged when developing the student support systems of future web based e-learning in Europe.

Pedagogical Issues

Teaching and Learning Philosophy and Theories of Teaching and Learning

It is our firm belief that our perception of teaching and learning has important implications for how we will look at organization models, administration and student support systems for online education.

Keegan (1996) categorizes distance education theories into three groupings:

1. Theories of autonomy and independence
2. Theory of industrialization
3. Theories of interaction and communication

It should be noted that until the 90's the theories of interaction and communication mainly treated communication between the tutor/helping organisation and the individual student, while recently theories involving collaborative learning, group interaction and social constructivism emphasising learning as a process and result of a collective experience of the learning group have received much attention.

Independence and Autonomy

Moore is specifically known for his development and refinement of the theory of distance education as independent learning. His work was clearly based in a tradition of autonomy and independence of adult learners advocated by scholars such as R. Manfred Delling in Thübingen, Germany and Charles A. Wedemeyer in Wisconsin, USA. Moore's theory was developed over more than 10 years. The main dimensions are *'transactional distance'* and *'learner autonomy'*. It is clear that in his earlier writings Moore put more emphasis on autonomy – as distance teaching programmes by their nature require more autonomous behaviour by the learner. To succeed in such programmes, the learner must be able to act independently and autonomously. (In this connection it can be questioned whether this should be seen to be a necessary condition for enrolment, or that the institution must take responsibility for preparing their students and train them to become autonomous learners, which again would be one important aspect of student support services in e-learning.)

According to Moore (1991*)* "It is the physical separation that leads to a psychological and communication gap, a space of potential misunderstanding between the inputs of instructor and those of the learner and this is transactional distance." (p. 2-3).

Transactional distance is not the same as physical distance but built up of the two qualitative and continuous variables labelled *'dialogue'* and *'structure'*. The dialogue describes the transactions between teacher and learner, but is not used synonymously with interactions, as dialogue is described as interactions having positive qualities (Moore, 1993). The structure of a programme is determined by the nature of the media being applied and by the teaching philosophies of designers and constraints imposed by the educational institutions. Structure describes to which degree the programme is able to be responsive to individual student's needs. According to Moore the transactional distance of a programme increases when level and quality of dialogue decrease and structure increases. Programmes with low transactional distance have high dialogue and low structure.

For an overview of the theory of 'transactional distance' see Mueller (1997) and ERIC document annotations (1992).

The Industrialization of Teaching and Distance Teaching in the Post-industrial Society

Otto Peters (1973) was one of the first theorists within the field of distance education. His theory of distance education as a new form of industrialized technology-based education has received considerable attention. His viewpoint has often been misunderstood and often criticised (cf. Peters, 1989). Critics have perceived Peters to look at industrialization of teaching through distance education as a positive development and thus being critical to traditional forms of education. This is not at all the case; as we understand Peters, his concepts were applied for the purpose of analysing the didactical structure and did not imply any kind of value judgements. Since Peters' early writings, large societal changes have taken place, and modern online education takes place in a societal context often referred to as *'post-industrial'*. In analysing distance education in light of the post-industrial society, Peters (1993) draws the following conclusions:

> In a postindustrial society the traditional industrial model of distance teaching will no longer satisfy the new needs of new types of students with their particular expectations and values which, seemingly, not only differ from those of the students in the industrial society but are in many cases even the exact opposites of them.

> This situation calls for the design of new models of distance education. They will probably be combinations of intensified and sustained group work – highly sophisticated ways of acquiring the necessary information of self-study and increased telecommunications between participants. They will have different sets of goals and objectives. And they will have to rely on self-directing and self-controlling – that is, on students becoming autonomous. (p. 57)

There seems to be no doubt that when theorists of distance teaching and learning revisit their own writings when relating to the new developments of online teaching and learning, they agree that new technology changes the concepts, but that the main ideas still apply.

Guided Didactic Conversation – Teaching-Learning Conversation

Long before the term *distance education* had been established and the terms for this concept were correspondence education, home study and independent learning, Börje Holmberg (1960) argued in favour of a conversational approach to course development, and later followed this up by attempts to formulate what can be called a theory of distance education in which empathy between the learner and the teaching organisation was assumed to favour learning. In his earlier writings, Holmberg used to denote his theory of distance education as *'guided didactic conversation'*. Now he prefers the term *'teaching-learning conversation'* (Holmberg, 2001).

