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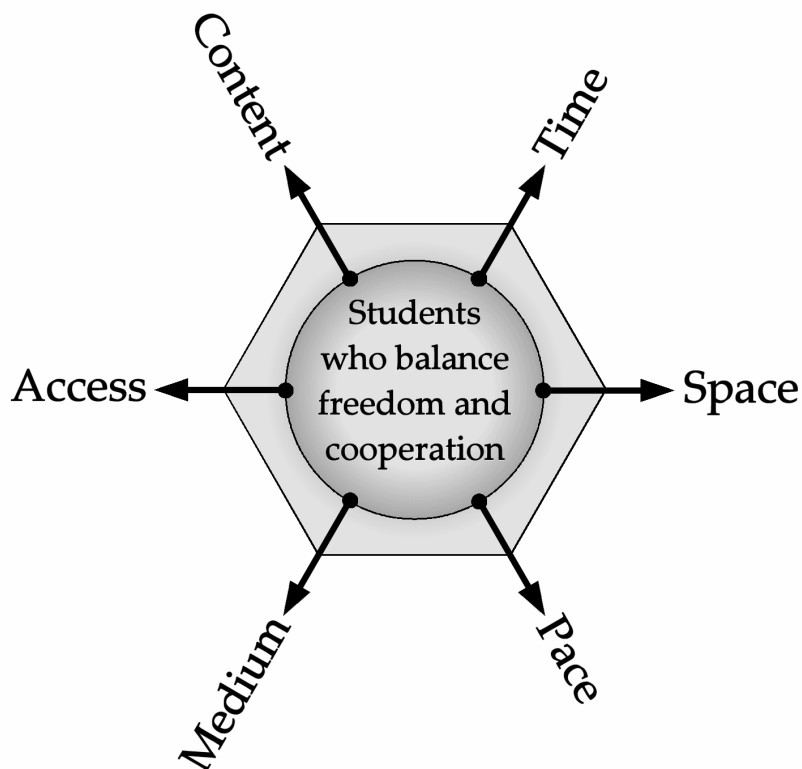# ZIFF PAPIERE 121

The role of
student support services
in e-learning systems

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1.1 Overview

This volume studies the role of student support services in elearning systems. E-learning is defined as the provision of education or training electronically, via the Internet. The term 'student support services' is used for those parts of a distance or electronic learning course which are additional to the provision of course content. These student support services can be further divided into 'learner support' and 'learning support'.

Learner support comprises all the assistance provided by a distance education or an elearning system which matches the facilities which a face-to-face system provides for the success of their students. This might comprise:

- Information Phase
- Guidance Phase
- Registration Phase
- Integration Phase
- Final Results Phase
- Accreditation Assistance Phase
- Guidance on Further Study Phase

Learning support lists the assistance provided by the institution in the actual process of learning to ensure that the learning tasks are performed successfully. They might comprise:

- **Learning Phase** This phase facilitates online learning. Online learning typically occurs via access to eLearning content, discussion forums, bulletin boards, email queries, telephone support, group work etc. These support both student to student and student to tutor interaction. Included might be:
- **Dispatch** of printed and other physical learning materials
- **Instruction** on Online Learning techniques
- **Bulletin Boards** Online discussion rooms for all users to post comments, questions, learning support documents etc.
- **Email** The facility to contact tutors and / or peers.
- **Online tutorials** Online tutorials to support students in meeting their learning objectives.
- **Face to face tutorials** The facility to arrange online, face to face tutorials that support the students in meeting their learning objectives.
- **Resources / Library** Online access to additional material to support student learning.

- **Student - Self Assessment** The online facility to check learning progress during the course. The results of these tests are not usually recorded towards the final result.

- **Automated Assessment** Typically occurs at the end of a course, produces a result which may count towards certification.

- **Tutor Assessment** The facility to send work to a tutor / teacher for correction and evaluation.

- **Assessment Feedback** – electronic

- **Assessment Feedback** – manual

- **Student Portfolios** A personal home- page per student to allow them to introduce themselves to online colleagues, showcase their work, provide alternative sources of course information to colleagues etc.

1.2 Role of student support services in distance education

Student support services played a crucial role in the success of distance education; it is reasonable to expect that they would play a decisive role in elearning too. The success of distance education came when it was accepted that nationally and internationally recognised university degrees, college diplomas and training certification could be won at a distance.

The first 100 years of distance education were fraught with difficulties. Distance accreditation was not accepted, the correspondence image was rejected, university professors criticised education at a distance.

It was not until the foundation of the open universities in the 1970s that this image began to change. Although the course materials produced by the Open University of the United Kingdom, the FernUniversität in Hagen in Germany and the Universidad Nacional de Educación a Distancia in Madrid, Spain were highly praised, it was the student support services and feedback provided by these universities that enabled distance education to come of age.

An important distinction was between Teach Yourself Books and Distance Education Courseware. Pedagogically Teach Yourself Books provided the reader with information on the subject matter from which the student learned. Absent was, however, interpersonal communication and feedback on learning endeavours which had always been seen as an integral part of the learning process. The better distance education institutions provided interpersonal communication and feedback, as well as course content, by a range of facilities known as student support services. The role of the student support services was to guarantee the validity of the educational process by providing structures for interpersonal communication and feedback in the distance education system.

Student support services were crucial in the accreditation process of distance education courses and the decision of national and international bodies to award university degrees, college diplomas and training certification for studies done at a distance. There never was

question of awarding degrees, diplomas or certificates for Teach Yourself Books or Packages but it was one of the great successes of distance education that gradually nationally and internationally recognised certification was awarded for distance education courses, even at degree level. Today a B.A.Open degree from the British Open University is as valid a degree for employment purposes or for post-graduate research studies as a degree from another British university.

1.3 The analysis of Tait

Tait (2003) of the Open University of the United Kingdom gives a reflective analysis of the role of student support services in distance education. He asks: *What then are the main reasons for having student support integrated in an ODL system?*

He replies:

Students want support
The first of these is that students want it. While this might be said to be pedagogically weak in the theoretical sense, it is important for the best of reasons. In the OU UK student feedback tells us that some 10 per cent of students do not want interaction with other students, having perhaps a personality type that has led them to choose a study mode that reduces or removes the need for interaction with others. However, for the other 90 per cent, this is looked for, albeit not always taken up because of the demands on time and place that are so prevalent in the lives of adult learners.

The reduction of drop-out
Student support, especially student guidance and counselling, tutor support, and effective information and administrative systems all provide a range of activity that impacts not only in terms of teaching but also affectively, that is to say reinforcing the student sense of confidence, self-esteem and progress.

The nature of learning
A further mode of explanation for student support, especially for tutoring in group work in study centres or online and in the teaching given through the return of assignments, lies in the impact this makes on the learning process. Essentially this has been termed 'mediation,' that is the role that the tutor performs in relating the teaching content to the student as an individual in her or his situation, including the social, economic, geographic and cultural dimensions.

The statistics quoted by Tait from the Open University of the United Kingdom are impressive. Many years ago the Swedish scholar, Bååth, had argued that there were four types of students enrolled in distance education systems:

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.*

Tait has shown that the last category at the Open University of the United Kingdom numbers less than 10%. The avoidance of avoidable drop-out has always been a goal of distance education systems, which are often compared with conventional colleges and universities in spite of the fact that their students are normally older, have families and are in employment.

There can be little doubt that at the Open University of the United Kingdom in particular, the rich provision of student support services solved the drop-out problem and this contributed greatly to the status of distance education worldwide.

Tait's argument from the nature of learning is an important one. The provision of feedback is an important dimension of the education process and feedback on student work is a characteristic part of student support services.

1.4 The analysis of Thorpe

The identification of student support services in elearning LMSs has been commented on by Thorpe, of the Open University of the United Kingdom. She writes:

The use of computer-mediated communication (CMC) as an integral part of the design of distance taught courses raises interesting challenges to our thinking about course design and learner support. These have typically been conceptualised as two complementary but distinct systems in distance education, characterised by different practices often carried out by different groups of staff. Where CMC is designed as an integral part of the course, with collaborative learning as essential to assessment and study, this separation breaks down. The design of online activities is integral to both learner support and the course content, with new possibilities for open and distance learning as a result. Where the learning group itself is a resource for study and personal development, it also becomes feasible to orientate courses and programmes towards local teams and communities. Online tutors play a key role and need to develop 'the technology of conversation' and expertise in the design of activities, as part of their facilitator role.

Thorpe's position that "*Where CMC is designed as an integral part of the course, with collaborative learning as essential to assessment and study*", this separation breaks down. The design of online activities is integral to both learner support and the course content' is not accepted here. It is believed that it is still possible to identify course content development and student support services as component parts of an elearning system.

There are three reasons for this:

- Some elearning systems are today rich in student support services and some are not

- It is possible to identify in functioning elearning systems today clusters of activities which match the definition of student support services

- There is a clear distinction in elearning theory today between Learning Management Systems (LMSs) and Learning Content Management Systems (LCMSs).

It is clear that some elearning systems today are rich in student support services in a way which others are not. The NKI (Norway) system is particularly rich in student support services. Theoretical and technical justification of this richness is fundamental to the organisation. In contrast to this many corporate implementations of elearning are fragile in student support services and tools for these services, if present in the system, are little used. Thus, it is felt, that Thorpe's assertion that 'the distinction between course content development and student support services breaks down in elearning' goes too far.

In a similar it can be demonstrated that the student support services in an elearning system can be identified and analysed. A grid developed for this purpose identifies clusters of tools under the headings:

- Information phase

- Guidance phase

- Registration phase

- Integration phase

- Help desk

- Learning phase

- Final results phase.

These facilities are either present or not in an elearning system and the system can be analysed to evaluate and measure the degree of use of the facilities. The tools listed under the heading 'learning phase' are central to the richness or otherwise of student support services.

In a similar way the Learning Content Management System focuses on the provision of course content and the Learning Management System clusters the other services that are provided a support to the student.

1.5 The two worlds of elearning

In conclusion it needs to be stressed that elearning comprises a new sector of education and training provision today. Industry analysts put its value at $/€ 3 billion in 2003 and state that it is set to grow $/€ 18 billion by 2005.

This world is split into two halves: corporate elearning training provision and university/college elearning education provision.

Corporate training provision on the WWW is a rapidly growing industry, characterised by the leading American LMSs, like WebCT, Blackboard, Saba and Learning Space, regulated by American standards like SCORM 1.2, providing training certification and using either asynchronous elearning or synchronous systems like Centra Symposium.

University/college provision is less dominated, at least in Europe, by American LMSs and standards and makes little use of synchronous virtual classroom systems like Centra. It offers university degrees and college diplomas and 70000 such courses are listed on the TeleEducation, New Brunswick portal at http://courses.telecampus.edu/subjects/index.cfm.

The two halves of elearning have different attitudes to student support services. College and university systems, like NKI in Norway, are often designed to be rich in student support services and the provision of rich student support services is a central factor in the college or university's business model. Corporate systems, on the other hand, can be based entirely on man/machine interfaces and Tait's three rules for the provision of student support services break down.

'Students want support' is not proven. Courses tend to be short and focused on technical knowledge. Chatting is not a requisite. Email and bulletin boards, if provided, are not used.

The 'reduction of drop-out' is not a factor as courses are often done in company time and are a requirement for career progression.

The 'nature of learning' is different in training and education settings and this argument too does not convince corporate providers to include rich student support services in their elearning courses.

1.6 References

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2 INTERNET BASED E-LEARNING, PEDAGOGY AND SUPPORT SYSTEMS

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2.1 Introduction

This paper intends to identify and discuss the areas of e-learning that are important in describing the state of the art in e-learning 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 issues discussed in this paper will be used as a foundation for further analyses in the project, Student Support Services in E-Learning.

2.2 Definitions of online education and e-learning

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."*

If we accept that online education represents a subset of distance education we may define online education by accepting Keegan's definition and changing his points 3 to 4 to:

- 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 point five, as 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 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 important 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. 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 (see e.g. Dichanz 2001 "E-learning, a linguistic, psychological and pedagogical analysis of a misleading term").

However, as the term seems to have become part of accepted terminology, 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, who is 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" (Dichanz 2001)

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 has developed an online e-learning glossary, which provides this definition:

E-learning covers 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.

In the glossary of elearningeuropa.info, 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."

We agree with Keegan's (ibid.) 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.

Hence, the project, Student Support Services in E-Learning, 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 need 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 and administrative student support services. Our concept for this totality of organisational and administrative systems and operations is online flexible distance education (from the teaching organisation's viewpoint) and online distance learning (as seen from the student's viewpoint).

2.3 Pedagogical issues

2.3.1   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'ies 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.

2.3.2   Independence and autonomy

Michael 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 Tübingen, 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 is 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 in e-learning.)

According to Moore (1991, p. 2-3):

"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."

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
http://tecfa.unige.ch/staf/staf9698/mullerc/3/transact.html

ERIC document annotations on 'transactional distance':
http://www.asu.edu/lib/webdev/trans.html

2.3.3   The industrialization of teaching and distance teaching in the post-industrial society

Otto Peters (1965), 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 have often been misunderstood and often criticised (see 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; 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 draw the following conclusions:

"Distance education is, indeed, a typical product of industrial society. This not only applies to its inherent industrial principles and trends but also to the fact that distance education has been capable of meeting educational needs typical of an industrialized economy and that it could attract and keep highly motivated students who wish to improve their vocational or professional status as well as their income, sacrificing their leisure time for gratifications often delayed for many years.

In a post-industrial 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.

This means that the shift from industrial to post-industrial distance education will be a Copernican. Slight and superficial alterations will certainly not do." (Peters 1993, 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.

2.3.4   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 argued in favour of a conversational approach to course development (Holmberg 1960 pp. 15-16) 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 summarises his basic theory, concerning learning, teaching and organisation/administration, as follows:

"Distance education mainly serves individual learners who cannot or do not want to make use of face-to-face teaching, i.e. usually working adults who wish to learn for career purposes or for personal development.

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. It may inspire meta-cognitive approaches.

Central to learning and teaching in distance education are personal relations between the parties concerned, study pleasure and empathy between students and those representing the supporting organisation. 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" (Holmberg 2001).

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 included its 'built-in tutor'. He specifically refers to the educational institution as the supporting organisation.

Holmberg agrees with Keegan that modern developments, included online learning, have not changed the content of the theory, although he clearly values that the use of new computer technology, 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 in 2001 finds that the relevance of the theory is now greater than when it was first developed.

2.3.5   Immediate and individualised communication – educational transaction and control

D. Randy Garrison published his book 'Understanding Distance Education' in 1989. (See also Garrison 1993.) Garrison 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 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. This educational transaction includes a mutually respectful relationship. It is a complex transaction for the purpose of transmitting and transforming societal knowledge.

Instead of, what Garrison 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'. Control 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 view that high quality distance education is best organised within a traditional university or teaching institution.

In our view, Garrison's 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 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 it will in Thorpe's (2001) 'Online ODL – Learner Support Model – Web-based' (discussed later in this paper).

2.3.6   Cooperative learning and constructivism

David McConnell gives an introduction to computer supported cooperative learning in his book 'Implementing Computer Supporting Cooperative Learning (2000).

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 encourage 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 loose.

In cooperative learning the theory is that everyone wins no one looses. The learning process is not seen as an individual pursuit concerned with accumulating knowledge, but as part of a social process where students helps 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 (1990) (from 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 problem 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.

2.3.7 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 2-1 illustrates six dimensions of flexibility that many individual students want. Many institutions (among them NKI (se below)) 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). 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.
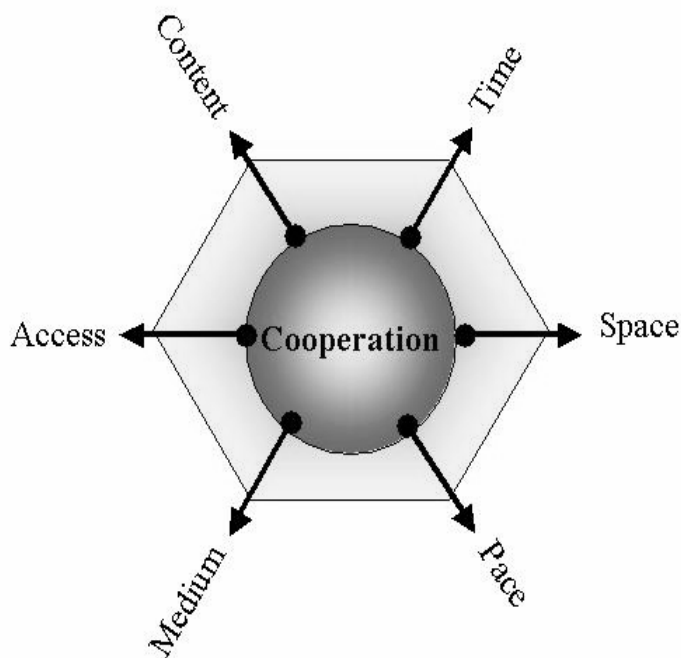
Figure 2-1: The hexagon of cooperative freedom (Paulsen 1993).

The CISAER project (Paulsen 2000) 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.

2.3.8   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 (WAI) (http://www.w3.org/WAI/)

Introduction to Web Accessibility (http://www.webaim.org/intro/intro2)

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.

2.3.9   Teaching and learning philosophy, teaching models and organisational models for online education

There is hardly no doubt that our view on teaching and learning will influence our choice of methods, organisational models and (perhaps also) learning management systems and 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 in the system.

It also seems that some learning models are better suited to one type of organisation that another. Thus, on 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.

2.4   Student support in online distance education – "continuity of concern for students"

Generally and historically distance educators have had basically 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 connection - 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 NKI Distance Education, although we know that direct teaching may increase experienced quality by some online learners. On the other hand, 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 material (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.

Most institutions offering distance education or online courses have understood that student support is necessary to secure quality of learning, 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.

2.4.1   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 problems connected with drop out 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 (se 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).

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."