In recent writings Holmberg (2001) summarises his basic theory concerning learning, teaching and organisation/administration, as follows:

> Distance learning is guided and supported by non-contiguous means, primarily pre-produced course materials and mediated communication between students and a supporting organisation (university, school etc.) responsible for course development, instructional student-tutor interaction, counselling and administration of the teaching/learning process inclusive of arrangements for student-student interaction. Distance education is open to behaviourist, cognitive, constructivist and other modes of learning…
>
> Feelings of empathy and belonging promote students' motivation to learn and influence the learning favourably. Such feelings are conveyed by lucid, problem-oriented, conversation-like presentations of learning matter expounding and supplementing course literature, by friendly mediated interaction between students, tutors, counsellors and other staff in the supporting organisation as well as by liberal organisational-administrative structures and processes. These include short turn-round times for assignments and other communications between students and the supporting organisation, suitable frequency of assignment submissions and the constant availability of tutors and advisers. (pp. 3-4)

When analysing the teacher-learner conversation, Holmberg stresses that the conversation includes both non-contiguous conversation between the live teacher and student and also learning activities, such as thinking, processing information and other cognitive processes taking place when the student interacts with the pre-prepared learning materials including its *'built-in tutor'*. He specifically refers to the educational institution as the *supporting organisation.*

Holmberg agrees with Keegan that modern developments, including online learning, have not changed the content of the theory, although he clearly values that the use of

new computer technology that provides the basis for great improvements of teaching-learning effectiveness. Communication on the net with its great possibilities for spontaneous interaction underlines the importance of the empathy approach and the conversational style. Holmberg (2001) finds that the relevance of the theory is now greater than when it was first developed.

Immediate and Individualised Communication – Educational Transaction and Control

Garrison (1985, 1989; 1993) argues that technology and distance education are inseparable and that theory and practice in distance education have evolved based on increasing sophistication of instructional technology. He argues that distance education has developed through *three generations of technology*, correspondence education, teleconferencing and computer-based learning.

The new developments in technology make a paradigm shift in the theory of distance education not only possible, but also necessary. Garrison (1989) holds the position that previous theories of distance education were based upon the ideal of increasing access and looking at student independence as the ultimate educational goal. He argues that if distance education is to continue to develop as a field of study, one has to develop a theoretical framework that recognizes the differences between the old paradigm and the new and emerging paradigm. The old paradigm was, according to Garrison, based on looking at pre-produced and pre-packaged materials as the primary source of information and learning for the independent and autonomous student, and two-way communication between teacher and student as 'add-ons'. When learning materials are pre-packaged with prescribed objectives with the purpose of stimulating independent self-instruction, the approach reflects a behavioural perspective. Further, according to Garrison the new paradigm represents a cognitive/constructionist approach, which encourages the construction of new knowledge structures. This type of learning must take place in a highly interactive environment with feedback from teacher and fellow learners. The theory emphasises that education is a process, which is characterized as an interaction between a teacher and a learner and includes a mutually respectful relationship. It is a complex transaction for the purpose of transmitting and transforming societal knowledge.

Instead of what Garrison (1989) sees as an excessive emphasis on independence and freedom to study when and where the student wishes, the concept of *'control'* is proposed as more inclusive to account for the complexity of the educational transaction. Control is defined as *'the opportunity to influence educational decisions'* (p. 27), and is achieved in a complex and dynamic interaction between *teacher, student and content/ curricula* at the macro level and between *proficiency, support and independence* on the micro level. According to Garrison, control cannot be possessed only by the teacher or the student, but should be shared in an inherently collaborative process. Control is seen as an inclusive concept where both teacher and student roles and responsibilities are considered within a context of continuous communication. If any of the parties of the educational transaction possesses an inordinate or inappropriate amount of control, the communication and possibilities for meaningful learning and personal construction of understanding is seriously diminished. It is assumed in the theory that interaction is necessary for higher order cognitive learning.

The emerging paradigm is seen as reflecting a convergence between distance education and the general field of education and brings distance education into the educational mainstream.

With the new technologies, distance education can to a large degree simulate or approach conventional face-to-face education. It seems to be inherent in Garrison's (1989) view that high quality distance education is best organised within a traditional university or teaching institution.

In our view, Garrison's (1989) concept of distance education is far from most conceptions of e-learning. Courses and programmes based on *'third generation'* distance education put less emphasis on pre-produced electronic learning materials and high emphasis on student-student and student-teacher interaction. In Moore's (1993) terminology the courses would be *high on dialogue* and *low on structure*, and probably student support will depend to a large degree on the teacher and fellow students, as described by Thorpe (2001) and discussed later in this paper.

Cooperative Learning and Constructivism

McConnell (2000) gives an introduction to computer-supported cooperative learning. Cooperation in learning is not new. Students have formally and informally cooperated in learning processes, however, as a way of thinking about and conducting learning processes, *'cooperative learning'* is a fairly new concept. Planning and conducting cooperative learning means formalising what happens informally in many settings. According to Argyle (1991) there are three possible reasons for cooperating:

1. For external rewards – in education, e. g. achieve better grades, diplomas and degrees
2. To share activities
3. To form and further relationships

Often the educational system can bee seen as one which encourages competition and not cooperation. Often students are required to do the same work, and results are compared and often also a limited number of high grades are granted. The students compete on a zero-sum basis. Whatever one person wins, others lose.

In cooperative learning the theory is that everyone wins and no one loses. The learning process is not seen as an individual pursuit concerned with accumulating knowledge, but as part of a social process where students help each other to develop understanding in an enjoyable and stimulating context. The learning is process driven and learners must be involved in the social process and pay attention to this process to achieve their desired goals. The outcomes are not only academic, but involve increased competence in working with others, self-understanding and self-confidence. The learning activities may end up in group products, which would not be achievable if learners worked individually, or the process may consist of learners helping and supporting each other in achieving individual learning goals.

The developments of online learning have spurred interest for computer-supported cooperative learning. Computer-supported cooperative learning is based in socially oriented learning theories, such as *'constructivism'* or *'social constructivism'*. Emerging from the work of Piaget and followers, the role of peer interaction in cognitive development has been influential for our concept of learning. Learning is seen as a construction of meaning in interaction with others (teacher and fellow students). Knowledge is constructed in social groups.

A meta-study by Johnson & Johnson (as cited in McConnell, 2000) concludes that cooperative methods lead to higher achievement than competitive or individualistic methods:

1. Students in cooperative learning environments perform better
2. Students in cooperative groups solve problems faster
3. Students in cooperative work use elaboration techniques and meta-cognitive strategies more often than those working in competitive and individualistic situations
4. Higher level reasoning is promoted by cooperative learning
5. Students in cooperative groups discover and use more higher-level strategy methods
6. New ideas and solutions are generated in cooperative learning groups that are not generated when people are working on their own
7. When individuals have worked in cooperative groups, their learning is transferred to situations where they have to work on their own.

Flexibility

In online education, there is a conflict of interest between many students who prefer individual flexibility and educators who promote collaborative learning. Many students choose to study online because they want or need individual flexibility. They have full-time jobs and family responsibilities, and many are reluctant to participate if it means relinquishing high quality family life and job achievements. They need flexible education: education that allows them to combine job, family, and education in a manageable way.

Figure 1 illustrates six dimensions of flexibility that many individual students want. Many institutions (among them NKI) have put major emphasis on designing online courses to be flexible concerning time and schedules. It is a great challenge to develop online learning environments that support this individual freedom as well as collaborative learning. This challenge is discussed in the theory of cooperative freedom (Paulsen, 1993, 2003). There is no doubt that design and administration of student services is related to how the teaching learning model emphasizes individual freedom in learning relative to collaborative learning.

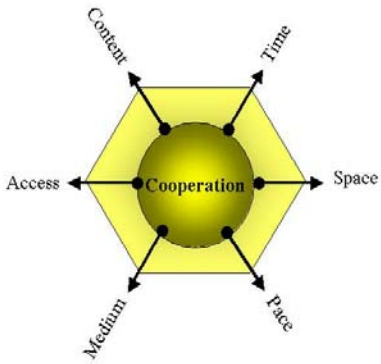

Figure 1. The hexagon of cooperative freedom (Paulsen, 1993, 2003).

The CISAER project, which aims to provide a comprehensive, state-of-the-art survey of course provision on the web (Paulsen, 2000, ¶23-25) concluded that:

> Both enrolment and progress can be more or less flexible. However, the two main models found in the interviews are group enrolment and progress and individual enrolment and progress. These models represent two different strategies that have important consequences for marketing strategies, administrative systems, and pedagogical approaches.
>
> The interviews testify that group based enrolment and progression is far more used than individual enrolment and progression. The analysis identified 46 institutions that used the group model and 12 that followed the individual model. In addition, 11 institutions offered both models.
>
> The preponderance of the group model could come from conventional thinking that sustain the semester and term system in traditional educational systems. Another possible reason is that the institutions have a well-considered perception that teamwork and collaborative learning is hard to achieve with individual enrolment and progress. One can, however, argue that many students will prefer individual flexibility and that many institutions lack systems, structures, and competence on individual enrolments and progression. If so, one may hypothesize that open universities and distance teaching institutions should be more disposed of individual flexibility than traditional universities and colleges. However, the analysis has not found evidence to support this hypothesis.

Accessibility

There is a growing interest of accessibility to web content, which focuses on how to make web content more accessible to people with disabilities. Two good resources for more information about this are:

- W3C's Web Accessibility Initiative (W3C, 2004)
- Introduction to Web Accessibility (Bohman, 2003)

One may expect that more e-learning providers will utilize the result from the accessibility initiatives in the future. Increasing accessibility is also one aspect of student support in e-learning.

Teaching and Learning Philosophy, Teaching Models and Organisational Models for Online Education

There is hardly a doubt that our view on teaching and learning will influence our choice of methods, organisational models and (perhaps also) learning management systems for online teaching. It will also to a large degree influence how we perceive the need for student support systems and how we design, organise and operate student support services in the system.

It also seems that some learning models are better suited to one type of organisation than another. Thus, one will find that traditional institutions offering online education to on-campus students and/or distance students and specialised distance teaching institutions tend to choose different models for their online courses.