During the preceding years research on drop out in conventional higher education has largely applied a model often referred to as 'Tinto's (1975, 1987) 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.
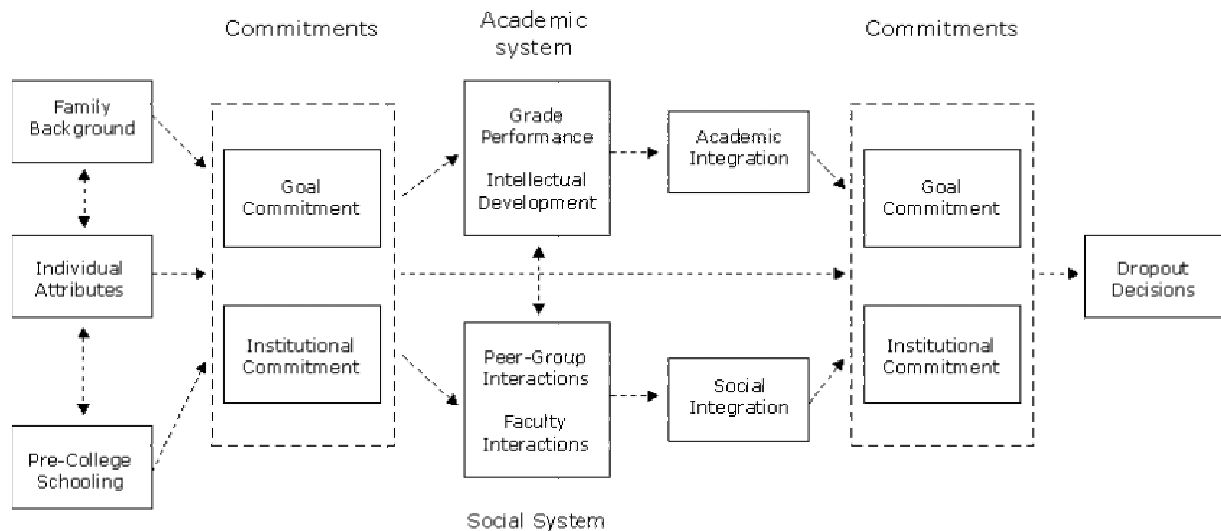
Figure 2-2: Tinto's (1975) model for drop out from college

The student enters the academic institution with a social and personal background that influences which commitments he/she will have to the institution and 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 Vincent 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 (see e. g. Sweet 1986, Taylor et al. 1986, Kember 1995). It seems clear that Tinto's 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 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."
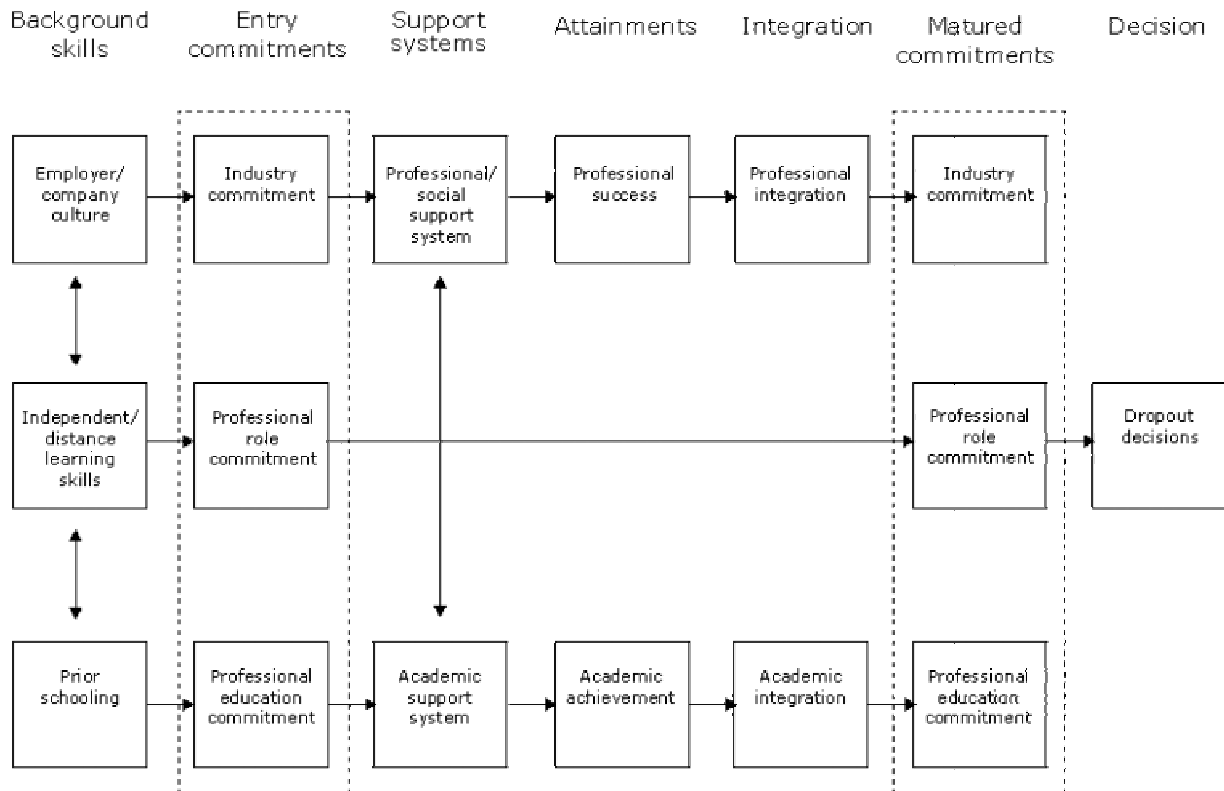
Figure 2-3: Bajtelsmit's (1988) model of drop out from distance education

David Kember (1995) argues that Tinto's model are suited also for analyzing completion and attrition problems in distance education and has developed 'a model for student progress' based on Tinto.
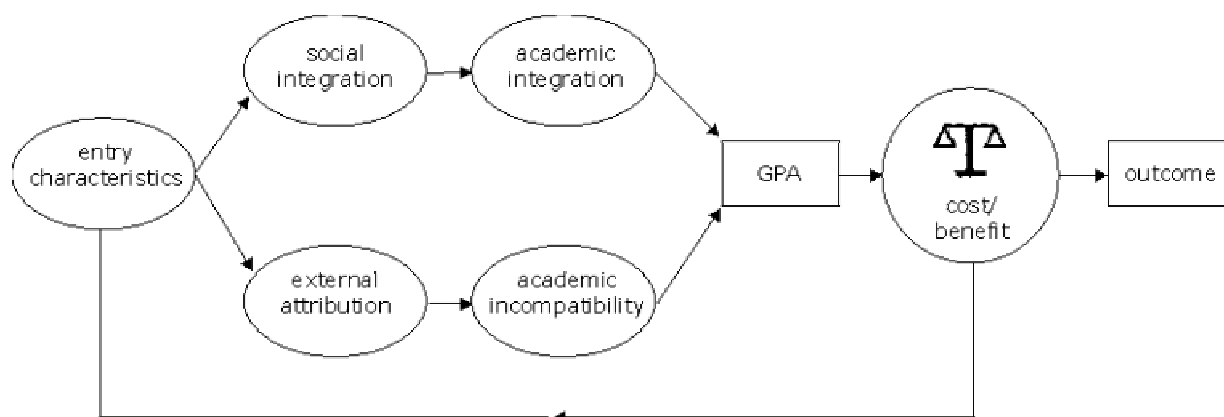
Figure 2-4: Kember's (1995) model of drop out from distance education

Kember's 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 favourable 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 decides 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 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 (see Marton et al. 1997, Morgan 1993).

The assumptions above would have implications 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.

2.4.2   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. It 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 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." (Kember 1995, 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 et al. 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

2.5 Student support

2.5.1   The Personal tutor/Counsellor

Questions concerning student support are central in the theory of Börje Holmberg (1960) on '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. Otto 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, we 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. So en 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

Aspect	Experimental group	Control group
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 2-5: **Aspects included in the "personal tutor/counsellor experiment" (Rekkedal 1985)**

2.5.2 Continuity of concern for students

David Sewart 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. Already during the planning stage of the Open University counselling, guidance and support were in focus, and the Project Working Group on Counselling and Tutorial Services listed among functions of the counsellors (Sewart 1978):

- Personal continuing relationship with student – contact and encouragement
- Help students with general study problems
- Personal and social needs of the student, including domestic and personal problems
- Create conditions for students to meet informally and create for informal group discussions
- Make contact with students unable to meet at study centres
- Prevent drop out and follow up non or irregular attendance
- Advice students on vocational and further education opportunities
- Advice students for further Open University courses

David Sewart also maintains that the success of the Open University largely is a result of its support and counselling systems.

2.5.3 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." 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 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 1993).

David Sewart 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. Sewart (2001) presents the aims and goals of the UKOU 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 is contrasting 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 emphasizes 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 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."

Phillips, A., Phillips, M. & Christmas, D. (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 UKOU 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.

2.5.4   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." (Ibid.)
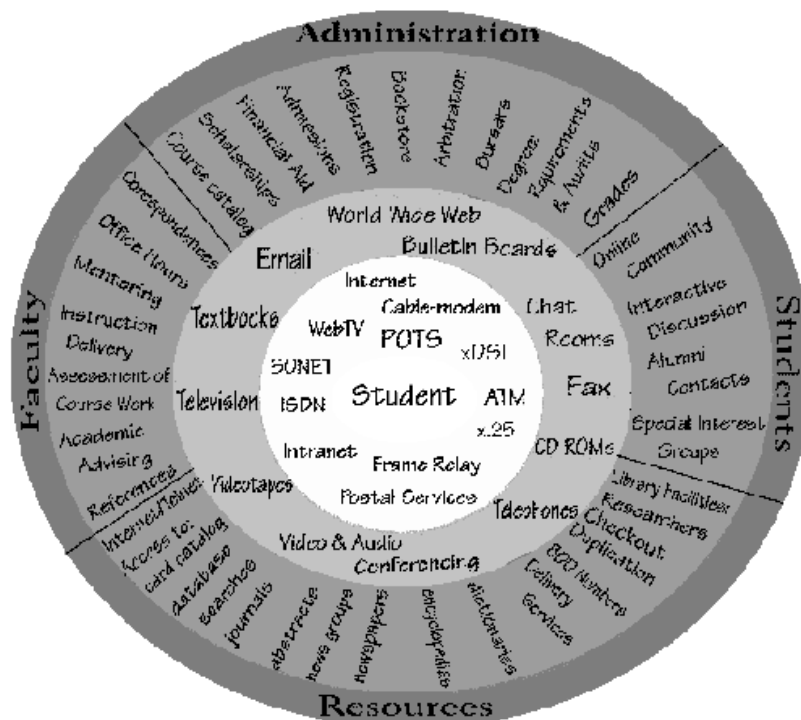
Figure 2-6: The Virtual University Reference Model (Aoki & Pogroszewski 1998)

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 (Ibid.) 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.

2.6 Student Support Systems in NKI Online Distance Education

2.6.1   NKI online distance education (or Internet/web based e-learning)

NKI was probably the first European online college, and it has offered distance education online every day since 1987. Few - if any - online colleges in the world has been longer in continuous operation.

NKI Distance Education has today well above 300 courses and more than 60 complete study programmes on the Internet. March 2003 we had 4,700 registered active students. Contrary to many other educational providers, where the Internet is used as a supplement to face-to-face teaching or other forms of distance education, we have followed the philosophy that in principle all communication can be taken care of through the Internet, and ideally no obligatory physical meetings should be required. (This does not mean that the students are not free to communicate by post, phone or fax or that study materials includes print, audio or video technologies.)

2.6.2   NKI Internet College '4 Generations' of development

The NKI Internet College has been developed through 4 systems generations:

1987 - 1994: '1st generation' based on the conferencing system 'EKKO', a menu based conferencing system designed by our in-house systems developers no other options were available that could be installed on the mini computer in NKI at that time. The idea was that we through 'electronic means' could establish a virtual school and be able to simulate electronically all communication needs previously organised through solutions of combined distance teaching and local face-to-face classes.

1994 - 1995: '2nd generation' – 'the open electronic college' with the underlying philosophy of offering a system as 'open as possible to other networks and services based on the Internet, e-mail and Listserv conferencing system'.

1996 - 2001: '3rd generation' – the introduction of graphical interface and the WWW, taking the step from 'small scale experiments to large scale Internet based distance education', introducing courses and programmes below university and college level.

In our experience, it is the step from small-scale to large-scale operation that involves the greatest challenges. Putting some teaching material on the Internet and offer one single course is not a very difficult task. The great challenge is to develop and administer an Internet based teaching organisation offering a large number of courses with high quality to a large number of participants on a continuous basis. This is why we experienced a great leap forward when we March 2001 launched what we characterize as the '4th generation' with the introduction of SESAM (Scalable Educational System for Administration and Management). SESAM is our internally developed learning management system completely integrating the teaching-learning system on the WWW with our overall student administrative system (STAS). The learning management system and the student administrative system together form the basis for the complete system of student support services.

Based on theory and research from the field of distance education, included our own research, NKI has chosen this basic philosophy for the development of Internet based education at NKI: Flexible and individual distance teaching with the student group as social and academic support for learning. NKI recruits thousands of online students every year. These students may enrol in any of the more than 60 study programmes or 300 courses or in any combination of courses at any day of the year and progress at their own pace. This flexibility does not exclude group-based solutions in cooperation with one single employer, trade organisation or local organiser.

All our research confirms the main message of adult educators (e.g. Knowles 1970) that adult students are independent and should be treated as 'autonomous learners'. 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 1972, 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. The great and difficult challenge have been formulated by John Bååth:

"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."

2.7 Student support in the NKI Online Distance Education System

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 media
	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

Figure 2-7: Framework of student support services for NKI online distance students, part I

Time	Support needs	Component responsible	Tools/applications
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 2-7: Framework of student support services for NKI online distance students, part II

In figure 2-7 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. Bajtelsmit 1988)

As the pre-produced course materials (e-learning package) (Thorpe 2001) is not considered to be part of the student support services, office and academic staff is not included among the support components as in the Aoki & Pogroszewski (1998) model.

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3   PEDAGOGY AND SUPPORT SYSTEMS IN E-LEARNING

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3.1 A new sector

Industry analysts give the value of the e-learning industry at $3 billion by 2002 in the United States alone and forecast that it will grow to $15 billion as soon as the year 2005.

A whole new sector of education and training has been born. The CISAER Leonardo da Vinci project in the years 1998-2000 demonstrated that e-learning was already a sector of educational provision that had its own rules and regulations, examples of best practice and presented transcripts of interviews with leading industry experts who moved confidently from e-learning systems with 200 students, to systems with 2000, to systems with 20000.

The rapid emergence of this new sector of education and training provision is surprising as Collis in her influential *Telelearning in a digital world: the future of distance learning* puts the start of courses on the World Wide Web as recently as 1995. Since then e-learning has grown to encompass corporate learning and university awards and has grown into a billion dollar industry.

The purpose of this paper is to analyse e-learning both as a billion dollar industry and as an educational phenomenon. The focus is on the pedagogy of e-learning , that is the educational and didactic principles on which it is based, and on the provision of student support services, that is those parts of the educational programme which are additional to and supplementary to the provision of course content.

The analysis sees electronic learning (e-learning) as a subset of distance learning rather than conventional provision in school classrooms, company training centres or university lecture rooms because in e-learning the student is usually placed alone in front of a computer for the purposes of learning and does not join a class or learning group for face-to-face interpersonal communication with a teacher, trainer or lecturer. E-learning differs from distance learning in that it can take place in schools or universities or training centres when the teacher puts the content to be studied on the World Wide Web and makes it available for study on computers distributed throughout the university, school or training centre either as a supplement to or substitute for the presentation of content face-to-face in the classroom.

3.2 The World Wide Web

There is now little doubt that the World Wide Web is the most successful educational tool to have appeared in a long time. It combines and integrates text, audio and video with interaction

amongst participants. It can be used on a global scale and is platform independent. While largely an asynchronous medium, it can also be used for synchronous events. It is not surprising therefore, that trainers, lecturers, distance education providers and teaching institutions at all levels are increasingly using the World Wide Web as a medium for course provision.

The arrival of the World Wide Web created a new market for educational provision: citizens who already spent more that 20 hours per week in front of a computer screen who wanted to be trained in front of a computer screen too.

An early analysis of this new market for education and training was made by Fritsch.

By 1997, Fritsch, in Germany, had started the analysis of a new training market. He identified students who:

- spent more than twenty hours a week working in front of a screen,

- had a company or university link to the internet,

- could write or edit a page in html

- wanted to be trained in front of their screen.

It seems remarkable that, by 1997, there was a new market of persons who spent most of their day in front of a computer screen and wanted to be trained in front of their screen too.

Electronic learning or e-learning became a new form of distance learning and spread rapidly throughout the world both in corporate training and in university and college education.

The spread of electronic learning coincided with a worldwide increase in the availability of information and communication technologies and a new set of skills among the general population in dealing with these technologies. A major factor was the availability and use of email which became a major feature of many e-learning systems with the Open University of the United Kingdom reporting as early as 1998 that 50.000 of its students were online and that they sent 70.000.000 emails and that these were read 700.000.000 times. Typed interaction became a major pedagogical feature of e-learning as typed student to tutor communication and typed student to student interaction became staple features of e-learning systems.

3.3 The distance learning background

Distance education paved the way for electronic learning by separating the teacher in time and place from the learner and by demonstrating that valid educational outcomes could be achieved outside the traditional face-to-face educational framework of the classroom.

In those days, as today, education and training took place face-to-face, with interpersonal interaction, in the university lecture hall, the school classroom or the company training centre. The pedagogical structures were interpersonal communication from the teacher to the students

in the learning group and learning was said to occur in the psychological processes that were characterised by the changed skills or knowledge or behaviour that were the result of learning.

Distance education was different. In distance education the teacher developed the content of the course that was to be learned one, five or ten years before it was offered to students. Students could be in any country of the world and the course could function when the teacher had left the institution or had died.

An important distinction was between Teach Yourself Books and Distance Education Courseware. Pedagogically Teach Yourself Books provided the reader with information on the subject matter from which the student learned. Absent was, however, interpersonal communication and feedback on learning endeavours which had always been seen as an integral part of the learning process. The better distance education institutions provided interpersonal communication and feedback, as well as course content, by a range of facilities known as student support services. The role of the student support services was to guarantee the validity of the educational process by providing structures for interpersonal communication and feedback in the distance education system. Examples of student support services would include provision of a tutor, telephone communication, correspondence communication, audio conferences and occasional seminars or tutorials.

Student support services were crucial in the accreditation process of distance education courses and the decision of national and international bodies to award university degrees, college diplomas and training certification for studies done at a distance. There never was question of awarding degrees, diplomas or certificates for Teach Yourself Books or Packages but it was one of the great successes of distance education that gradually nationally and internationally recognised certification was awarded for distance education courses, even at degree level. Today a B.A.Open degree from the British Open University is as valid a degree for employment purposes or for post-graduate research studies as a degree from another British university.

3.4 Extent of provision

The extent of provision of e-learning today and the extremely wide range of subject matter covered can best be realised by visiting one of the portal sites on the internet which lists courses from a range of providers.

The best known site is that provided at http://courses.telecampus.edu/subjects/index.cfm by TeleEducation of New Brunswick in Canada. This site lists 70.000 courses and then gives a detailed breakdown on each giving data that is of value to students seeking to enrol in an e-learning course. Here is the New Brunswick site:

By clicking on the categories provided one gets taken to other screens which provide the following data on each of the 70.000 courses:

- The university provider (most of the entries are academic rather than corporate)

- Course description

- Learning level

- Language of course

- Price.

The next illustration gives an example of this provision:

3.4.1 Two types of provision

There are two types of e-learning provision, which will here be called asynchronous and synchronous provision.

The traditional learning environment was based on synchronous communication in which the teacher and the learning group were brought together at the same time, in the same place for the purposes of learning.

The distance education learning environment, at least as practised in Europe, was based on asynchronous communication with students enabled to learn at any time or any place that their social and family commitments permitted. Students studied individually with printed learning materials, audiocassettes, videocassettes and in some systems broadcast television programmes, usually at their own homes and sometimes at work. Feedback and contact with the tutor and the institution was on an individual basis.

It comes as a surprise to many in Europe to learn that the term 'distance learning' as used in the United States in the 1980s and 1990s frequently referred to a group-based form of distance education provision. The wondrous developments of technology in a telecommunications revolution in the 1970s and 1980s were quickly harnessed for distance education in America. Satellite-based systems and videoconference-based systems quickly developed. A typical scenario was a professor lecturing at a central campus with the lecture being beamed by a

satellite uplink to be down linked to a series of other groupings of students across the state or the nation. Thus distance learning was group-based, as it was beamed to groupings of students gathered at different locations throughout the state and it was based on synchronous communication, as the professor was beamed out live to all the students attending the course at a distance. In many systems a telephone link was provided so that students could question from a distance the professor or interact with him.