Student Support in Online Distance Education – "Continuity of Concern for Students"

Generally and historically, distance educators have basically had two different approaches to student support. The first is support relying on the teaching and guiding through learning materials and non-contiguous communication by correspondence, telephone, tele-media – and in our situation – computer-based communication. The second approach is to include face-to-face contacts – regular local meetings or teaching sessions, summer courses, meetings at local study centres etc. Some proponents of distance education maintain that some elements of face-to-face interaction are necessary to secure satisfactory quality in distance and online learning, a position not supported by the author. Although we know that direct teaching may increase experienced quality by some online learners, face-to-face requirements exclude many learners from taking advantage of the course.

Support services within the system of 'pure' distance online study is seen as two different areas, one being support structures built into the materials (course development sub-system) and the other area being activities carried out to support the individual student during his/her studies (the teaching/learning process sub-system). When we here talk about *'student support services in e-learning'*, we are primarily stressing the need for support measures in addition to those built into the pre-produced e-learning package (Thorpe, 2001).

Most institutions offering distance education or online courses have understood that student support is necessary to secure quality of learning and student satisfaction, and to reduce attrition rates. Student support applies both to counselling and advice on all aspects of distance study as well as to teaching and guidance within the specific course.

Attrition and Completion in Distance and Online Study

Drop out has been a focal point of research in distance education. On some occasions distance educators have been criticized for being too occupied with drop out and associated problems for students and institutions. Generally, we believe that we are in agreement with most online distance educators that reducing drop out is a major challenge in the field of distance and online education (cf. e.g. Peters, 1992). This fact must not be taken as a support of the view that drop-out is a larger problem in distance education than in other types of part time education. There is really no clear evidence supporting such an assumption.

For the institution, drop out may be a considerable financial problem. Through economic analyses Keegan (1996) indicates that the viability of an educational institution depends very directly on the number of drop-outs in the system. A McKinsey report on an American institution "...focused on student attrition as a deficit-producing trend that threatened the very future of this distance institution" (Bajtelsmit, 1988, p.3). From an individual student's point of view, Bajtelsmit holds the position that *"the negative effects of dropout are obvious: loss of opportunity for personal and career advancement, lowered self- esteem, and increased likelihood of future disengagement"* (p. 2).

During the preceding years research on drop out in conventional higher education has largely applied a model often referred to as *'Tinto's (1975, 1986) model or theory'*. The theory explains the persistence/withdrawal process, which depends on how well the student becomes involved in the social and academic processes of the academic institution. The model describes the concepts and four sets of variables in a causal sequence:

1. Background characteristics and their influence on pre study commitment to the institution and to the goal of study.
2. Academic and social integration during study.
3. Subsequent commitment to the institution and to complete successfully.
4. Voluntary decisions on continued study or withdrawal.

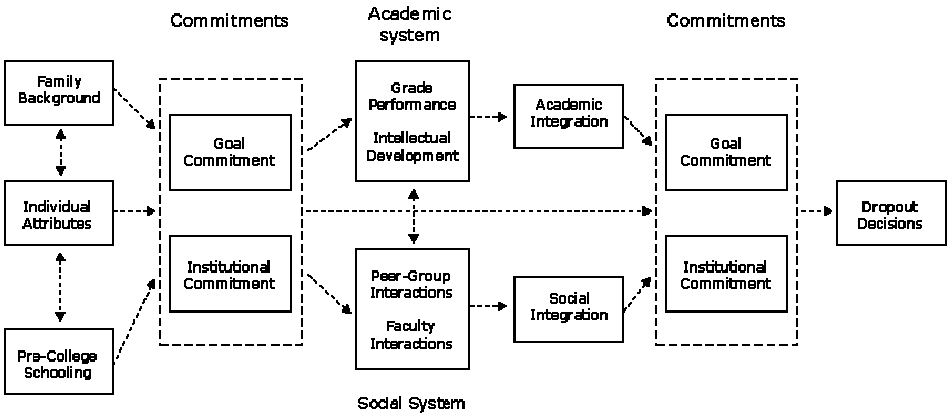

Figure 2. Tinto's (1975) model for drop out from college

The student enters the academic institution with a social and personal background that influences which commitments he/she will have to the institution to complete the studies. These background characteristics and initial commitments will influence how the student will perform and get involved in the academic and social systems. The experiences of academic and social nature during the studies will interact with the background variables and subsequently influence the student's later academic and goal commitments. According to Tinto, it is the student's integration into the social and academic systems of the institution that most directly relates to continuance/withdrawal.

The model has mainly been applied in research on attrition in full-time education, but it has also been referred to and/or applied in studies on distance education (cf. e.g. Sweet 1986, Taylor et al,.1986, Kember, 1995). It seems clear that Tinto's (1975) model for attrition applied to online distance education would direct support services toward integrating the student into the social-academic environment, and put less emphasis on support measures related to the student's situation outside the study environment, such as the family, work and local social environment.

Bajtelsmit (1988) has questioned whether Tinto's (1975) theoretical model is appropriate for use with non-traditional students, such as part time distance students. He proposes a model for explaining and predicting drop out in distance education that puts more emphasis on the influence of the external environment, specifically the student's occupation and family, while the concept of social integration in the institution is given a less prominent role. Bajtelsmit does not devalue the importance of academic support in the distance study setting, but shifts the primary focus "...from the socialization process of previous models to the congruencies and compensatory relationships between the educational (academic) and external (occupational) subsystems" (p. 13).