In the same way videoconferencing systems were used to provide synchronous group-based distance learning. A typical scenario would be the provision of a Masters degree in Nursing from, say, the University of Albuquerque in New Mexico. Students in this degree course at a hospital 300 miles from New Mexico could follow the course by two-way video, two-way audio videoconferencing rather than travel the 300 miles to the lecture at the university and back after work at their hospital.

The new eLearning technologies permit both synchronous and asynchronous communication. Asynchronous systems are provided by Learning Management Systems like WebCT, Blackboard and others in which the course content is prepared and distributed to students individually. The students progress individually through the courses and communicate mainly asynchronously by email.

Synchronous systems are provided by Learning Management Systems like Centra Symposium, Click2Learn Aspen Suite and others. In these systems the students are brought together electronically at a fixed place and a fixed time just as in conventional face-to-face provision. The lecturer or trainer delivers the course live to the students in the group. These are frequently PowerPoint presentations and the calculation of audio levels throughout the system is important. There are electronic devices for raising one's hand to ask a question, for breaking the group into smaller discussion groups and electronic equivalents of many of the features of conventional education.

3.4.2   Academic and corporate

Courses in e-learning span both academic education and corporate training.

Although distance education courses dealt with business subjects, distance education was not embraced by corporate training to the extent that e-learning has been. Enormous savings in payment for training have been claimed by corporate trainers who have switched the bulk of their training from face-to-face training to e-learning. Previously staff left their company sites, travelled to hotels, attended lectures and training sessions, and frequently enjoyed a break from work pressures as part of their training programme. With the arrival of e-learning training has been focused on the computer on the desktop, travel bills and hotel bills are eliminated and staff do not leave their working environment for the purposes of training.

The e-learning scene is very much driven by corporate pressures, with a focus on man-machine interfaces, just-in-time training, multiple choice questioning and compliance with

SCORM and other standardization requirements. The internet abounds with sites of training providers who have developed ranges of courses for this corporate market and who sell large numbers of courses, fully developed, to corporate customers. A typical provider is Global Learning Systems:

Side by side with this enormous corporate e-learning market is the academic market from universities, colleges and schools. It is said that there are online courses from every United Kingdom university and every university in Ireland.

Many of these courses are for recognised university degrees. Examples of these degree offerings are given by organisations which list online degree courses available. An example is Geteducated.com at http://www.geteducated.com.

3.5 Accredited Universities

Announcements of new distance learning university programs at accredited universities.

3.5.1   DePaul University

School of Computer Science and Telecommunications - New Online Master's

http://dlweb.cs.depaul.edu

DePaul's School of Computer Science, Telecommunications and Information Systems (CTI) offers online MS degrees in Computer Science, Distributed Systems and Telecommunication Systems. Instruction is delivered via the Web, using CTI's innovative Course OnLine system and an assortment of communication tools. Students can customize their DePaul University degree, choosing distance-learning courses from a variety of degree programs and concentrations, all taught by CTI's distinguished faculty in conjunction with on-campus courses. For details E-Mail: distancelearning@cti.depaul.edu.

3.5.2   Drexel University - 30 Online Degrees and Certificates

http://www.drexel.com/rd/geted

Drexel University is a leading, private, non-profit university. Founded in 1891, it offers 175 programs to 16,000 students. Drexel has an international reputation for academic excellence and innovation and ranks among the top 50 private Doctoral/Research universities in the US.

Through its subsidiary, Drexel eLearning, it now offers over 30 graduate, undergraduate and certificate programs completely online. Online Bachelor's degree completion programs are available in Communications & Applied Technology (business and technology focus), General Studies and Nursing. E-Mail: info@drexel.com.

3.5.3   The University of Illinois at Springfield Web-Based

Undergraduate Degrees http://www.uis.edu/clas/online

The Virtual College of the University of Illinois at Springfield offers the Bachelor of Arts with Majors in English or Liberal Studies and minors in English or Philosophy completed entirely online. The Virtual College offers a Credit for Prior Learning Program that allows adult learners to document their expertise for degree credit. New online liberal arts and sciences degree completion programs are scheduled for launch each semester; visit the University of Illinois for further information.

Listings such as this give evidence of the availability of e-learning degrees from accredited universities that can be completed completely online. It is said that there are 2.500 online MBAs available worldwide, as universities compete for the online education market.

3.6 Student support services

Much of the groundwork for the award of university degrees, college diplomas and training certification that is nationally and internationally recognised for courses carried out at a distance from the institution or training centre granting the qualification was achieved by the field of distance education in the 20th century.

It was a lengthy process as the correspondence image was criticised by and unacceptable to many university academics. Crucial was the distinction between distance education courses,

which recreated the interpersonal interaction and feedback which are crucial to the education act at a distance, unlike Teach Yourself Packages which lacked the essential pedagogical structure of intercommunication and feedback and for which university degrees and other qualifications were not available.

It was not until the foundation of the European Open Universities in the 1970s that full recognition for the award of university degrees for distance education was achieved. These universities offered degrees that were valuable on the job market, and were valid for post-graduate university research and were interchangeable with degrees at conventional universities so that a student could transfer from the distance university to a conventional university to complete the course.

These universities brought about an immediate raising of standards in both the quantity and quality of provision and had large numbers of full-time staff for course development, student support and academic research. Although the course materials designed by these institutions received much acclaim, it was the student support services which they provided that were crucial in the acceptance of their degrees.

Student support services are defined as all the facilities and assistance a distance system provides which are additional to the course content, which is contained in the learning materials developed by the institution.

It is the student support services which supply the essential pedagogical features of the educational process, supplying the interpersonal communication with the tutor and other representatives of the institution and the feedback that guides the students' progress and leads to a successful outcome.

3.6.1 Characteristics of student support services

In the distance education period examples of student support services would include:

tutor contact,

telephone counselling,

correspondence contacts,

assignment correction,

audio conferences,

email,

seminars and

face-to-face meetings.

In a broader interpretation they would include the provision at a distance of all the features that conventional universities and colleges provide for their students including:

Induction-type services,

General information services,

Counselling,

Social work services,

Special needs services,

Career Guidance,

Study Guidance and study groups,

Intervention service (for those deemed likely to drop-out of the system).

The best distance education systems and Open Universities provide a wide range of services for their students which makes them national institutions of great prestige and reputation which take their place easily amongst the universities of the nation.

3.6.2   Student support services in e-learning

Rekkedal and Langdon provide listings of student support services transferred from distance education to the e-learning field.

Rekkedal's presentation is given at pages 30-31 above. Rekkedal's list is comprehensive and particularly helpful are the division of his presentation by phases:

Prospective phase

Start-up phase

Learning phase

Graduation

After graduation.

His listing of the representatives of the institution that are involved in the provision of the student support services is also valuable, as is the listing of the media used in each of the services provided.

Landon developed a grid for the analysis of Learning Management Systems for the Centre for Curriculum Transfer and Technology in British Columbia which has been taken over by EduTools of Boulder, Colorado. It provides a comprehensive analysis of the leading Learning Management Systems for e-Learning under a wide range of headings comprising both Course Development tools and Student Support Services. It is published at http://www.edutools.info .

These studies show a rich provision of Student Support Services in e-learning systems.
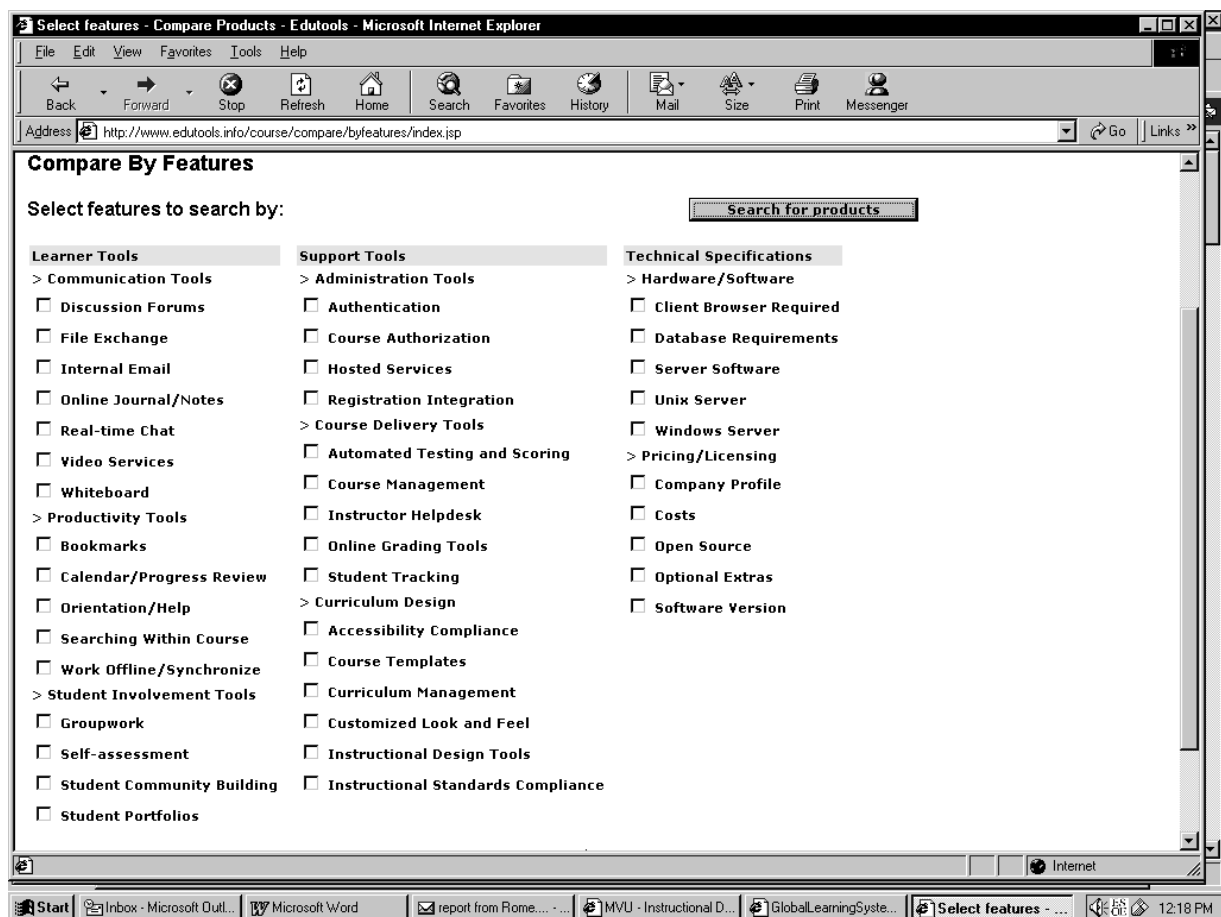
They contrast markedly with this presentation of e-learning which is from an influential American study: T.H. Davenport writing in 2001: "The use of eLearning is generally unsupervised by any instructor or training professional; this is one way it achieves economic efficiencies" (http://www.linezine.com/5.2/articles/+deatae.htm).

This contributes to the distrust of eLearning in recent surveys: "Recent opinion surveys, give indicators that the world is reluctant to accept eLearning on a par with residential instruction" (http://www.geteducated.com/vug/oct01/vug1001c.htm).

3.6.3   Student support services – the issues

The major issue with regard to provision is the level of student support services necessary for a viable system.

Examples have been given of a particularly rich e-learning system from Rekkedal at NKI in Norway and Davenport's view that "*The use of eLearning is generally unsupervised by any instructor or training professional; this is one way it achieves economic efficiencies*".

Another issue is the level of student support services necessary for accreditation. Is accreditation to be granted only for programmes rich in student support services or for programmes that are characterised only by man/machine interface?

Differences from the distance learning scene need to be noted. In distance learning there was a relatively clear distinction between course development tools and student support services. This distinction does not transfer to e-learning. Most e-learning Learning Management Services provide electronically for both course development and student support, often in a way that mingles them so it is hard to distinguish electronic course development tools from electronic student support services.

The corporate sector may differ from the academic sector in student support services. Man/machine interfaces may be acceptable in corporate training, whereas a human interaction may be required for academic e-learning.

3.7 e-learning standards

There have been many calls for the establishment of standards for e-learning and many attempts to set up sets of standards. As an example we may take the well-known standards published on the WWW by Michigan Virtual University at http://standards.mivu.org. Here is a quotation from their site:

More than a year ago, MVU began developing rigorous standards to guide the design and evaluation of online course quality. Based on decades of research and the work of the best minds in the field of Instructional Design, we have recently completed a comprehensive set of standards that can now be used to design and evaluate online courses.

3.7.1   What is Instructional Design?

Instructional Design is the science of instruction. Based on research and observations about effective teaching and learning practices, Instructional Design has been used in the fields of both Education and Training to aid in the development and assessment of instructional practices across content areas and settings.

3.7.2   "Open Source" Standards

At MVU, we feel that it's important to share with the community. That's why we've made our standards available here for all to see and use. Read the *Overview* of our standards or take a look at our *standards*, including benchmarks, measurement criteria and prescriptions for quality online learning. Download our *Course Evaluator* tool - a detailed check-list based on our standards to help you measure the quality of your own online course. We would also be interested in your suggestions, comments or other *feedback* you may have.

3.7.3   NEW! Accessibility Standards

Since the release of our standards and tool, we have received over 300,000 hits to our web site! As a result, we have received a significant amount of very valuable feedback from you. One of the biggest requests was that we consider developing Accessibility standards. We are pleased to announce that we have just completed this process. Based on WAI Priority 1

Standards and with the help of the people and resources available at _**WebAIM**_ and the _**World Wide Web Consortium**_, we have added 11 new Accessibility standards to our site. The _Course Evaluator_ has now been updated to reflect these new standards.

3.7.4   The challenge

The challenge is to produce viable e-learning systems that are based on sound pedagogy which enable students to undertake valid study programmes that lead to accepted qualifications.

4   Student support services for e-learning: collaborative tutoring and authentic assessment

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4.1 What is e-learning?

Although very much has been written about e-learning in the past five-seven years, confusion, it seems, continues to abound as to what precisely the term refers. Variants even in the actual spelling of the word can be found throughout the literature (elearning, e-learning, E-Learning or eLearning?) not to mention a multiplicity of proffered meanings.   Marcus Pailing, Marketing Manager at Knowledge-Power.com, a private e-learning design company, captures a common scenario for many working in the field when he writes:

‘it is all very well for me to talk to a potential client about an e-learning solution, but we spend half the meeting making sure we are both talking about the same thing. No wonder customers are confused’

4.1.1   E-Learning and Distance Education

It is not uncommon to find e-learning confused with distance education, even though the later predates it considerably, going back at least to the mid-1800s with the beginning of correspondence home-study courses in America, France, Germany and the UK, as is well documented in the literature. It was, and still is, the means by which education and training was made available to groups experiencing difficulty in accessing formal face-to-face courses, such as, for example, those who lived in remote areas or worked during classroom/lecture hall times and, in these early days, women who were not allow enrol in the traditional male-only learning institutes. Today distance education is a highly popular alternative to face-to-face learning.   Daniel lists 11 institutions which meet his criteria for the mega-university as a distance-teaching institution of over 100,000 active students, including, on this side of the Atlantic, The French Centre National d’Enseignement a Distance, The University of South Africa, The Spanish Universidad Nacional de Educacion a Distancia and, of course, the UK Open University (Daniel 29-30).

The underlying technology has changed somewhat over the years however. The medium of mail remained the dominant one for distance learning courses until the early 20th century when instructional radio began to be used which, after a largely unsuccessful debut, gave way to the educational television movement of the mid-20th century which was itself succeeded in the late 1970s and 1980s by the use of cable and satellite television. Told in this way it is easy to see why distance learning and e-learning are confused and why some like to see e-learning simply as the latest incarnation of distance education, a natural extension of distance

learning models, a thesis supported, according to Venkatachary, by the following characteristics:

- The adoption of the 'course team' approach from the Distance Education models for the design and development of courseware

- The emphasis on building a 'dialogue' with the learner group through technology-driven interactive elements in the courseware

- The affordance for interaction, discussion and collaboration in learning through instructional design elements.

The fact that the e-learner and e-instructor are often separated in time and/or space of course provides in the minds of many the strongest and most obvious case for viewing e-learning as a form of distance learning. This however is not always the case: learner and instructor may engage in e-learning in the same face-to-face space, in a networked computer lab, for example, or across a corporate intranet. In addition there is the fact that many institutes use e-learning technologies and methodologies to augment their face-to-face courses (as in "mixed-mode" learning, all or some of which can take place on campus), making the thesis distance learning equals e-learning seem less appealing. To equate distance learning with e-learning is also, of course, to ignore both the historical influence of Computer-Based Learning and the unique characteristics of the web and other modern ICTs as facilitators of learning.

4.1.2   What E-Learning Can Learn from Distance Education

Yet while it is overly facile to propose that the two are one and the same it would also be fool-hardly to dismiss the notion that e-learning has something to learn from distance learning. As Shirley M. Davies, past president of the USDLA writes: *While e-learning presents us with opportunities for new approaches as well as new obstacles, much of what we have learned during the past 30 years of technology-assisted distance learning is still relevant*

Clarke (Clarke 3) and Davies have pointed out that it is precisely the failure to build on past research and the assumption that each new communication/pedagogical technology is, of itself, unique and unprecedented, which leads to certain mistakes being continually repeated.

This is a view which essentially provides the departure point for this paper but, as we will see later, the paper also suggests that the use of the web and web-related technologies to facilitate learning may allow us to go beyond the bounds of what Nipper refers to as 2nd generation distance education, overcoming its deficiencies while retaining its well-known benefits. So while e-learning certainly has lessons to learn from the history of distance education it need not necessarily be overly circumscribed by it.

4.2 Tutoring in Distance Education and E-Learning

4.2.1   Persistence in E-Learning

At present however e-learning is dogged by accusations of lack of quality, the failure of many high-profile e-learning initiatives (e.g. Fathom[1]) and high drop-out rates.   The issue of retention provides a useful quantitative index of student attitude regarding those features students value within courses and, more particularly in the context of this piece, which of those features are often missing in e-learning (Clarke 9). Significant then that dropout rates for online courses are reported as ranging from 20 to as high as 50% (Clark 8, 2003) with some evidence to suggest that rates may even be as high as 70 to 85% (Horton 41).   In the words of one well-placed observer:

'the challenge for online education providers…is, not so much how to recruit students , but how to retain them once they have begun' (Ludwig-Hardman 2003).

4.2.2   Second Generation Tutoring

In traditional, "second generation", distance education; based, in part, on the theoretical foundation of Tinto and Bean and Metzer's research into student integration/attrition (Rovia 2003) and certain models and frameworks of 'mediation' dating back to the work of Holmberg and Moore (Tait 2003) as well as the long-standing practices of the big name open universities; the challenge of high drop-out rates are typically answered through the provision of face-to-face tutorials.   The UK Open University for example, has, since its foundation, provided (non-mandatory) access for all its students to a personal tutor in groups of 25 or under in order to "allow personal knowledge, support and understanding to grow up through the lifetime of a course" (Tait 2003). Ongoing research seems to affirm the validity of the approach. As Mason writes (Mason 91): *'Studies of OU students going back over nearly thirty years continue to show that students value face-to-face tutorials [and] request more of them whenever asked'*

Face-to-face tutorials play the additional role in 2nd generation distance education, as pointed out by Robertshaw (quoted in Fahy 2003), of counteracting what might be seen as the overly "industrial" or mass-produced nature of much of the course materials, as well as representing a basic recognition of the personal and public/social character of education itself (Garrison 2002).