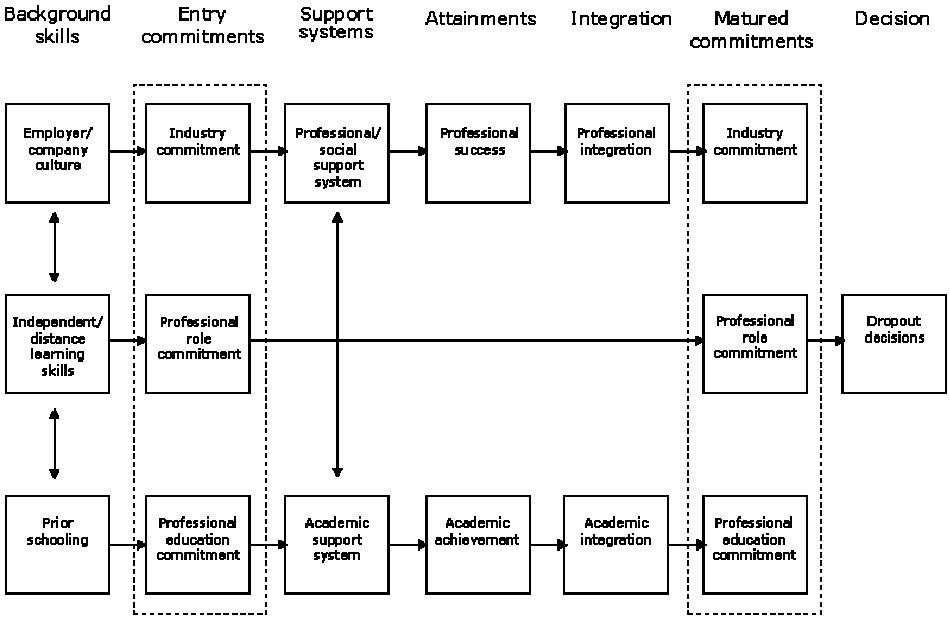

Figure 3. Bajtelsmit's (1988) model of drop out from distance education.

Kember (1995) argues that Tinto's (1975) model is also suited for analyzing completion and attrition problems in distance education and has developed '*a model for student progress*' based on Tinto.

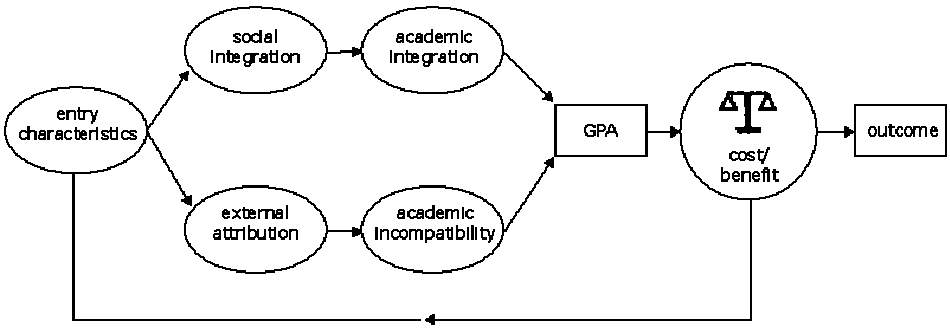

Figure 4. Kember's (1995) model of drop out from distance education.

Kember's (1995) model is based on thorough research and illustrates well how theory and research may influence practice. Kember assumes that the students' previous experiences direct them towards one of two possible 'paths' in their studies. Those with a favorable background (expectations, motivation, previous experiences etc.) tend to proceed on the positive track integrating socially and academically with the institution, course and tutor. Students taking the negative track have difficulties in their social and academic integration. Students on the positive track have a much higher chance of satisfactory achievement in the course. The model incorporates a cost/benefit decision step that

determines whether the student will continue study or not – and the cycle is repeated if the student decides to continue. The cost/benefit analysis may be taken more or less consciously and at any point of study. According to Kember, departure from study may be taken before really starting to study, early or later in the first unit, when deciding to embark on the second unit, the next course etc., until final graduation.

Kember (1995) discusses implications of the model based on a large body of theory and questionnaires/interviews in different settings and cultures. He suggests that the positive integration factor contains subscales, such as *'deep approach'* to learning and *'intrinsic motivation'*, while the negative track contains *'surface approach'* and *'extrinsic motivation'* subscales (cf. Marton, Hounsell, & Entwistle, 1997; Morgan, 1993).

The assumptions imply that courses should be developed to stimulate intrinsic motivation and help students to apply a deep level approach to their study. The model also tries to identify possible difficulties students are expected to meet. Thus it can by used as a guide for information, counselling and guidance and support activities at critical points.