However, despite indisputable evidence of their value to students, it is worth mentioning the obvious fact that face-to-face tutorials, used to counteract the perceived disadvantages of learning at a distance, also undermine their advantages, such as the independence of time and

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[1] Pioneered by Columbia University in partnership with 12 prominent partners including LSE, Cambridge University Press, British library and the University of Chicago, Fathom opened in 2001 with an allocation of 14.1 million dollars from Columbia and went offline in March this year.

place and the economies of scale (Daniel 57). Mason also queries, as have others before her, whether the costs of tutorials are commensurate with the educational benefit. She goes on to cite evidence that some students in today's changing world of HE may be "choosing flexibility over hand holding"(Mason 93) , i.e. the convenience of the online over the inconvenience of the face-to-face. This, as we will see, may have to do with the changing nature of the typical distance education student.

The use of online rather than face-to-face tutorials, by contrast, while they re-achieve advantages of time and place independence are, however, often seen as highly expensive to provide. Rumble calls this kind of online learner support the "least costed ingredient in the costs of online learning" (Rumble 4). One strategy for overcoming this problem is to make use of pedagogical techniques and models which leverage more student learning for less tutor/mentor input (Fox 2002).

4.2.3   Third Generation Tutoring

Thorpe's account of 'third generation student support' represents such a 'high leverage' approach (Thorpe 2003). The web, she argues, has the capacity to blur the conceptual distinction long made in OD (e.g. Keegan 1996) between course development and learner support by using the learners themselves as a resource, "to build on their experience, reading and perspectives" (Thorpe 204). This adds, contends Thorpe, a fourth point of orientation, that of the learner group itself, to the traditional triangle of course materials, tutor and learner.
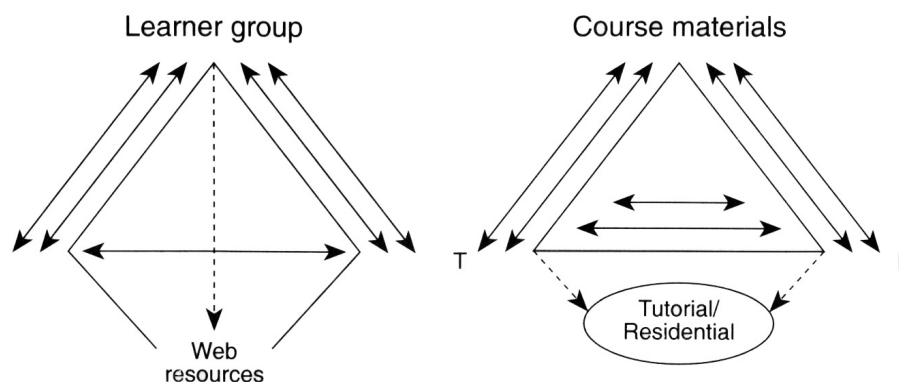
Figure 4-1: Mary Thorpe's Third Generation Student Support (right) contrasted with traditional SS (left) (Thorpe 2003)

4.3 The E-Learner and The Authenticity of Learning

4.3.1   E-Learning and The Lifelong Learner

Thorpe's model is evidently at odds with what Freire's famously condemned as the "nutritionalist" model of education, still very much the dominant model in HE, which organises its participants hierarchically in accordance with their status as official authors of knowledge. 'Third generation student support' however sits well with the changed and

changing profile of the typical e-learner who, as many commentators have noted, is likely to be an adult "lifelong learner", returning to education/training to obtain knowledge and competences to become more effective and more employable in the workplace. Today's learner, Paloff and Pratt (Paloff and Pratt 181) note: *'Although their previous educational experiences [may] have been traditional… [are] looking to enter a partnership that results in the achievement of specified learning objectives'*

This is evidenced in the demand for continual professional and work-related training. As Bates writes of the changing landscape of Higher Education today (Bates 12, 2000): *'…universities and colleges are facing an important increase in demand from all those in the workplace who need to continue learning if they are to stay employed and if their employers are to remain economically competitive'*

Daniel (Daniel 7) has also written that: *The principal challenge to the flexibility of universities is the changing nature of the student body. The term 'lifelong learning' is now part of the vocabulary of the industrialised world. It describes the need for people to continue their education and training throughout life because they will face multiple careers in changing economies and enjoy longer lives in evolving societies. The word 'learner' now designates a role, not a person*

4.3.2   The Theme of Authenticity

In this context of 'learner as customer' and the broader context of the explosion of knowledge itself in our society today as well as the concomitant and accelerating need for new professional skills/competencies the theme of *authenticity*, i.e. relevance to authentic or real-world situations, emerges as a primary concern for the range of stakeholders in the learning process. Higher Education today must not only incorporate an understanding of adult development (cf. androgogy) but also an understanding of and promotion of the relevance of its courses to the worker in the workplace. In fact the future development of Higher Education provision will likely require a closer and sustained partnership with the workplace and the learners within it in the design, development and delivery of learning programmes.

4.3.3   The Importance of Authentic Assessment

Among the constituent functions of traditional student support services those of assessment and testing are of critical importance here. As Brown, Bull and Pendlebury (Brown et al 7) have written : *Put rather starkly: If you want to change student learning then change the methods of assessment.* Assessment indeed is often overlooked as the "cash nexus of learning", (Brown et al 7) defining what students regards as important, how they perceive themselves as students and subsequently as graduates (Brown and Knight 1994) and, we may add, lifelong learners etc. As already outlined in its endeavour to meet the needs of a new breed of lifelong learners Higher Education is forced to give quite serious consideration of the authenticity of its programmes as perceived by them and the assessment process is key to this perception, strongly influencing, thus, the key issues of recruitment, retention and the success

rates for courses. For if the actual course curriculum as perceived by the conventional student is that which is defined by the assessment methods and instruments used, it is much more pointedly so for the e-learning lifelong learner who given time constraints, work and, more likely, family demands etc. will be far more selective when choosing to engage or remain within Higher Education programmes.

Authentic learning, in this sense, requires authentic assessment, it will not and cannot happen without the assessment methodology to define, facilitate, capture and value it. Moreover an authentic assessment methodology implies the setting of authentic activities; addressing central issues such as whether the activity is representative (in terms of being broad enough to allow for the adequate assessment of the constructs being tested) and direct (in terms of being narrow enough not to be confounded with irrelevant information), (Messick 1992, 1996) as well as various related psychometric and logistical issues and strategies for the assurance of the twin criteria of reliability and validity. The literature supports a number of other important claims on behalf of authentic assessment which can be summed up under the broad categories of "improved assessment"; i.e. the way in which it goes beyond the limits and inappropriateness of standard summative testing; and "improved learning", i.e. the way in which the authentic assessment experience is variously argued to be more meaningful, more 'real' and/or more encouraging of 'constructivist/active learning' and critical thinking (McAlister, nd).

In raising authenticity to this level of importance, it behoves learning researchers, particularly those involved in e-learning, to define authenticity in more rigorous terms, possibly, the authors suggest, in terms of 'permissible/acceptable deviation' from the real world situations.

4.3.4   Dominant Assessment Models for E-Learning

Just as 3rd generation 'constructivist' tutorial support was earlier suggested to be breaking down a traditional distinction between course development and learner support, proper authentic assessment methodologies effectively break down the distinction between the learning activity and its assessment, as typified by end-of-year high stakes summative exams or, the two dominant models of assessment for e-learning, consisting of:

- Auto-corrected tests of 'quizzes', i.e. the kind of testing associated with "pre-internet" CAL and CBL

- The submission/uploading of essays or reports for marking by a human expert, i.e. the assessment method of choice for "pre-computer" distance learning

There is then, it appears, what Lewis Elton and Brenda Johnston have in the context of assessment in Higher Education in general referred to a "strong persistence of largely unreflective traditionalism" here. Rather than using web-based technology to develop and support new approaches to assessment (using the 'e' to make the 'learning' authentic) many e-learning efforts simply continue to do things as they have always been done, borrowing

approaches to assessment from the twin traditions of CAL/CBL and traditional distance education. In fact it is strange, given all that has been written and done about issues relating to the content-side (cf. e-learning standards, Instructional Design techniques, content management etc.) and other areas of the e-learning project that so little has been done in the area of assessment and that dominant models, as outlined above, are almost retrogressive rather than progressive.

4.3.5   The Need for Authentic Assessment for E-Learning

Clearly in the context outlined above there exists a need to identify alternative authentic assessment techniques and methodologies for e-learning. These would represent a 'good fit' with the needs of the typical e-learner, and other stakeholders in the contemporary HE process, as well as good fit with the range of learning theories long associated with e-learning technologies (e.g. constructivism, active learning, inquiry-based learning, collaborative and peer learning etc), which emphasise the central role of the learner in the learning process and the role to be played in the process by interaction between learners. Authentic assessment then is about appropriate assessment for a view of learning that goes beyond the simple recall of facts, principles, procedures etc. into the area of creativity, problem solving, analysis or evaluation (Bates 2000, 13).

4.3.6   Issues to Consider

The authors contend that certain definitional aspects of the web are significant for developing authentic assessment methodologies:

- Web-based activities (unless, of course, they are 'authentic to' web-based or computer-based activities like, say, web design, or programming) are limited in 'how authentic' they can be but, by corollary, also limit 'real world risk'

- The possibility arises for constructing activities to progressively increase risk and representativeness in order to ensure and facilitate the 'robustness' of the learning

- All online activities are archived and can therefore potentially be used as evidence of learning, which is not the case in the face-to-face world where capturing the evidence may often prove problematic

- The usual and oft-quoted benefits of e-learning in general can be achieved

4.4 The E-Portfolio

In the context sketched out above the recent attention being paid to the use of the web to support portfolio assessment holds much promise for the evolving world of e-learning. It is a development which according to Batson (2003) can be seen as arising out of three interrelating trends or facts:

- Student work now being mostly available in electronic form or, as Batson says, "based on a canonical electronic file". We can add that even where it is not the process of digitisation is become simpler and cheaper all the time.

- The web, according to Batson, "is everywhere". Although not yet a ubiquitous technology the web is certainly becoming more and more so and the tendency, particularly at Higher Education level, is for an overwhelming majority of students to have web access and 'web literacy'.

- Database are available through web sites which provides users the capacity to manage large volumes of data and information online.

"E-portfolios", as they are coming to be known, in their many forms offer the potential to support a form of authentic assessment for the web which (Cambridge, B. 2002):

- can feature multiple examples of work

- can be context rich

- can offer opportunities for selection and self-assessment

- can offer a look at development over time

Simultaneously freeing the creator from the limitations of the e-portfolio's older paper counterpart and making available the oft-quoted benefits of e-learning in terms of openness, flexibility, transparency etc. In addition e-portfolios, the authors content, can be developed to measure validly many of the key learning and competencies for effective working, areas poorly addressed by the range of current, more conventional, assessment methods.

Some, unsurprisingly, claim that the e-portfolio represents a new revolution in e-learning and a burgeoning industry seems to have grown up to support the expectations and promises of academics and researchers in the field. A total of 30 separate e-Portfolio tools, defined as "now available or in production", are referred to, in fact, in a recent article on the subject (Batson 2003). Although the idea of the electronic and digital portfolio has been around since the early 1990s (Barrett 2001) it is still an area of emerging standards, approaches and services, in particular with regard to these new commercial platforms. Interoperability standards include issues such as document format (e.g. pdf, html, xml, etc), accessibility (e.g. WAI), data format (e.g. learner profile), authentication (e.g. certificates), access right, etc. IMS specification such as LIP (Learner Information Profile) and content packaging, are some of the elements that may need to be included in future ePortfolio standards (ePortfolio 2003).

A number of other related issues appear to the authors critical to the success of this new e-enterprise:

- Integration with existing e-learning systems, esp. commercial LMSs
- Systems and methodologies for evidence/artefact validation
- Supports to increase inter-rater consistency/reliability, e.g. support of shared rubrics
- Data/information management and mapping
- Security of data (How? Who?)
- Storage of data (How? Who?)
- Supported file/media types (Which? Why? How?)

However all these technical issues seem to pale in significance when related to the pedagogical and andragogical principles which must underpin them. From these principles will derive the guidelines and supports for the facilitation, gathering, submission and structuring, measurement and accrediting of authentic online learning experiences. As with Thorpe's new generation of student support services the role of the tutor or mentor must be seen as central to facilitation of the process here, in terms, in this case, of mediating and managing the process of creating the e-portfolio. Further research into this role and the responsibilities and skill sets which constitute it, is very much required, along with longitudinal studies of the range of e-portfolio practices now in evidence in and beyond the Higher Education world in order to sustain and substantiate the concept. Furthermore significant research efforts will be required to support the contention that authenticity must be added to such characteristics as validity, reliability, fairness etc as a fundamental requirement of an assessment process for the award of formal credit within national qualification frameworks.

4.5 Conclusions and Recommendations

Borrowing from the theories and traditions of distance education, e-learning needs to look towards tackling low retention rates and student dissatisfaction with the provision of high-quality tutorial support. Collaborative tutoring represents a possibility for e-learning to go beyond the limits of the face-to-face tutorial solutions of second generation distance education by achieving a 'high-leverage' model of support which uses the learner group themselves a learning/teacher resource. Such an approach is very much in keeping with the changing nature of the e-learner who, typically, is a working lifelong learner seeking convenient and flexible continuing professional development. In this context of 'learner as customer' and the accelerating need for new professional skills and competencies the theme of authenticity emerges as a prime concern for contemporary higher education process.

Assessment is of critical importance here, not merely because if you want to meaningfully change the curriculum you must change the means of assessment but because the definition,

facilitation, capturing and valuing of authentic learning necessarily requires an authentic assessment methodology. Such a methodology implies the setting of authentic activities as well as various related psychometric and logistical issues and strategies for the assurance of the critical assessment criteria such as reliability and validity. The literature also supports a number of important claims on behalf of authentic assessment which can be summed up under the broad categories of "improved assessment"; i.e. the way in which it goes beyond the limits and inappropriateness of standard summative testing; and "improved learning", i.e. the way in which the authentic assessment experience is variously argued to be more meaningful, more 'real' and/or more encouraging of 'constructivist/active learning' and critical thinking. Of course in raising authenticity to this level of importance, it behoves learning researchers, particularly those involved in e-learning, to define authenticity in more rigorous terms, possibly, the authors suggest, in terms of 'permissible/acceptable deviation' from the real world situations.

Proper authentic assessment methodologies effectively break down the distinction between the learning activity and its assessment, as typified by the dominant models of assessment for e-learning, which show a strong persistence of largely unreflective traditionalism. In this context the recent attention being paid to the use of the web to support portfolio assessment holds much promise for the evolving world of e-learning. Notwithstanding the many residual issues with regard to technical standards for the e-portfolio, much research needs to be done with regard to the role the mentor or tutor must play in the support of the process along with longitudinal studies of the range of e-portfolio practices now in evidence in and beyond the Higher Education world in order to sustain and substantiate the concept.

The authors suggests, in conclusion, that tutoring and assessment are central to what are conventionally known as student support services and are very much the activities upon which all other services (e.g. special needs services, intervention service, induction-type services) must be based upon. In the second place the facilitation of collaborative tutoring and authentic assessment methodologies for the e-learning environment represent a blurring of the traditional distinction, between, respectively, course development and learner support, and the learning activity and its assessment, as well as, en masse, a breaking down of the division between learning and learner support. Together they hold promise for the ongoing evolution of e-learning in terms of addressing the needs and characteristics of the lifelong e-learner, ensuring the relevance and quality of e-learning courses and impacting fundamentally on the way we plan, design, deliver, assess and think about e-learning and distance education in general. In the context of high drop-out rates, dissatisfaction as to the quality of many e-learning efforts and the expensive failures of many recent high-profile and lesser-known e-learning initiatives at higher education a new model of e-learning practice with collaborative tutoring and reliable authentic assessment methodologies, likely in some variant of the e-portfolio model, at its heart has much to recommend it for all stakeholder in the contemporary higher education process.

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5 CONTRASTING DISTANCE EDUCATION DROP OUT EXPERIENCE

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There have been long discussions about the use of media in education. Many reports during the sixties of the last century dealt with the question of aptitude-treatment- interaction. Until the eighties many projects proposed the instalment of new media for education. It seems that the times of academic discussions in the field of instructional technology had reached their end when it became possible to realize all dreams having defined learning goals operationally, having developed assessment procedures, being able to prove that learning had happened. For distance educators it was clear that learning takes place in the central nervous system of the learner and not within the medium, neither book nor TV. And distance educators knew that help in optimizing, individualizing the path to learning needs personal communication.

Yet distance education until this period still seemed to be something out of norm, something secondary, specialized for people with disabilities either in time or place, the distance educators worked in a sort of ivory tower: only when the peer group of academics came into closer contact with these people they found that their didactic credo made sense also for the "normal" education. Then they all came, universities trying to find their way for better instructional design, for using media in universities. Lots of money has been put into such projects in many universities with the effect that many a project died exactly the moment when it should have been transformed into the normal system. Nowadays the project workforce, at least in Germany, turned into a second labour market attached like a planet to university structures.

The ease with which distance education institutions could cope with new media resulted from the consciousness that such new efforts did not imply a structural necessity to change the theory. Media, for a long time, belonged to the structural setup of distance education and had been under consideration for a long time. It seems that many universities were shocked with the necessity to re-think media and their roles in university teaching and had to think about the basics of didactical use of media in university teaching. Distance education institutions did not have this transition problem because of the definition of distance education: Distance Education is an organizational form of education where

instructional provisions,

tutorial interactions,

monitoring of practice as well as

individual control of learning

may take place via media making the simultaneous personal presence avoidable.

Sir John Daniel of the British Open University referred to "Mega-Universities" - , the institutions enrolling regularly more than 100.000 students a year, such institutions growing in the far East more than in Europe. Without the continuing Education branch Europe hardly could present such numbers. Such "mega-universities" depend on the use of media. And there is not a hint to an inferiority complex of distance education compared with traditional education: on the contrary

instructional "design",

structured instances for communication

regular assessment of individual progress

continuous evaluation,

all belong to the standard procedures and constitute the success of distance education institutions, also for mega-universities.

5.1 Success story for distance education

If it wasn't for the drop-out rates: Up to 85% drop outs from the initial enrolment figures! Whenever institutions have to report this, they will indicate similar figures in the case of competing distance education institutions. It seems to be a worldwide phenomenon.

This phenomenon is based in the heterogeneity of the addressees. "Students" in DE often are studying parallel to a job, have social obligations and a family and are attracted by distance education because of the possibility to participate in a continuing education program otherwise not possible. The question is now: what can we do, that drop-out does not question the whole system of distance education?

Sometimes definitions help: Not in the way the Open University introduced a so called "preliminary enrolment" and this way got rid of the dramatic drop-out of the first year. No, on the contrary, it is necessary to take a closer look at the individual biographies of the students enrolled. In 1988 we studied this at FernUniversität using the learning biographies of a compulsory regular course (mathematics for business administration) (Fritsch & Ströhlein).