Reasons for Drop Out

Rekkedal (1972a) carried out one of the early drop out studies in distance education. The reasons students gave (deliberately when writing to the institution to cancel their contract) in this study were the following (from higher to lower frequency):

Shortage of time, job required too much time
Financial reasons
Major change of plans for the future
Illness
Private commitments
Unsatisfactory living/study conditions
Drafted into the military
Personal/private reasons
Marriage
Course found too difficult

Less frequent reasons were connected with practical arrangements of enrolling, reading difficulties, lost interest in the studies, distance study methods did not suit me etc. It seems clear that the majority of reasons stated by the students concerned problems and difficulties outside the study situation. There is no reason to believe that the situation is much different for online (or Internet/web based) distance students. This means that student support measures should be directed towards helping students on a wide scale to cope with their learning situation as one part of their personal and social life.

While many research studies point to pre-entry characteristics correlated with drop out, Kember (1995) states from his search of the literature that: *"It is quite comforting that entry characteristics are such poor predictors of success. ... The faculty and college do have a role to play in determining the success or otherwise of their students."* (p. 32).

It also seems that most studies indicate that there is clearly not a single explanation or cure for drop out. A study at the FernUniversität (Bartels, Helms, Rossie, & Schormann, 1988) led to these findings concerning reasons for drop out (from higher to lower frequencies):

Change of job, job stress
Too much time required for studying
Restrictions on private life to great
It would have taken too long to complete the whole course
Would rather study at a campus university
Missed social contact with other students
Physical and mental stress too great
Could not find a working style suited to the institution
Expected more support from the institution (highlighted here)
Used distance study to prepare for possible campus study
Not enough success
Not sufficient support from family for distance studies
Have reached my goal with the course
Course too difficult
Studying was not at all important for me
Had a different idea of what distance learning was
Studying was too expensive

Student Support

The Personal Tutor/Counsellor

Questions concerning student support are central in the theory of Holmberg (1960) on the *'teaching-learning conversation'*. In discussing research to support his thinking, Holmberg sometimes refers to *The Personal Tutor/Counsellor Project* (Rekkedal, 1985, 1991) carried out at NKI Distance Education. Peters (1992) also refers to this project as supporting the views of educators in favour of concerted supportive measures when discussing drop out and possible solutions for reducing drop out at the FernUniversität.

During the planning stage of the *personal tutor/counsellor project*, NKI carried out some intensive group interviews with several newly enrolled students. These interviews confirmed that the students seemed to be generally satisfied with their experiences in distance study.

The students reported, however, one common difficulty: They were reluctant to contact the administration, the counsellors or their tutors when they met problems, and they were uncertain about whom to contact in order to seek advice on different problems. Hence, an experimental study was designed to measure the effect of intensifying and personalizing student support services including academic, social and administrative services and follow-up schemes. Although this study is some years old, it pointed to the results from a number of research studies on drop out and student support and hypothesized that personalizing and individualising support activities, specifically in the first phases of study, was important for student success and satisfaction. The results are seen to be specifically valid for teaching and support also in online education.

The experimental role of the tutor is described below. The experiment covered 10 different aspects of the tutors work – all related different aspects of student support.

Aspect	Experimental group	Control group
1. Tutor	Same tutor during the first 3-11 courses	Different tutors in different courses
2. Employment	Permanently employed full office time	Part time employment at home, paid per assignment
3. Tutoring/ counselling	Same person responsible for all student communication	Responsible for written assignments only, other persons for general counselling
4. Turn-around time	Assignments returned the same day from the school	Assignments sent via the tutor's home address
5. Study technique	Same tutor teaches study techniques	Specific part time tutor in study techniques
6. Follow up of new students	Tutor takes contact with all new students via mail or phone	Automatic routines with form letters
7. General follow up	Tutor takes contact with all inactive students via mail or phone	Automatic sequence of form letters
8. Telephone tutoring	Students may phone the tutor. Tutor calls when needed	No systematic use of telephone tutoring
9. Tutor presentation	Personal presentation with photo and phone numbers enclosed with the study material	Presentation of each tutor enclosed with first assignment returned from the tutor in each separate course
10. Preproduced tutor comments	Developed for all courses. Applied when needed	May have been used by some tutors

Figure 5. Aspects included in the "personal tutor/counsellor experiment" (Rekkedal 1985).

Continuity of Concern for Students

Sewart (1978) has worked with central and local support services at the UK Open University since 1973. His theoretical approach to teaching at a distance can be summed up as a *'continuity of concern for students studying at a distance'*. He discusses the dilemma between the efforts of some course developers to produce the *'hypothetically perfect teaching package'* or put more resources into the support system for students during study. He finds the perfect package to be unrealisable, and however perfect the pre-produced material is, the teacher, tutor or tutor-counsellor as well as student advisors are necessary as intermediaries between the learning material and the individual student.

It is this author's impression from Sewart's numerous articles and papers on support and counselling that he to a large degree relates the success of the Open University to its emphasis on student support services.

What Does 'Student Support' Mean?

In everyday language it means really every aspect of the institution's provision from the enquiry desk, through quality of learning material and all aspects of interpersonal relations between the institution's staff and its students. It also includes efforts to help students with special needs. Thorpe (2001) defines *'learner support'* as "*all those elements capable of responding to a known learner or group of learners, before, during and after the learning process*" (p. 15). This means that Thorpe stresses the personal relationship between an institution, its representatives and the learners/students/customers. In this view the pre-produced learning materials are not part of the support system. Sewart (1993) defines learner support as the means through which individuals are enabled to make use of the institutionalised provision. The learner supporters are *'intermediaries'* able to talk the language of the learner and help learners to interpret materials and procedures. Learner

support activities are produced and consumed simultaneously in a process where both the learner/consumer and the tutor/counsellor must participate actively.

Sewart (2001) relates distance and online learning to the service industry, stressing that education must not be seen as a manufacturing industry selling a product, but as an activity where customer focus needs a continuous broad supporting environment. He presents the aims and goals of the OUUK to adapt the total teaching organisation to provide support and guidance to distance students matching the use of the new technologies of online learning, use of e-mail and the WWW.

Thorpe (2001) focuses specifically on how we conceptualise learner support in online teaching and learning and discusses differences between online learning and previous distance learning solutions concerning what student support means. While course development and learner support in the earlier types of distance education could be seen as two different sub-systems, it is not necessarily so in online teaching and learning. Some online courses contain little pre-developed learning materials. Students may be expected to find materials on the web. Some courses are constructed while they are 'presented' or studied. Thorpe contrasts two teaching models:

Second Generation ODL – Learner Support Model
and
Online ODL – Learner Support Model – Web-based.

It is evident that these two models put very different demands on student support within the course. The first model emphasises the student's interaction primarily with the learning materials and secondly with the tutor, with less emphasis on the student group. The second model stresses the interaction with the student group as the primary source for learning, where pre-produced materials may be non-existent or of peripheral importance. One of Thorpe's (2001) conclusions is that the use of online interactive technologies increase the range of learning outcomes that can be achieved, for instance collaborative learning and communication skills, and specifically that *"A large element of the course is in effect what would be called 'learner support' under second generation terminology"* (p. 19).

Phillips, Phillips, & Christmas (2001) discuss how to organise practical student support at the institutional level. The authors concentrate on student support and guidance in connection with course choice and study planning. The paper illustrates how the OUUK works to develop an integrated approach to the provision of services to students applying ICT. The "aim is to develop a coherent service, which includes the provision of information, educational advice and support for learning and also offers opportunities to carry out business transactions on the Web" (p. 24).

Framework for Student Support Services in Online Distance Education

Aoki and Pogroszewski (1998) have presented a model, *The Virtual University Reference Model*:

> Planning and designing a virtual university or a virtual campus is a complex task involving many different aspects of higher education administration and instructional delivery. In the early days of online courses, just putting course syllabi on the Web is worthy of attracting some attention. Nowadays many online courses are offered using a combination of asynchronous and synchronous

> computer conferencing, slide presentation on the Web, and file transfer systems. Though course delivery is an important component of virtual university, it is not the only component. In order to create a successful academic environment for a distance learner, various support services to students and faculty members have to be included in the plan as integral part of a virtual university. (¶ 10)

The outer ring illustrates how the virtual university is broken down to four major components: administrative services, student services, resource services, and faculty services. Each component has a different purpose and provides students with different services to support the student's learning. As described by Aoki and Pogroszewski (1998) the second outer ring in the model shows the types of services a student receives from each of the four component areas. The inner three rings represent (from the innermost): 1) the student and his or her relationship to each of these four areas; 2) transmission systems with which the services can be accessed by students; and 3) applications and tools to be used in offering the service elements in the outer ring. The students are placed in the centre of the model to point out the importance that all the service components and elements are depicted in relation to the students.