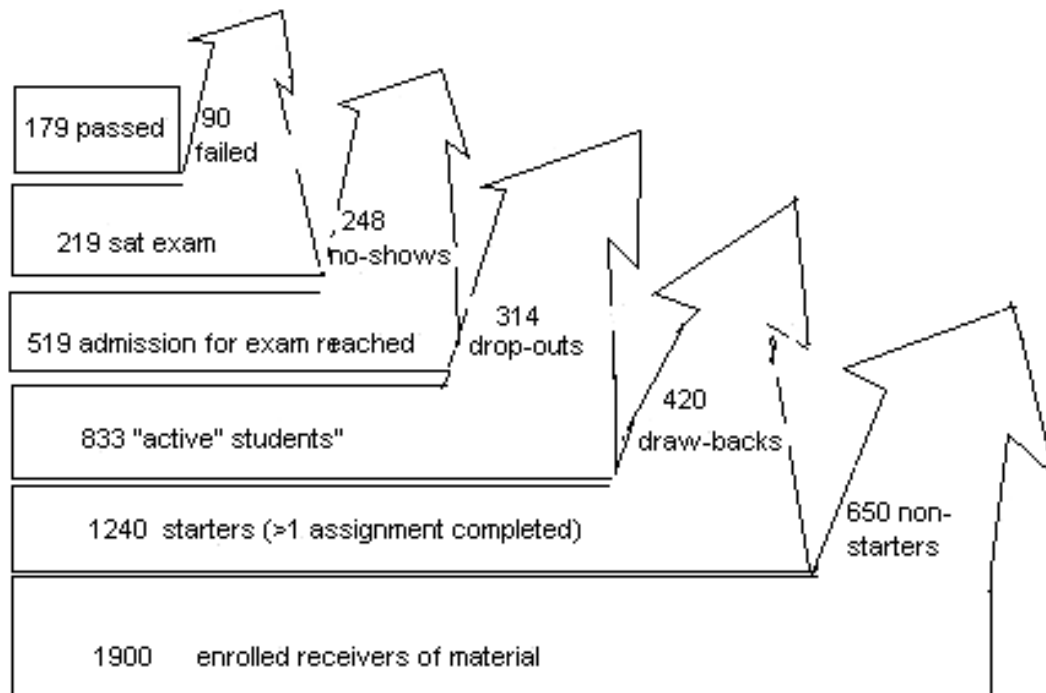The figures read like this (distortions due to missing values etc.):

Non-starters: of the 1900 enrolled students 650 stopped reacting after they received the material.

Draw-backs: of the 1240 "starters" (at least one assignment turned in) 420 stopped after that

Drop-outs: of the 833 "active students" (more assignments) 314 dropped out or failed

No-shows: of the 519 "admitted students" (all prerequisites fulfilled to sit the exam) 248 did not show up

Failures : of the 269 students sitting the exam 90 failed and 179 passed.

drop out from a basics course "math for busines admin" in FernUniversität 1988

179 passed	90 failed
219 sat exam	248 no-shows
519 admission for exam reached	314 drop-outs
833 "active" students"	420 draw-backs
1240 starters (>1 assignment completed)	650 non-starters
1900 enrolled receivers of material	

We tried to find the motif to stop and found for the first group, the "non-starters", that the 34% of the original enrolments just were interested in obtaining the material for individual autonomous reference or for the bookshelves because many thought that it represents the "state of the art" presented in a didactically comfortable way. Most of these have been quite happy with it.

Of the second group (22%) we learned that many of them wanted to "keep up" with the development in their profession, tried to really work but found out that it is more work than they wanted to invest: Most of these took the decision not to continue without bad feelings.

Then we found 16.5% of drop-outs: these people sent in more than two assignments, wanted feedback, got feedback and stopped working with the material, either frustrated or not- they indicated that they meant to do the course and found that their time or effort was not enough.

Then a fairly large group of students fulfilled all prerequisites to sit the exam but did not show up: These no-shows terminated their study mostly because they felt no need to sit an exam, travel there etc., because many of them already took the same exam many years ago or have the degree to which the course curriculum belongs. It is in this group where we also have to look for students with a manifest test anxiety- more research is still needed. Anyhow, after the exam we find a pass-fail ratio of 2:1.

Roughly speaking 10% of the original cohort passed and 5% failed the final exam.

5.2 Solving the problem

Success-rates of 15% of the originally enrolled cohort are not very seldom in the difficult courses of FernUniversität: the course curriculum is not different from many normal university course curricula. But when we see in another course of the FernUniversität a success rate of 85% over several years we must look for explanations. The course now under consideration is a course in special education for teachers working already in schools for the handicapped but not yet having had a special training for their job. The curriculum is specialized but roughly the same in normal universities for on-campus-students being trained in special education.

The description of this enrolled group gives the hints for all differences in comparing them with the normal students. This course is meant for training on the job. The course design does not differ much from all the other courses but the cohort is homogeneous: all are school teachers (they know how to learn) , all are in-service, regionally put together into regional study groups (many of them know each other: either they are from the same school or neighbouring schools), so there is a certain infrastructure among them, and, I think the most important feature is that their work is not aside from their study, what they learn today can be practised tomorrow, evaluated by practice and colleagues, and what they do is officially recognized by the authorities in that they receive a reduction of workload to a certain amount.

All these characteristics seem to have favoured the results. So if distance education or in future the so called e-learning meets the following structures in recruiting students, drop-out seems to be a phenomenon of history:

students should be used to systematic learning

in a course there should be a homogenous student body

there should be at least the offer of regionally organised seminars

there must be regular assessment

the curriculum should be job related as close as possible

acceptance by the employer is favourable

If these characteristics are given, you can expect a high ratio of success.

5.3 Literature

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6 ON THE USE OF INFORMATION AND TELECOMMU-NICATION TECHNOLOGY TO SUPPORT LEARNING

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6.1 Introduction

Let's start from an analysis of some typical definitions of 'pedagogy' found on the web by the search machine Google when looking for the terms 'pedagogy' and 'definition':

a) [Pedagogy is] the principles, practice, or profession of teaching
   (http://www.wordreference.com/English/definition.asp?en=pedagogy)

b) Pedagogy is the study of the methods and activities of teaching.
   (http://dictionary.cambridge.org/define.asp?key=pedagogue*1%200)

c) An appropriate definition of pedagogy is systematized instruction or principles that promote student learning.
   (http://www.rit.edu/~rkelly/html/03_ped/ped_tea1.html)

d) A possible working definition of a pedagogy is: a theory of teaching and learning encompassing aims, curriculum content and methodology. Another is: a science of teaching and learning embodying both curriculum and methodology. Whatever the definition, the fundamental concern of pedagogy is to relate the process of teaching to that of learning on the part of the child (B. Simon, 1981, 95)
   (http://www.studyoverseas.com/re/re.htm)

e) PEDAGOGY: The kinds of structured activities of students and the various kinds of methods used by teachers/trainers in the teaching/learning process.
   ACTIVITIES: Structured activities of students/trainees through which the learning process occurs.
   METHODS: Methods used by teachers and trainers in structuring the processes of teaching, learning, and learner evaluation.
   (http://www.ischool.washington.edu/sasutton/dc-ed/Pedagogy_SS_1.html)

The very simple examples a) and b) seem to look upon teaching as being separable from learning. Examples c) to e) build a series of increasingly complex definitions of pedagogy, in which the teaching processes on the teacher's side, the learning processes on the learner's side and the exchange mechanisms between these two are regarded as an interwoven network. This point of view is the state of the art of modern pedagogy. It seems impossible to deconstruct this network without loosing important parts of its functionality. The last definition also mentions that in almost all teaching-learning situations some measures are used to determine the level of its success. And as it is common sense not to keep humans under

conditions like rats in a laboratory, it seems dubious from statistical reasons whether it will ever be possible to attribute observed, different increases in skills, knowledge or whatever data of two students to the different learning-teaching situations they experienced.

All given definitions of pedagogy don't rely on a specific teaching-learning situation. Quite often, one finds definitions like

- classroom learning (which means the learner, the co-learners and the teacher are in the same room/location),

- distance learning (which means the learner is separated from the co-learners and the teacher) and

- self-study (which means the learner is on her/his own).

Another kind of clustering teaching-learning situations stems from the media and devices used for the teaching-learning process; if almost all media and devices are of electronic kind, the term 'e-learning' is used and recently, even the term 'm-learning' has been invented to indicate that even mobile electronic devices like smartphones or PDAs might be used for learning purposes (and not only learning how to operate them…).

In reality, these pure teaching-learning situations will be rarely found, that's why the term 'blended learning' was introduced to characterise a situation in which a learner changes the kind of the teaching-learning situation from time to time on purpose or for convenience. For example, even a student of a traditional presence university will encounter self-study situations if she/he chooses to learn from a book not used or promoted in the lessons or exercises. Indeed, in most situations in everyday life that force us to learn we find ourselves in the situation of self-study, as we usually have nobody to ask for 'tutoring'. And if we believe the results of polls in which people are asked whether they are able to use the timer-controlled recording functionality of their video recorder, we have to conclude that self-study is not a very efficient teaching-learning situation...

Moreover, from a university's point of view as a services provider, the question should be how the different tasks necessary for successful learning (presuming they are known to us) can be optimally achieved by selecting the suitable situation, which may require changing it from task to task. So, are there some generally identified tasks that occur in most teaching-learning situations? There is a variety of such lists, which all resemble each other; the following is an example according to Kearsley (1993):

Searching for/receiving information (detects, observes, inspects, identifies, reads, surveys)

Processing information (categorizes, calculates, codes, itemizes, tabulates, translates)

Problem-solving (analyzes, formulates, estimates, plans)

Decision-making (examines, chooses, compares, evaluates)

Communication (advises, answers, directs, informs, instructs, requests, transmits)

Sensory-motor processes (activates, adjusts, connects, regulates, tracks)

Most of these tasks may be accomplished using personal computers and distance learning; only the last item of this list is definitely not suitable for distance learning, except of the task to learn how to track something on a computer screen with a mouse (virtual operations, flight simulator).

In modern pedagogy, the role of a teacher is seen as that of a facilitator of learning, i.e. the influence of the teacher on the learning processes in a learner's brain is rated as being very limited. Contrary, an immediate feedback on the performance of a learner, particularly in case of errors, seems to be necessary for efficient learning. Thus, some drawbacks in ordinary ODL are introduced and it is indicated how these may be removed by using ICT. ICT is treated as a tool to solve a problem, not as a hype which has to be followed to define the spirit of the times.

6.2 Early ODL

In the beginning of open and distance learning (ODL), the main drawback of the teaching-learning situation was the delayed interaction between teachers and learners. The learning material typically consisted of media like printed matter or audio and video tapes, e.g., which ideally had been proven of being suitable for autonomous learning. But there was no control at all what conclusions a student had drawn from that material until the student had sent back some assignments. This procedure led to a very ineffective form of learning, because errors of the students were not detected instantaneously but had to be corrected (by the students) after a large delay, i.e. when they got access to their corrected assignments.

And all practitioners tell that it needs much more effort from a student to re-learn a subject correctly which has previously been falsely learned than to learn it correctly at the first time. This is an inherent feature of the human brain which prevents us from forgetting things too easily. The longer the delay between a wrong learning outcome and its correction is the more effort is needed.

Therefore, leading ODL institutions created study centres at which classical fact-to-face meetings could be held to overcome the mentioned and other more sophisticated shortcomings of the early respective pure form of distance teaching. But this requires the student to be in a specific place at a specific time, and thus introduced conflicts with some of the fundamental ideas why students choose distance study as their desired form of learning. And just the absence of these two requirements was and is still used to promote distance teaching. Thus, the frequency of these events had to be kept relatively small and other forms of distance student-tutor contacts had to be developed.

Obviously, in the early days of ODL these were letters (correspondence study) and telephone calls. But, at least in Germany, universities are designed as research organisations. That means, the main job of the person entrusted with the tutoring work is to do some academic research, and the tutoring work is usually limited to a few hours a week. Particularly this aspect of distance teaching is subject of cultural, traditional and legal issues between different institutions in a country and comparable institutions in different countries. Nevertheless, extensive one-to-one telephony or exchange of letters (email nowadays) is practically impossible because it is too in-efficient.

And using telephone or video conference systems to change the one-to-one into a one-to-many scenario even poses more restrictions on the students because in this case many people would have to synchronise their activities, despite of the fact that video conferences are technically still difficult to set up, even nowadays.

So the question remains how to establish (at least the possibility for) an intensive student-tutor contact in distance learning.

6.3 ODL with software called 'intelligent tutors'

With PCs becoming widespread in the 90ies, many people saw a chance how to remove most of the problems mentioned above without posing restrictions on the ODL learner: the creation of computer programs that interact with the students using even audio and video as channels of information exchange, monitor their success or failure when performing predefined tasks and then adaptively choose an optimal strategy for further proceeding in a course. This kind of programs was named 'intelligent tutor'.

But the undoubtedly nice idea of creating 'intelligent tutors' does not take into account the kind of task PCs (and most other past and present computers) are made for: precisely repeat predefined steps of a mathematical algorithm. But the task of a teacher/tutor is nearly just the opposite: react very flexible on a process detected in another human being, so the task is mainly an associative one. This misunderstanding of the strong point of current computers can explain many of the failures observed when using PCs for unsuitable tasks, e.g. in face-recognition for security purposes.

Another example is speech recognition, which would be of great help in distance teaching of languages, as a fully functional speech recognition engine would allow for immediately correcting any errors in the pronunciation, e.g. The author of this paper has visited the world-leading computer fair CeBIT in Hannover, Germany, now for approx. 15 years, and every year he has visited the stands of the manufacturers of speech recognition software. Among other sentences, he has always spoken the sentence "Dies ist ein Bus." (This is a bus). The funniest ever recognised sentence is "Dies frißt ein Bussard." (This eats a buzzard); contrary, there have always been only few problems with long words. This indicates the structure of

the underlying software: a simple recognition engine the output of which is processed through a large database. The human brain obviously works different and much better in this context.

So, many educators realised that using a PC for creating virtual 'intelligent tutors' is like using a hammer for tightening a screw. But how to bring 'real' tutors into contact with 'real' distance students without forcing them to at least temporarily become on campus students?

6.4 ODL with ICT

Nowadays, the answer is commonly given by using modern telecommunications products in combination with the internet. At this point, a second source of misinterpretation arises: the internet is a perfect tool for world-wide, asynchronous exchange of information. For synchronous exchange, the existing world-wide telephone system has to be used instead, e.g. for making phone calls.

This is because the data transmitted through the internet via the TCP/IP-protocol are packaged before sending and may use different routes to the receiver that lead to different travel duration times, i.e. the packages may arrive out of order, some even may be lost and then have to be re-transmitted and so on. The receiving device (or software) is responsible for re-establishing the correct order and guaranteeing the completeness of the transferred data. As this may require some time, communication over the internet is never synchronous, regardless of the hard- and software used.

Thus, the task is to identify the most appropriate communications tool for a specific task. There will be a trade-off between the flexibility and richness of a tool and its synchronicity.

6.5 Asynchronous communication

6.5.1 Email

The most famous kind of asynchronous exchange of information is email. It is mainly used for one-to-one information exchange, but may be used for distribution of information as well, i.e. creating a one-to-many scenario. Usually, an email contains a plain text section, but it may additionally contain nearly all kinds of media in its attachment section. All up-to-date operating systems of personal computers allow for email exchange. Usually, a correspondence via email is used for an exchange of ideas between two people. Nearly all kind of media can be sent as so-called attachment of an email, but a sender has to make sure that the receiver can view the attached content, i.e. has proper hard- and software installed. Email is the most flexible and strong existing asynchronous communications tool. It can be regarded as the transformation of correspondence to an electronic format.

6.5.2   Forum

Another kind of asynchronous communication is realised by a so-called forum or bulletin board. Here the contributions written by any of the participants can be read and commented on by all other participants, so it is meant to ideally develop from a one-to-many to a many-to-many scenario. It will definitely not reach the level of free spontaneous associations which is possible in real discussions, as reading a contribution and writing a so-called follow-up posting needs much more time than answering in a real discussion.

Moreover, in a forum it is not possible to interrupt a discussion partner in case of an error or a flash of inspiration (from your point of view). So, there is no real discussion but rather a sequence of statements; at best each statement is related to the preceding one.

The intellectual level of the postings usually is not as high as in an email correspondence, because if one of the active participants in a forum starts to think hard about a posting and wants to respond with a well formulated answer, she/he can't follow the postings anymore and some other participants may have shifted the focus of the pseudo-discussion before the elaborate posting appears. This is boring and annoying, but a quite common phenomenon in all existing forums. Therefore, the technique of starting so-called 'threads' is common practise, in different threads different people discuss different thoughts. So if you are involved in a thread, after it is finished you have to look up what happened in the other threads in the meantime and if there is something interesting for you. But even if you find something interesting you want to comment on or ask a question about, it may happen that this thread now is dead, too. Thus, one has to re-investigate all threads after all are dead to get the 'big picture'.

If all postings are archived and their content is stored in a searchable format, a forum can be a very valuable source of information and, depending on the subject, even serve as starting point for an FAQ document.

6.5.3   Chat

There is a third asynchronous communication method called chat, which was originally meant as transformation of a verbal conversation to an electronic format. Typically, the postings are even more light-weighted than in a forum, i.e. they do not contain references to external sources of information or longer statements but are short and intuitive statements that comment on the other ones. Usually, a chat gets a more 'human touch' than a forum by posting a frequently updated list showing the nicknames of all other active participants. Nevertheless, a so-called 'chat-room' is not a synchronous communications tool, though one often finds this false statement on the web. It may well be the very text-based asynchronous tool that comes closest to synchronous communication, but even in a chat, it is impossible to interrupt a chat partner. And that's the very feature distinguishing a vivid verbal discussion from a moderated talk show.

6.6 Pseudo-synchronous communication

6.6.1 VoIP (Voice over IP)

VoIP means all participants are using headphones and a microphone that are connected to a soundcard in a PC. But instead of dialling a number on the telephone an internet connection is used to transmit the digitised sound data. This method comes very close to real telephony, only if the network is very busy the communication resembles that between 'Houston control' and Apollo spacecrafts, i.e. due to the characteristics of IP, there may be a delay of a few seconds between the moment in time words were spoken and the moment in time they are heard by others. What seems much more important is that people don't need to read and write but can speak and hear and thus, may use their hands for simultaneously operating a device they asked help for, e.g. VoIP is the 'most synchronous' among all asynchronous tools.

6.6.2 Video-conference over IP

Nearly all distance students will only have the chance to set-up a video connection using a web-cam and their internet connection, which again means the typical delay of information packaging via the internet. This even holds true if they have a good net-connectivity, as there are much more data to transmit than for VoIP. Thus, even a one-to-one video connection is a challenge for the transmission rate, and even using the DSL technique it seems unlikely that setting-up a video-conference with more than 5 partners will lead to acceptable results in the next few years.

Recently, we tried to view the pictures from the famous 'Rosenmontagszug' (a traditional event) in Cologne, using the ISDN connection (64kBit/s) at the ZIFF. We could identify the shapes of horses and of humans riding them, but all more detailed information was wiped out due to the bandwidth limitation. And remember, this was only a one-way stream…

It seems unlikely that students get access to real video transmission techniques in the near future.

6.7 Synchronous communication

The only way to establish a synchronous communication between two or more people is to use telephony, i.e. only using telephones it is possible to produce output and receive input at the same time. Because this tool places the strongest restrictions on the participants, it should be thoroughly considered whether it seems necessary to use it. Telephony can be used to set up a one-to-one or even many-to-many scenario, the latter is known as telephone-conferencing.

6.8 Conclusions

The nearly unbelievable rapid development of ICT over the last 20 years now allows any distance education provider to select an appropriate mix of communication tools for a specific purpose. All internet-based communication tools are basically asynchronous. Using emails, textual information may be enriched by attaching almost all known kinds of media, in case of forum and chat postings there is only pure textual exchange of information. Voice over IP comes close to telephony, but becomes annoying in busy networks. Good old telephony is still the only easily available medium for two people to get into a really synchronous contact.

But communications technology is only one factor, and others may be much more important for success in distance education. Thus, when institutions try to minimise the number of participants in their (electronic) distance learning programmes who don't finish, they should have a look on basic differences between (electronic) distance teaching and classroom teaching and whether the institution as well as a potential learner know what they should expect from the other side during an education programme.

6.9 Non-ICT-related aspects of pedagogy

Nowadays a profession named 'controller' attracts much attention. Many executives of organisations feel the need to 'control' nearly all aspects of work regardless of the product established by that work. This means they try to define a – more or less mathematical – model for each step in the establishing process and try to find quantities and measures for them that indicate how well reality fits to the model. At best, these data allow them to deduce consequences what to do if reality differs from expectations derived from the model using some reasonable input data. Even the institutions offering education as their product have now been reached by this trend.

Thus, nobody starts to shout out loud when a government decides to measure the success of a distance education programme by the proportion of students finishing with some exam. Instead, some committee is set up and given the task to propose some actions to reduce drop-out because it is found as twice as high as for presence education programmes (hypothetical example!).

But the fundamental series of questions to answer in this example is: can the factors determining the drop-out proportion be identified, and if this is true, does the education-offering institution 'control' these factors?

Especially for this example, most studies are discouraging (e.g. H. Fritsch & Gerhard Ströhlein, 1988). Though a positive influence of mentor (tutor) contacts and sending in exercises in the period just before the exam on the proportion of students successfully participating in the final exam is found, these two factors only deal with a very small proportion of the total drop-outs of the course.

And interestingly, the basic structure of the drop-out phenomenon did not change over a period of 15 years, as a more recent study shows (H.-W. Six & J. Voss, 2000): approximately half[2] of the enrolled students send in at least one exercise, half[2] of this group sends in more than one exercise, half[2] of this group get admission to the final exam, half[2] of this group shows up in the exam and half[2] of this group passes. If you are good in mental arithmetics, you will agree that this means only approximately 3% of the enrolled students get the exam.

But what is to be concluded from this finding? Can we take it for sure that all enrolled students initially want to get the exam or do some of them just want access to the course material? Don't they start because the material doesn't comprise the subjects they are interested in, i.e. do teaching and learning goals match and are they communicated before the course starts? Is there a fair chance for a student to communicate the true enrolment goals without fear for some 'punishment' if they differ vastly from the teaching goals?

Do those students who only send in one exercise largely underestimate the effort needed to do the exercises respective the course and does the institution communicate a realistic estimation of the efforts needed for successful study before the course starts? And how realistic, i.e. related to a specific student can the effort be estimated at all, as the institution has to know many characteristics of the student for this task? This is especially important as the largest number of drop-outs occurs at the beginning of the course when the institution has the smallest amount of information about the student.

And why do only half of the students that got the admission show up in the exam? Is it because it is a presence exam and they can't or won't attend such an event? Would web-based exams improve the situation, but how to prevent fraud then? And if the reason are exam nerves, what do we have to conclude then for the acceptance of eLearning management systems that are able to track every movement of the mouse?

Obviously, it is relatively easy to formulate many of these questions that are extremely hard to answer, if at all. And shall we develop a procedure called student support service from every answer we can give, or are they more likely perceived as 'controlling support services'?

Shall the services be mandatory or voluntary? And do we expect that a choice in this question can be made regardless of the kind of institution and learners involved, i.e. for students of a distance university or employees of a company?

It seems that there is no chance to give a closed set of answers to all of these questions within a theoretical framework of an eLearning or distance education pedagogy. But all institutions can follow some 'good practices' examples to maximise the probability that an enrolled student finishes a course.

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[2] always add approximately

6.10 Good practices for student services in ODL and eLearning

Obviously, even very good services can't hide that a course is bad, thus, try to let the courses be produced by a team consisting of widely recognised experts in their area, i.e. at least content experts to produce the content of a course according to a widely recognised curriculum, media design experts to choose the media suitable for delivering the (different parts of the) course content and usability experts to build a user friendly design. Before the course is advertised, accredited and used, an extensive test phase should prove that all components work as desired. Good course material can be regarded as a prerequisite of good teaching practices. Then, good student services may further improve the students' satisfaction with the educational institution offering the course.

There are many more or less complete lists of student (support) services available from the websites of educational institutions. We'd like to introduce those compiled by the 'Western Interstate Commission for Higher Education (WICHE, USA)' and published under the title 'Guide to Online Student Services' (WICHE 2002) and propose to use them in this project, as they seem to be the most comprehensive ones and are designed for institutions offering higher education. Obviously, there will be cross-cultural and cross-institutional issues.

The first short list refers to the design of web services in general:

Some Tips for Designing Web-Based Student Services

Feature online and distance learning opportunities prominently on your home page.

Be consistent in design throughout the site.

Remember to create links to and from other relevant pages throughout your institution's Web site.

Keep your focus on meeting students' needs.

Provide quick access to "a real person" on every page.

Use terms that students understand.

Link to external sites when they would be helpful.

Make services user-oriented and process-driven rather than provider oriented.

Enable students to do as much business online as possible.

Be sure that the Web pages are themselves accessible to users with disabilities.

The second list gives more detailed advice on how to build what WICHE calls 'Good practises in student services':

Information for Prospective Students

- *Make online learning opportunities highly visible and clearly organized on your institution's Web page.*

- *Give a real sense of your institution and its distance learning offerings.*

- *Offer prospective students the opportunity to assess their personal readiness for an online course or program.*

- *Provide information and/or tools for assessing hardware and software capabilities.*

- *Include FAQs on costs, transferability, timing, and equipment related to your online or other distance learning offerings.*

- *Describe how to get additional information about online programs and how to contact someone who will answer any additional questions.*

Admissions

- *Describe the admissions process.*

- *State the admission requirements.*

- *Identify and describe methods for obtaining and submitting an application.*

- *Provide an online application form along with clear instructions.*

- *List deadlines.*

- *Offer options to save and re-open the application as well as track the application once it has been submitted.*

- *Provide multiple payment methods, including online credit card payment.*

Financial Aid

- *Include general information about financial aid.*

- *Identify and describe the various types of financial aid available.*

- *Detail the costs of attendance.*

- *Describe the application process.*

- *State all institutional financial aid policies.*

- *List deadlines and other important dates.*

- *Supply other applications and relevant forms.*

- *Link to related sites.*

- *Offer online student loan entrance and exit counselling.*

Registration

- *Describe the registration process.*

- *Identify and describe all registration methods.*

- *Define any relevant policies.*

- *Provide an online schedule planner.*

- *Provide an online registration form along with clear instructions.*

Orientation Services

- *Give a sense of what it is like to be a distance or online learner.*

- *Provide an online tour of a real or hypothetical course.*

- *Offer tips for success in an online environment.*

- *Describe or link to all requirements, important policies, cost information, student services, and information on how to get help.*

- *Define the technical knowledge needed and describe the steps to access online courses.*

- *Link to all student services available to distance learners.*

Academic Advising

- *Offer one-on-one access to advisers.*

- *At a minimum, define all general education and major requirements clearly and concisely.*

- *Give self-help pointers.*

- *Link to automated transfer/articulation information.*

- *Make advising guides accessible online to faculty, students, and/or advisors.*

- *Provide students access to their own records.*

Technical Support

- *Describe services and provide introductory information.*

- *Post scheduled network down times and maintenance.*

- *Provide online tutorials and documents.*

- *Teach students how to operate their hardware and software to allow them to use it more effectively and to reduce demands on staff.*

- *Provide self-help tools.*

- *Offer assistance through a student help line/help desk.*

Career Services

- *Describe services and make clear who is eligible for current students, alumni, community members, and employers.*

- *Provide self-help career tools, including online tutorials.*

- *Summarize opportunities for in-institution career exploration.*

- *Offer assistance in education-to-career planning.*

- *Display local and national job listings.*

- *Provide an online, comprehensive, job search handbook.*

- *Develop a moderated online forum and/or automatic direct email specifically for students who register for the service.*

- *Establish relationships with alumni and promote networking opportunities via the Web.*

Library Services

- *Provide orientation materials.*

- *Include information on how to contact a librarian with special expertise in serving distance students.*

- *Provide remote access to electronic resources and basic instructions for remote access of electronic resources.*

- *Offer reference support via email and/or phone.*

- *Provide document delivery services and put necessary forms on the Internet for students to download or complete online.*

- *Provide online tutorials on how to do library research.*

- *Provide online electronic reserves.*

Services for Students with Disabilities

- *Include general information.*

- *List eligibility and documentation requirements.*

- *Identify and describe available services.*

- *Offer assistance in determining assistive technology needs.*

- *Link to related sites.*

- *Provide a faculty/staff guide to referring or working with students with disabilities.*

- *Offer career information specifically for students with disabilities.*

Personal Counselling

- *Describe personal counselling services.*

- *Provide help for those experiencing a mental health crisis.*

- *List and introduce the Counselling staff.*

- *Provide self-help articles.*

- *Link to other self-help materials developed by other institution's counselling centres.*

- *Address confidentiality issues.*

- *Provide a faculty/staff guide to referring or working with a distressed student.*

- *Offer referrals to off-campus counselling resources.*

- *Augment Web services with a help and information line available 24 hours a day.*

- *Develop a regular, open forum for discussion of concerns typical to students.*

Instructional Support and Tutoring

- *Provide online tutoring opportunities to enable students to interact with an online tutor in a variety of ways, including via email, chat, or an online conference room with threaded discussions.*

- *Give contact information to enable students to ask questions or seek assistance via the phone and/or fax.*

- *Link to external instructional resources and tutoring.*

- *Present tips for study skills and test-taking.*

- *Consider to provide an online writing lab.*

Bookstore

- *Create an online environment in which students can browse through textbooks, services, and merchandise.*

- *State any relevant policies.*

- *Offer an online method to look up course textbooks and materials.*

- *Identify and describe each method available for ordering books.*

- *At a minimum, provide an order form to assist in placing orders via fax or phone.*

- *Accommodate online textbook orders.*

- *Deliver purchases to an off-campus address.*

- *Consider to accommodate online payments.*

- *Consider to accept online reservations.*

- *Provide order tracking.*

Services to Promote a Sense of Community

- *Develop a student government for distance learners.*

- *Develop a newsletter for distance students.*

- *Use your Web site for special announcements and to highlight chat rooms of potential interest to off-campus learners.*

- *Establish a virtual community through a MOO (network-accessible, multi participant, virtual reality).*

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7 STUDENT SUPPORT SERVICES IN ELEARNING AT ERICSSON EDUCATION - CASE STUDY STUDENT SUPPORT SYSTEMS IN E-LEARNING

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7.1 Introduction

The purpose of this paper is to analyse student support services in elearning as offered by Ericsson Education in the form of their Ericsson Education Online solution. This elearning solution is offered in a corporate telecommunications environment and the Ericsson solution is typical of large corporate elearning solutions in the area of telecommunications as well as data communications.

The Ericsson Education Online solution and associated training courses are analysed in terms of how they support each of the elearning phases defined in the evaluation matrix produced during output 2 of the project 'Student Support Services in eLearning'. (The evaluation matrix is attached as an appendix to this document).

Ericsson Education has been providing elearning content to the telecommunications industry since 1995 and since then has built up a reputation for cutting edge and high quality elearning courses. The typical student for their courses is a telecommunications technician or engineer requiring training in either generic telecommunications and/or data communications standards, techniques, protocols etc. as well as training specifically on Ericsson telecommunications equipment.

In this paper we analyse student support services that a typical student can encounter when enrolled on Ericsson elearning courses. These are analysed in terms of both the "generic" EEOnline site (the Internet site available to all users and potential users, see http://learning.ericsson.net/eeonline/) and "Customer systems", that is, portal solutions sold to corporate customers. Customer systems are largely similar to the generic site, but typically include a more comprehensive / tailored implementation of the various functionality and applications available on the generic site. As such there are inherent differences when compared to academic elearning solutions and this is apparent when student support services are analysed and discussed in this paper. The different phases of elearning that are identified and discussed in this paper are the Information phase, Guidance Phase/Registration Phase, Integration/Help Desk/Final Results Phase and Learning Phase.

7.2 Information Phase

The principal activities conducted during this pre-registration phase are an exploration and examination of the available student material via an examination of the material issued in support of the eLearning courseware.

Both our generic and customer systems support the following components of the Information phase:

- Information relating to the course

- Information relating to the program to which the course belongs.

- Vendor contact capability

- FAQ section

7.2.1   Information relating to the course:

Students can access five types of online courses via our sites. These are briefly introduced below and are covered in more detail in the section covering the Learning Phase:

- Web Based Learning (WBL) - courses hosted on an Internet server and delivered to the students over Internet.

- Multimedia Based Learning (MBL) - CD based courses that are typically installed on the students PC or LAN

- Streaming Videos - video recordings of Ericsson experts delivering presentations on current or emerging technologies and developments. These video presentations are synchronized with PowerPoint slides that highlight the major points being made by the speaker.

- Technical Articles – online articles that outline emerging or hot technologies. They include simple animations to illustrate key points and are designed to provide a brief introduction or overview of the technology.

- Virtual Classroom Training – This is a training course given in a virtual classroom over the net by an instructor. The course contains modules like slide presentations, exercises, self-paced studies and tests. It is delivered using a virtual classroom training tool such as Centra Symposium.

With the exception of Technical Articles all course categories include a course description document. The course description document is always presented to the student i.e. it's the first piece of information the student sees when he / she clicks on the course. It is from the course description document that the students can buy, order or access the course material.

Each course description document includes the following components:

- a brief overview of the principal objectives of the course

- details of the level at which the information is aimed i.e. if it is covered at an introductory, overview or advanced level etc. Sometimes this component also details whether the course is aimed at technical or non-technical students.

- duration – here the student is given information regarding how long a typical student would take to complete the course.

- requirements - the student is given information on any technical requirements that must be met for running the course i.e. what if any plug-ins are required, the version of windows required, whether or not a soundcard is needed etc.

Information relating to the program to which the course belongs: In Customer solutions, the course content is presented to the students via training flows and thus the student is aware of the program / training flow to which the course(s) belong. In cases where access is provided directly from the generic Ericsson Education Online site, i.e. where no customised solution is provided, each course is treated as a standalone solution – in this situation no information is given relating to the program to which the course belongs.

7.2.2   Vendor contact capability:

In the both the generic and customer solutions, vendor contact capability is facilitated via email links. These allow the user to contact either the site administrator – typically for technical questions or our sales department, for sales related queries.

It should also be noted that in most customer solutions, the user is also presented with an email link to contact a local / customer employee will either answer the query directly or who will direct the query to the appropriate Ericsson contact.

7.2.3   FAQ section:

Both our generic and customer sites have a frequently asked questions section where students can find out answers in relation to queries, including both sales and technical queries.

Information relating to pricing is included in the information phase. Neither the customised nor generic sites provide any pricing information – instead users are provided with an email link to a sales representative who will provide pricing information. Pricing is handled like this because the final price is based on factors such as the number of courses ordered, the number of users included in the pricing agreement and the existing relationship with the customer etc. and so human intervention is necessary.

7.3 Guidance Phase / Registration Phase

7.3.1 Guidance Phase:

We define this phase as being a pre-course registration phase, typically involving human intervention to give the student guidance / direction on what courses / programs to study and what courses / programs are not applicable.

In dealing with this phase we only refer to the generic Ericsson Education Online site, as in customer solutions all guidance activities will be largely completed by the time the site goes live.

Neither the generic nor customer Ericsson Education Online sites provide functions to meet any of the sub-phases defined in the guidance phase. This situation arises for two reasons

- Firstly, we conduct almost all guidance activities face to face, through the pre-contract negotiations between customer and Ericsson personnel such as account managers.

- Secondly, many of these sub-phases, such as resolving questions in relation to loans and grants and costs are not applicable to commercial organisations such as Ericsson.

7.3.2 Registration Phase:

As a result of this phase the student is enrolled in the course or program they have selected. The typical elements of this phase involve processing course payments and issuing the student with password access.

Neither the generic nor customer Ericsson Education Online sites provide electronic facilities to provide the student with registration information i.e. user identity and passwords.

In relation to the second sub-phase "guidance on practical matters", the customised portal solutions typically provide the student with information on when the real-time, live components of the program have been scheduled for. This of course is only in the cases where we have sold a blended solution i.e. one in which the eLearning material is included in conjunction with Instructor Led training.

7.4 Integration \ Help Desk \ Final Results Phase

7.4.1 Integration Phase:

The evaluation matrix developed in the 'Student Support Services in elearning' states that this phase "involves giving the users technical information relating to physically placing the learning material on the customers learning infrastructure". This phase is typically performed in the case of a commercial organisation providing online learning i.e. it would be less common for an academic institution to engage in the activities associated with this phase.

When considering the Ericsson Education Online site we have focused solely on the generic Internet site as customer sites will have been developed subsequent to the activities detailed during this phase being performed and so very few of the sub-components would be included. The generic solution contains a section titled "Training Support" where certain technical recommendations typically relating to issues surrounding plug-ins, web browser versions to be used etc. are made to users. More detailed technical questions may be submitted by the customer via an email link to the Ericsson Education Online support desk.

It should be noted that in general, more complex issues, such as the integration of content onto the customers Intranet / learning environment, require detailed analysis and testing. In order to reach resolution on these they are typically dealt with by face the face meetings between Customer representatives and dedicated integration personnel from Ericsson.

7.4.2   Help Desk Phase:

In the earlier consultations with our partners we stated that the activities associated with this phase e.g. (resolving problems with passwords, error messages, problems resolving URL's, general technical queries etc.) are likely to be performed during all of the phases outlined in the evaluation documents.

In both the generic and customer Ericsson Education Online solutions, this phase is facilitated using a combination of electronic and human support. The electronic support mechanisms consist of email links that allow the student to contact both technical and competence support personnel. Technical support is provided during normal GMT working hours and typically our technical support personnel undertake to provide an initial response / acknowledgement within twenty four working hours.

The competence support functions are usually provided by both Ericsson and the customer personnel with the groups two working together on functions such as training needs analysis, training flow development, solution implementation etc. Once the solution is rolled out and supported via an online site, users can contact these personnel using an email link.

Student self-tracking as defined in the earlier documentation, i.e. the ability to check his / her progress and / or check progress against the objectives set for the course / program is not supported in either of our solutions i.e. there is no online application that supports this function.

However, all courses, both online and instructor led, do contain a course description document that states the exact goals of the course, in addition there are training flows included in most commercial implementations. Both of these serve as reference documents against which the student can check their progress.