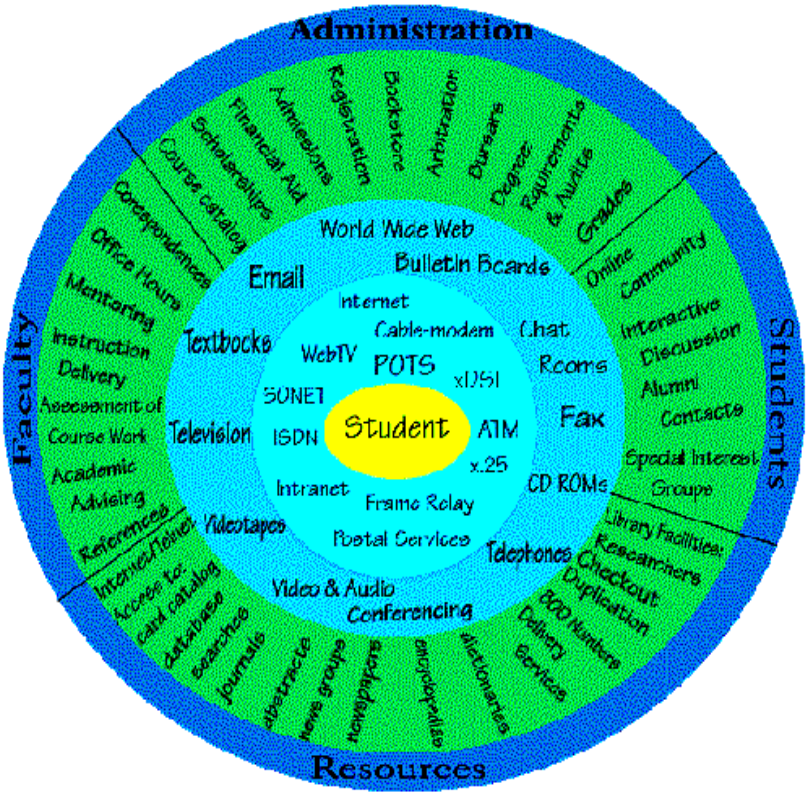

Figure 6. The Virtual University Reference Model (Aoki & Pogroszewski, 1998)

In connection with the project *'Student support services in e-learning'*, student needs and support services were analysed during the different phases of study from first contact to after graduation in the NKI system (Figure 7):

Time	Support needs	Component responsible	Tools/applications
Prospective phase	Information about courses	Administration	Print, WWW, print/ broadcast media etc.
	Guidance concerning choice of courses and programmes	Administration	Phone, e-mail
	Financial questions, loans, grants	Administration	Print, phone, e-mail
	Guidance on practical matters	Administration	Print, phone, e-mail
Start-up phase	Dispatch of printed and other physical learning materials	Administration	Surface mail
	Registration/information/user identity, passwords etc.	Administration	e-mail
	Introduction to online learning techniques	Administration Faculty	Phone, e-mail Phone, e-mail
	Initial follow-up	Administration Faculty	Phone, e-mail Phone, e-mail
	Technical support	Administration	Phone, e-mail
Learning phase	Teaching/tutoring	Faculty	Phone, e-mail, Forum, WWW
	Academic support	Faculty	Phone, e-mail, Forum
	Organisation of learning	Faculty	Phone, e-mail, Forum
	Social support	Faculty	Phone, e-mail, Forum
	Assessment	Faculty	Phone, e-mail, Forum
	Practical support, economy etc.	Administration	Phone, e-mail, Forum
	Follow-up	Administration	Phone, e-mail, surface mail
	Technical support	Administration	Phone, e-mail, Forum
	Resources/library	Administration	Print, WWW
	Learning group support	Fellow online students	Phone, e-mail, Forum
	Local learning support	Local faculty Classmates	Face-to-face
	Local administrative support	Local administration	Face-to-face, phone, print
	Local technical support	Local faculty Local administration	Face-to-face
	Local social/practical support	Employer Family	Face-to-face
Graduation	Diploma/accreditation	Administration	Print, face-to-face
After graduation	Counselling on further study	Administration	Print, e-mail, WWW
	Counselling on job opportunities	Administration	WWW, Forum
	Alumni services	Administration	e-mail, WWW, Forum

Figure 7. Framework of support services for online distance students (NKI)

In table 7 we have included the following components of the system:

Administration:

- Marketing and sales staff, course coordinators, counsellors, advisors, office staff
- Local administration (study organisation, employer, local office)

Faculty:

- Senior faculty and internal academic staff, external and internal tutors
- Local teachers

Fellow students:

- Students in same course, in other courses and classmates in local learning groups

Employer, family and colleagues:

- Not usually included in analyses of educational systems, but may be seen as (the most) important support system for online distance students (e.g. Bajtelsmith, 1988)

The pre-produced course materials (Thorpe, 2001) are not considered to be part of the student support services. Thus, they are not included among the support components as in the Aoki & Pogroszewski (1998) model.

From our own survey, experimental and evaluation research during over 30 years we would conclude that the main message of adult educators (e.g. Knowles, 1970) that adult students are independent and should be treated as *'autonomous learners'* is confirmed. Moore's (1991; 1993) theory for distance education is based on these principles. Still, it seems to be a common understanding that *'continuous concern'* for students, support and following-up systems are of central importance for student success in distance learning (Rekkedal 1972b; 1985; Sewart, 1978). There is all reason to believe that there is no less need for support and follow-up systems for online learners than for learners in earlier forms of distance education. John Bååth (personal communication, September 28, 1997) expressed this great and difficult challenge:

> We have four categories of students; there are
>
> - students who need student support services but don't want them
> - students who need student support services and want them
> - students who don't need student support services but want them
> - students who neither need nor want student support services.

A pedagogical correct model of Internet based e-learning must, as high quality distance education, be designed and organised to satisfy the support needs of a large variety of students. These support measures are handled by different categories of personnel and different media and technologies; they may be general for all or specific according to individual needs; they may be automatic or dependent on human decision; they may be based on personal contact and personal service or delivered electronically without human intervention.

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