7.4.3   Final Results Phase:

The earlier documents produced defined this as the phase where the student is given his / her course / program result. The Ericsson Education Online solution facilitates this phase as

follows: Within most of the WBL and MBL courses there is an end of module test where the student can attempt a series of multiple choice questions. At the end of these questions the student is given their result and told what areas of the module need to be repeated given the incorrect answers given in the test. These results are only for the benefit of the student i.e. there is no management visibility of them.

In customer solutions, it is possible to include an online test to be completed at the end of a series of online courses. Again the student has to complete a series of multiple choice questions based on the material studied during all of the online and / or instructor courses taken.

At the end of these questions the student is told their result and what areas of study need to be repeated. Typically, the student has a limited number of attempts to complete these tests i.e. the results are forwarded to management personnel and if further attempts are required to pass the program, these must be enabled by the management.

7.5 Learning Phase

The Learning Phase facilitates online learning. Online learning typically occurs via access to eLearning content, discussion fora, bulletin boards, email queries, telephone support, group work, assessments and tutorials etc. Included are services that support both student-to-student and student-to-instructor interaction.

For the learning phase Ericsson Education offer a variety of elearning delivery formats with asynchronous delivery formats such as streaming video, web-based learning, multimedia-based learning, technical articles (self-study) as well as synchronous formats in virtual classroom environments using applications such as Centra. In the section on the Information Phase these different formats were introduced but here they are covered in more detail with an emphasis on how support services rather than pure content delivery are incorporated into the delivery format.

In elearning supplied by Ericsson the different delivery formats and associated content are not seen as purely stand-alone training modules that a student would take in isolation. Instead Ericsson Education recommend that their eLearning products be used as part of a Blended Learning solution, which is the term applied to a learning solution that combines a number of different types of learning products. A typical Blended Learning Solution might combine Instructor Led Training (ILT) with Web, Multimedia and Virtual Classroom based training products to produce a Blended solution, designed to achieve pre-defined goals and objectives of the participants.

Blended Learning Solutions offer many advantages to their students when compared with solutions involving only a single training medium. The advantages arise principally because the students can use eLearning to supplement their learning activities, either prior or

subsequent to, attending ILT so that the material is better understood and retained for longer. In addition some of the delivery formats by their very nature and make-up can seamlessly facilitate the close integration of learning support services, whereas others do not easily lend themselves to this kind of integration. A case in point would be streaming video that consists of a pre-recorded segment of video where there is no attempt to integrate any of the learning support tools such as email or assessments into the video segment. On the other hand virtual classroom training is a format rich in additional supports that enhance the learning process.

Each of the delivery formats is discussed in more detail here with reference to the kinds of services they provide that support the student in the learning process:

Streaming Video courses: In streaming video formats the emphasis is on short concise, training modules where the relevant information is packaged into video format. This is streamed to the user at a time of their choosing. Streaming video training can be taken stand-alone but is usually taken as part of a wider blended solution with other forms of training. There are no additional support services built into the streaming video format. A typical interface screen from a steaming video is shown below. Once a student has enrolled on the course this is the only interface they will see with the normal controls one associates with video viewing (pause, stop, start etc.).

Web Based courses: These are courses hosted on an Internet server and delivered to the students over Internet at a time of his or her choosing. They are asynchronous in nature and the student has control over when and how much of the web-based course he will attend. These courses contain in-built supports to enhance the learning experience such as on-line assessments and quizzing.

Multimedia Based courses: These are CD based courses that are typically installed on the students PC or LAN. Again they are asynchronous in nature and like web based courses there is no 'human' tutor present in the learning process. This form of elearning lends itself to the same kind of support services as with web based courses.

Virtual Classroom courses: This is a training course given in a virtual classroom over the net by an instructor. The course contains modules like slide presentations, exercises, self-paced studies and tests. It is delivered using a virtual classroom training tool such as Centra Symposium The synchronous nature of virtual classroom training as well as the in-built tools in applications such as Centra Symposium offer rich possibilities for support services that enhance the learning process. In the main interface screen below you can see the main screen that the student sees when enrolled on a virtual classroom training course using the Centra application. There are many features that support the student during the learning phase, for example, the ability to work in on-line discussion or 'break-out' rooms with fellow students, the ability to respond to online assessments and to receive instant feedback from the instructor etc.
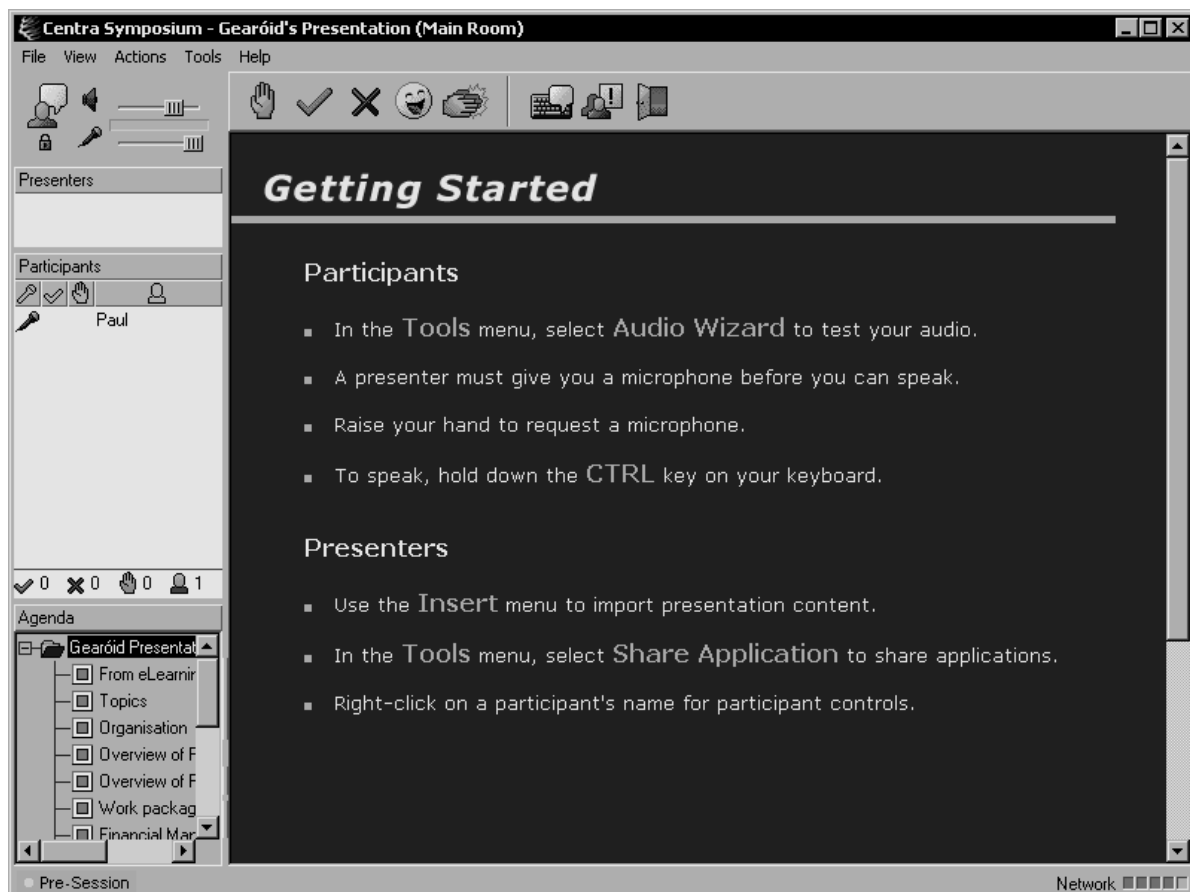
Based on this analysis of different types of elearning formats in the Ericsson Education Online solution a comprehensive list of student support services in the Learning Phase will be analysed in turn with reference to where and when they are present in the different elearning delivery formats.

7.5.1   Dispatch of printed and other physical learning materials

This is a facility for students to check on the status of the hard copies of their course material that have been dispatched by Ericsson. This feature is not supported by the Ericsson Education Online solution.

7.5.2   Instruction on Online Learning techniques

This is a facility that provides user instructions / demonstrations on how to use the eLearning material / services they have access to. In web-based learning and multimedia based learning there are Help menus that provide support to students in how to navigate through the course material whereas in streaming video these menus are not present. The reason they are not present in streaming video is that it is presumed that the navigation is self-explanatory because of the generic style of the navigation buttons used to control the video. In the roll-out of virtual classroom training the need for tutoring in the use of the applications (such as Centra) has been very obvious. This need has led Ericsson to develop the role of the 'Net Coach' whose responsibility is to ensure that all students who are enrolled on a virtual classroom training course are familiar with the application before the actual course begins. This may mean direct contact between the Net Coach and the student by phone or email to ensure that the student can launch the virtual classroom interface and can use the main features of the student interface. An advantage of the role of the Net Coach is that the online Instructor can presume that all his students have basic familiarity with the virtual classroom tool by the time the actual course is scheduled to begin and time is not wasted on training on basic functionality of the tool.

7.5.3   Student Learning Support

There are four categories under the umbrella Student Learning Support. These are bulletin boards, email, online tutorials and fact-to-face tutorials. These categories do not feature prominently in the Ericsson Education Online solution normally because elearning content is supplied to corporate customers on an open-ended basis and there is no requirement to take the course as part of a set syllabus within a fixed timeframe as would normally be the case in academic situations. In the corporate situation customers pay for content only and traditionally have had no requirements for extra support during the learning phase.

However, with the advent of virtual classroom training the situation is changing somewhat as this form of training is facilitated by a person rather than by a computer. Students are introduced to their human teacher perhaps seeing him/her via a live video feed as well as hearing his/her voice via a live audio feed. In addition they are given the opportunity to

respond to questions and ask their own questions in this form of synchronous elearning which is effectively an online tutorial. This format also allows for contact with the instructor and with fellow students by voice and email.

7.5.4   Resources / Library

This feature allows online access to additional material to support student learning. Ericsson publish a library of technical articles that support other forms of elearning. These can be accessed on the Ericsson Education Online website and in blended learning solutions certain articles that are relevant to particular topics are recommended that enhance both synchronous training or asynchronous training.

Certain forms of elearning (specifically web-based learning) produced by Ericsson provide access to libraries of customer product information. These libraries provide detailed information on Ericsson telecommunications products and on how to operate, maintain and configure this equipment. The student is guided to relevant sections of these libraries and this information is used as either self-study or as a source to find the answers to particular questions set during the elearning course.

7.5.5   Student - Self Assessment

This is an online facility to check learning progress during the course. The results of these tests are not usually recorded towards the final result. This feature is normally present in web-based learning and multimedia-based learning. However it is not a default feature and is not necessarily present in all Ericsson web-based learning and multimedia-based learning.

7.5.6   Automated Assessment

This feature typically occurs at the end of a course and may produce a result which could count towards certification. It may also occur at the end of a set of different courses of different formats, for example at the end of a blended learning module with a mixture of streaming video, virtual classroom training and/or web or multimedia based learning. Again, automated assessment is not a default feature and depends on the individual learning product.

7.5.7   Tutor Assessment

This is the facility to send work to a tutor / teacher for correction and evaluation. Normal asynchronous elearning courses do not have this feature present but virtual classroom training courses often have self-study sessions where the students are expected to work offline to complete assignments. In the synchronous virtual classroom the task is set by the teacher and the students then work offline away from the direct supervision of the teacher. These assignments could be of a practical nature where the students log-on to telecommunications equipment and perform various tasks that have been set-up by the teacher and the background explained by the teacher in the synchronous virtual classroom setting. After a certain time period the synchronous classroom session can resume and the students submit their assignment to their teacher. The assignment is assessed by the teacher. In the case of a

practical assignment the result could be a log file of a certain procedure that has been completed by the student(s) on Ericsson telecommunications equipment. In other cases in virtual classroom training, the tasks could be shorter in duration and completed through discussion with fellow students though online, synchronous discussion fora or so-called 'break-out' rooms.

7.5.8   Assessment Feedback – electronic

This feature covers electronic methods of giving students feedback on their work. The results may include guidelines on what areas the student needs to repeat. This is not normally a feature of individual Ericsson Education elearning courses. However in bespoke solutions where set curricula are created to meet the needs of specific groups of students in telecommunications companies it is a solution provided particularly in post-course or post-module assessments. The assessments provide feedback both for students and managers on what areas need revision and/or revisiting.

7.5.9   Assessment Feedback – manual

This situation occurs where instructions are provided on how to submit work for analysis and correction. Results may include guidelines on what material needs to be repeated. Manual submission of feedback is normally covered in the section entitled Tutor Assessment.

7.5.10 Student Portfolios

A personal home-page per student to allow them to introduce themselves to online colleagues, showcase their work. Provide alternative sources of course information to colleagues etc. This is not a feature covered by Ericsson Education Online.

8 STUDENT SUPPORT SYSTEMS FOR ONLINE EDUCATION AVAILABLE IN NKI'S INTEGRATED SYSTEMS FOR INTERNET BASED E-LEARNING

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The first part of this chapter presents the systems NKI Distance Education apply to facilitate student support services for online education. The second part discuss the services with regard to the grid of student support services developed by Student Support Services in e-Learning (http://learning.ericsson.net/socrates/), a project supported by the European Socrates program.

8.1 NKI's Integrated Systems

NKI has a number of self-developed and commercial applications that together make up a comprehensive system for student support services. The integration of the systems is extremely important for the total functionality, effectiveness, and quality of the student support services. As shown in Figure 8-1, STAS is the pivotal master system that holds the core data that many of the other systems depend on.
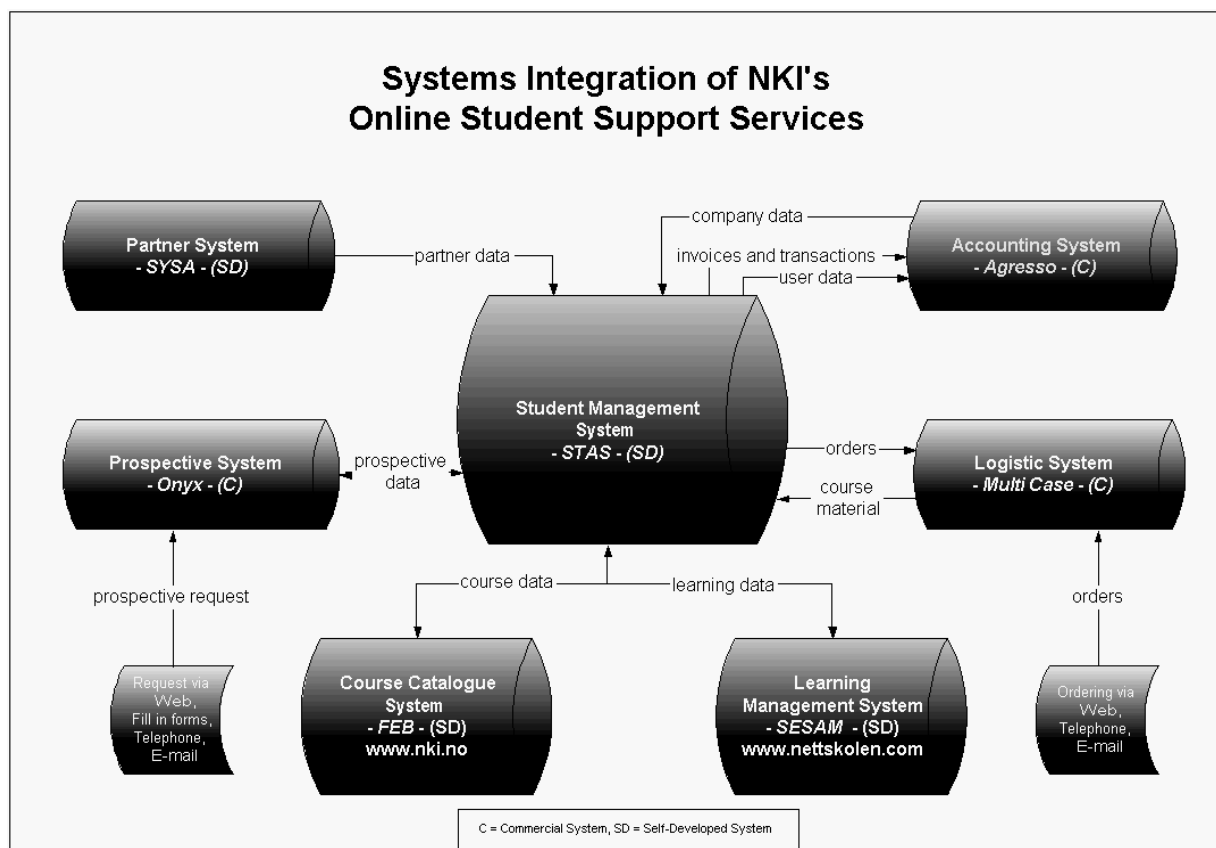
Figure 8-1: NKI's integrated systems for online student support

8.2 STAS: A Self-developed Student Management System

STAS is NKI's system for administration of distance students and it is developed by NKI. STAS holds all relevant data about our students, teachers, courses and study programs. One of the largest advantages with STAS is that it is developed to handle students with free starting time and progression. This system also contains very good tools for generating various reports and statistics. STAS is to consider as NKI master system and is tightly integrating other essential systems such as accounting, logistic, prospective and partner systems. STAS is also the master system for NKI's Learning Management System (LMS) SESAM, www.nettskolen.com, and NKI's business portal, www.nki.no.

8.3 Agresso: A commercial accounting system

Agresso (www.agresso.com) is a commercial accounting system that handles tuition fees, invoices, wages etc. When a course enrolment is registered in STAS, the corresponding student account is debited in Agresso. When tutors register grades in SESAM, they are transferred to STAS and the remuneration is added to their accounts in Agresso.

8.4 SYSA: A self-developed partner system

SYSA is a system NKI has developed to present information about the local partners that organize face-to-face classes based on NKI's distance education courses. It provides contact information about the local partners and the classes they offer for NKI courses. SYSA supports the local partners' marketing and student recruitment. The partners' contact information is forwarded to STAS.

8.5 Onyx: A commercial prospective system

Onyx is a commercial system that is purchased to handle marketing activities and requests from prospective students. Each advertisement, brochure, TV commercial, web-campaign etc. is identified with a unique media code. The advertisements result in thousands of requests that are registered with contact information and media code. The requests may come via NKI's website, telephone, e-mail etc. from people who consider to enrol in a course. Onyx is also used to follow up prospective students who have showed their interest, but never enrolled in a course. Onyx has access to STAS data so that it knows which prospective students that actually enrol in a course. As a result of this, Onyx provides a number of reports and follow-up services for the marketing department.

8.6 Multi-Case: A commercial logistic system

Multi-Case is a commercial logistics system for administration of purchases and shipments of textbooks and miscellaneous physical course material. When course enrolments are registered in STAS, Multi-Case automatically initiate shipment of the corresponding course material. Multi-Case also provides a number of reports about royalties, material on stock etc.

8.7 SESAM: a self-developed learning management system

SESAM is NKI's self-developed learning management system. It is developed to support the services that are important to NKI, and it is therefore well adapted to NKI's special needs. SESAM is excellent for handling continuous student enrolment 365 days a year. The major, additional advantages it has compared to commercial LMS systems, is its focus on cost-effectiveness and the necessary integration with all the critical student support systems.

SESAM provides a number of services for students. Among them are:

- Access control

- Personalized user-interfaces

- Access to course content and assignments

- Discussion forums

- Class lists

- Student presentations

- Information about grades

The **teachers have access** to additional services such as:

- Online registration of grades

- Tutor support services

- Wage and payment data

NKI employees also have access to a number of additional reports and statistics on information about course enrolments, user statistics, etc.

SESAM is developed for large-scale online education and it applies state-of-the-art web technologies including Java, XML, XSL, Oracle 9i database and Apache web server.

8.8 FEB: A self-developed business portal

FEB is NKI's self-developed business portal. It is the main portal for the NKI online course catalogue. This online catalogue presents all courses and programs offered by NKI. This

includes information about course content, necessary prerequisites, credits, exams, tuition fees, etc. Prospective students may register or apply to courses directly via FEB. In addition to course information FEB also include a comprehensive database of article with news, frequently asked questions, and more general information about distance and online education. A number of research articles and reports are also available in FEB.

FEB also provides a search engine covering the course catalogue, www.nki.no and www.nettskolen.com. FEB is built on current web technologies including Java, XML, XSL, Oracle 9i database and Apache web server. In February 2003, FEB for the first time automatically provided the course information used in the printed course catalogue.

8.9 The Grid of Student Support Services

The project Student Support Services in e-Learning has developed a grid of student support services. The following, second part of this article, discusses NKI online student support systems according to the following elements of the grid:

The information phase

The guidance phase

The registration phase

The help desk

The learning phase

The final results phase

8.10 The Information Phase

The NKI Marketing department is responsible for the activities related to the information phase. The pivotal systems the department uses to handle this are FEB, Onyx, and SYSA.

FEB presents information about the courses and program for potential students. It also includes additional information about NKI and the services that are available for students. Ideally, FEB should provide the information students need before they decide to enrol in a course. The online information presented via FEB is available at www.nki.no.

Figure 8-2: Front page of the NKI marketing/information site.

The front page of the information/marketing site is developed with the main goal of supplying information about NKI courses and programmes in a way that is easy to understand and access. The front page has links "studies and courses", "corporate training" and to the "NKI Internet College" (i.e. to SESAM and the course pages). In addition the front page links to news and other information about NKI aiming to create contact and credibility. FEB includes both a free text search function and a function for searching for courses and study programmes.

The search page contains in addition to the search function information about how to order more information or enrolling, information about possibilities for loans and study grants and more information about study forms and methods (i.e. correspondence education, on line learning, combined education) and where in Norway on can participate in local face-to-face support in different programmes. The page also contains a FAQ unit.

Figure 8-3: Courses and programmes search page.

When searching whether NKI offers a programme in psychology, one may search for psychology in free text or click on P in the alphabetical search. A click on P gives a page with 50 different options of courses and programmes delivered either as correspondence education or as online education, while a click on psychology gives you all courses and programmes where the word "psychology" is included in the description.

Clicking ⊠ Psychology leads you directly to the course page of the Psychology programme delivered as correspondence study, while clicking @ Psychology leads you to the page informing about the Psychology programme delivered as e-learning on the Internet.

This course page gives complete information about the programme with links to course descriptions, prices, prerequisites, expected study time, exams etc.

Figure 8-4: The information page for the Psychology programme.

The marketing department advertises NKI courses in newspapers, magazines, brochures, catalogues, radio commercials, TV commercials etc. The commercials refer to NKI's addresses, telephone numbers, e-mail addresses, and web-addresses. These may vary according to product and campaign. As a result of these marketing efforts, thousands of prospective students contact NKI to get additional information. This is entered into Onyx so that NKI can provide prospective students with the information they request. Onyx also provides statistics and opportunities to follow up prospective students later.

NKI collaborates with local partners throughout the country. They offer face-to-face classes based on NKI's distance education courses. SYSA holds information about the partners and the NKI courses they plan to provide. This information is forwarded to FEB so that prospective students can find information about local classes in their region.

8.11 The Guidance Phase

For many prospective students, it is a major decision to enrol in a course or program that could take many months to complete and could cost a substantial amount of money. They often want some individual and personal guidance. Hence, the most important tools in the

guidance phase are telephone calls, e-mail messages, and student fairs. This personal guidance is very time consuming, but hard to automate.

NKI has not implemented any computer systems to support the guidance phase. But it could be worth wile to consider using support software such as for example Rightnow.com to organize and reduce inbound guidance loads.

8.12 The Registration Phase

On registration, student information is entered into STAS and forwarded to SESAM, Agresso and Multi-Case.

When students enrol, information about the enrolment is entered into STAS. This includes information about their names, addresses, and e-mail addresses. Each student is assigned to a course, a class, a tutor and a payment scheme. An e-mail is automatically issued to each student providing an individual password and information shipment of textbooks.

STAS also forwards information to SESAM about the new students and the courses and services they should have access to. STAS forwards account and payment information to Agresso. Similarly, STAS forwards information to Multi-Case about shipment of textbooks and other physical material.

8.13 The Help Desk

Students may need help and guidance with regard to technical problems, financial requests, local exams, etc. These requests are time consuming and could be reduced by providing comprehensive, well-organized and searchable web-services. Still, it is important to allow student to contact people who can help them via telephone, e-mail or other services. Since distance students often study during weekends and in the evening, the services should be available after the ordinary office hours.

NKI has not implemented any computer systems to support these individual requests. But it could be worth wile to consider using support software such as for example Rightnow.com to organize and reduce inbound guidance loads.

8.14 The Learning Phase

SESAM is NKI's self-developed learning management system that is developed to handle the learning phase. As soon as a student is enrolled, she receives a personal password that provides access to all course material and services. This includes access to a personal tutor, one ore more discussion fora, a class list etc.

In SESAM each student and tutor have their personal page with information about which Courses they have access to, News from NKI, link to a page for Settings, where they can change settings (password, e-mail address, personal presentation and how frequent they wish to receive e-mail about new entries the their course forums (immediately, once a day, once a week or never (!))). The personal page for students also contains links to Resources (such as FAQs, search engines, archive of previous exams, and form for registration to exams, software, instructions for tutors). There is also a link to registered information about study progression and grades in all courses.

A tutor's personal page includes in addition a System for registration of grades, overview of assignments commented and graded, overview of salary earned, practical advice for tutors, access to a senior tutor for personal guidance. The student and tutor pages also include a quick menu for direct access to all pages and information in SESAM to which the person has access rights. All pages have a printer friendly version.

8.15 Student follow-up

The support functions in SESAM were described by Sjaastad, Akre and Rekkedal (2003). Through the SESAM system for registration of graded assignments, information about study progress is transferred to the STAS system that follows up students continuously according to their plans and real progression schedules.

8.16 Course content

The course content in NKI Internet based e-learning courses is delivered both as printed materials (textbooks) and as web materials. In some courses, as the one presented below in figure 6, all course content is delivered on the web. Whether to study on the screen, on line or off line may be dependent on the preferences of each individual student and/or type of course content, interactive, with links or long texts. All course materials are presented in forms meant to be studied on the screen and in printer friendly versions. Preferences concerning studying on the screen or on paper have been examined in different evaluation studies. It seems clear that students generally prefer reading from paper when the materials do not include interactive elements (se e.g. Rekkedal 1998). See also discussion in Ströhlein & Fritsch 2003.

Figure 8-5: Personal page of a tutor.

Course content may include text, pictures, graphics, multi media, interactive assignments, multiple-choice assignments or essay assignments. All courses will include obligatory assignments to be submitted to the personal tutor for comments and evaluation.

Figure 8-6: Course page of the course, Introduction to international online education.

8.17 The Final Results Phase

The students may register for exams via SESAM. When course completion and exam grades are registered in STAS, course certificates or program diplomas are printed and mailed to the students.

8.18 References

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9   THE PRESENCE AND STRUCTURE OF STUDENT SUPPORT SERVICES WITHIN SOME IMPORTANT E-LEARNING INITIATIVES IN ITALY

Laura Palmerio (Roma III)

Distance education shows a trend in which the greater the investment in this field, the more the tendency to create, strengthen and improve student support services.

The quality of a distance learning programme does not, in fact, solely depend on the effective transmission of contents, but also on the quality of learner support services. One of the main problems of distance education is the high drop-out rate. Among the reasons for this, besides practical ones (e.g. the type of population currently using distance education is usually composed of working people with many commitments), we can include the little or no personal interaction characterising this type of teaching/learning technology that can give the student the feeling of being isolated.

Student support services can considerably help in the identification, or rather, self-identification, of the educational offer by providing the necessary assistance to allow students to define the learning package according to their specific needs. Student support services are thus increasingly seen as important and must be particularly attended to.

Some studies have shown that these services, if running properly and thus affecting the quality of interactions with students, have a considerable positive effect even on the satisfaction of teachers and other operators involved in the running of a distance course (Thompson, 2002).

Student support services feature a broad variety of spheres of application. They may be administrative type services or of an academic-didactic, technical, informative and documentary, and affective-motivational support nature, or geared to cater for students with particular needs and so on.

The administrative type services include the bureaucratic aspects for course admission, registration and payment as well as for requesting and receiving learning materials, certificates and other documentation, etc. They also include providing information to potential students (a guide to courses, information on possible scholarship grants etc.).

As regards academic-didactic type services, we can consider all aspects concerning the teaching-learning process and its organisation, tutoring, the setting up and individualisation of the educational offer, the chance to set up collaborative computer-based learning initiatives (CSCL – Computer Supported Collaborative Learning, or CSCW – Computer Supported Cooperative Work) etc. Moreover, this field also includes a "transverse" kind of student

support in order to enable them to learn autonomously – this being one of the main features of distance learning.

Naturally, e-learning means enhancing the technical-technological type support to students. This means providing the necessary assistance for an effective use of the virtual learning environment. A good e-learning programme should also offer students the chance to consult bibliographic materials and documents of various kinds that may be useful for effective learning, by providing a virtual library and archive.

Finally, one should not overlook personal counselling, which can carry out support functions of various kinds: academic, informative, study planning guidance and, above all, of an affective type.

The more transverse type services are those enabling interactions between users: forums, chat groups, newsgroups and virtual communities. The main function of these services is to give all participants the feeling of belonging to a community.

Moreover, student support services must include a sector dedicated to students with special needs (the disabled, students with particular learning difficulties or with other difficulties).

9.1   The activities of the Experimental Pedagogy Laboratory of the Università degli Studi di Roma Tre

The participants of the advanced course in "Elements of formative, summative and system evaluation" and the 2nd level Master in "Formative, summative and system evaluation" are equipped with Internet link, have reserved access to course resources (lessons, forums, various materials) and do the tests of each teaching unit by sending their answers online. The tests are of the multiple-choice type and are corrected automatically with the operative system sending compensatory messages. The online services include discussion forums, notice board, course participants feature, authors' pages with e-mail addresses, possibility to contact the course administrative office and technical management centre. The courses envisage free student-student(s) and student-author(s) communication (virtual classroom).

9.1.1   The Resource Centre for Multimedia Didactics and Distance Education

Within the measures linked to the European Social Fund, the Emilia Romagna regional authorities started up a project for creating a resource centre for multimedia didactics and distance education. This project saw the definition of a methodological and ICT architecture for implementing a distance education system covering the whole territory of the Emilia Romagna region with the possibility for integration at a multi-regional level. The Resource Centre aims to (and has already partly) set up the following:

- A Multimedia Centre acting as a point of reference for the experimentation and dissemination of educational actions based on open distance learning and on the use of multimedia materials.

- A software adaptation activity in order to valorise/prepare teaching-learning packages that are technically and methodologically suitable for online use.

- A Central Library for distance courses that is progressively updated and extended.

- A regional ICT system enabling the centralised management and monitoring of the online education process.

- The management and distribution of the distance education service.

- The main elements of the project are:

- A website (www.odl.net) for the open distance learning system including areas for user registration, information/communication services and education services.

- A Multimedia Centre including a laboratory for adapting teaching-learning software and a multimedia classroom.

- A distance education network covering all 9 provinces of the Emilia Romagna region, with 10 multimedia classrooms linked to the Resource Centre website.

- The experimentation and implementation of open distance learning processes in order to test the implemented services through the 9 territorial nodes.

- The administrative and educational services provided by the Resource Centre can be accessed according to the user's role, defined on registration (student, tutor/coordinator, developer, administrator) and are listed in tables 1 and 2.

Table 9-1: Administrative Services of the Resource Centre for Multimedia Didactics

Service	Description	Accessibility
REGISTRATION	Application for the services of the Distance Education Resource Centre Updating and modifying the user registration card Application for specific courses	All users Registered user Registered user
GUIDANCE	Overview of current or possible courses with the Distance Education Resource Centre	All users
DATA ENTRY	Setting up and making changes to the: Course study plan course timetable learning materials sheet agency/company data sheet	Tutor, Coordinator or Administrator

Service	Description	Accessibility
ARCHIVES	'Historical' archive of past courses 'Users' archive 'Statistical' archive	Tutor, Coordinator or Administrator
ENABLING	Enabling or disenabling of: user passwords data entry sheets service access	Administrator
FAQ	Frequently Asked Questions	All users

Table 9-2: Educational Services of the Resource Centre for Multimedia Didactics

Service	Description	Accessibility
COURSES ENABLED	Each user enabled course provides access to the following services: **'Virtual classroom'** – List of students and progression of individual work. Access to the "course timetable". **Course timetable** (tutoring kit): **Study plan** – planning (materials, objectives, deadlines, tests) the study process in modules containing one or more units. Access to online software. **Guide** – downloading the teaching-learning and operational guides associated with the teaching/learning materials used **Feedback** – Recording the results of online tests and management of evaluations. **Learning Diary** – support for the description of the work done and time taken. An 'institutional' report for the self-certification of distance education. **Incoming mail** – e-mail system with a specific address book for the class. **Forums** – discussion groups on course topics. **Chat groups** – an online communication system with a specific class list. **Videoconferencing** – audiovisual support to supplement the teaching/learning materials. **Course appreciation** – online software to assess the appreciation of the education process. **"Course timetable" modification** – an option for making individual changes to study plans and services envisaged for a particular course.	Enabled students and tutors Individual student and relative tutor Tutor

Service	Description	Accessibility
DISCUSSION GROUPS	'Public' discussion groups on a theme Discussion groups reserved to specific users	All users Enabled users
WHO'S ONLINE?	Chat line – for users Help – online assistance from Resource Centre experts	Student Tutor
FAQ	Frequently Asked Questions	

9.1.2   EDULIFE (the Resource Centre of CNOS FAP Veneto)

EDULIFE (www.edulife.com) is a resource centre of the Centro Nazionale Opere Salesiane Formazione e Aggiornamento Professionale (CNOS FAP), located at the "San Zeno" Salesian Institute of Verona, and is a reference point for the national CNOS FAP and other partners.

The Resource Centre carries out research within the vast field of vocational training with public and private funding. The technological area of the constantly developing Resource Centre can count on:

- Several servers for training services: e-mail, virtual communities, management services, tutoring, lesson creation and distribution.

- A human resource team stably involved in research programmes at the service of education/training and of society.

- A permanent internet connection.

- A group of tutors for online answers and assistance to training groups.

The system also provides a rich and detailed area for online information and pre-contacts as well as services for analysing education/training needs, tutor support for personal distance study and specific classroom interventions on various levels according to user needs.

9.1.3   The FADOL project (ISFOL)

ISFOL is a public scientific research agency operating in cooperation with the Ministry of Employment, regional authorities, trade unions, other state administrations, the European Union and other international organisations in order to develop vocational training. It started up its own distance education activities in 1988 with a range of online software for self-learning and evaluation (1988-95).

In 1999 ISFOL started up the FADOL (online distance education) project on behalf of the Ministry of Employment. This project aims to create a dedicated and exclusive public online infrastructure covering the whole of Italy in order to permanently integrate the main actors of the vocational training system by disseminating innovation and situations of excellence with a view to harmonising the competencies present in the system.

The distance education activities are geared to the in-service training and re-conversion of personnel working in the designing, creation and evaluation of the various phases of the education process (teachers, tutors, career guidance personnel, designers, administrative staff and so on). The project aims to:

- introduce and use new technologies in education

- enhance and accelerate the teacher-training process

- harmonise educational methodologies

The FADOL project is an advanced and innovative system for the technology used (intranet, videoconferencing and multi-videoconferencing) and for the quantity and importance of the actors involved (Ministry of Employment, regional authorities, training centres, vocational training experts). The project allows maximum flexibility in handling learning times and objectives, the defining of a personalised education/training process for one's specific needs, the creation of opportunities for cooperative learning among geographically distant participants through workgroups and discussion groups, and lays the foundations for the production of shared tools.

Users can access a vast array of possibilities including products and services. The products consist of a set of multimedia learning materials for computer use, the courseware, relating to contents of specific interest. The services offered concern a more in-depth study of the contents through a virtual library (including databanks and archives online, sites and materials on the main current issues and topics, documents and files on projects, studies, essays and degree theses, all of which can be freely downloaded), and user access to a virtual classroom, communication network and cooperative learning with colleagues.

9.1.4   The Informatica 2000 Centre

Informatica 2000 is a vocational training agency of the Abruzzo region and is based in the city of L'Aquila. The centre has handled a growing number of courses funded by the regional government and mainly geared to employees and employers.

The distance courses are provided through computer based training (CBT) with a supporting tutor. There are currently about a dozen distance courses underway, mainly concerning office automation, involving workers of over 20 firms. Each course is organised on a modular basis and envisages an average of 12 hours of classroom teaching and 60 hours of distance (online) instruction at their respective company premises, where the necessary software has been installed. Communication with the tutor and the centre is possible by e-mail, chat lines or toll-free telephone calls. Two tutors are always available at the centre from 8am to 10pm, Monday to Saturday. The heads of Informatica 2000 have noted great worker participation and deem they have made a firm contribution to help workers use information and communication technology.

9.1.5   ENFAP Abruzzo

ENFAP has been active in the Abruzzo region since 1978 and currently has 11 centres. It promotes, coordinates and implements vocational training initiatives also of a distance type. The training activities cover a broad range of both traditional and innovative professions.

In 1998-99 the centre started up a distance training project called "Work Station Now" within the European Union's NOW programme. "Work Station Now" envisages guidance and assistance activities to help women start up businesses. In practice, it aims to establish a set of services at a local level in order to facilitate the creation of small and medium-sized enterprises run by women. The training lasts 200 hours and envisages the production and provision of CBT teaching modules for the whole process (from guidance to support in the field) within a view of overall assistance, even from a distance, for new women entrepreneurs. The programme also envisages an online teacher/tutor throughout the training process.

9.1.6   The NETTUNO consortium (a network for university education everywhere)

NETTUNO is a consortium of universities and enterprises promoted by the Ministry of Education. It aims to set up distance university courses, according to art. 11, third par., of law 341 of 19 November 1990.

The law envisages the possibility to define new distance teaching models through new technologies and the setting up of consortia between universities and private enterprises. The NETTUNO consortium was founded in 1991. The founder members are: the Polytechnic of Milan, the Polytechnic of Turin, the "Federico II" University of Naples, the RAI (Italian state television), the Italian Confederation of Industry, IRI (the Italian institute for property reconstruction) and Telecom Italia. There are currently 32 public universities involved.

The online distance instruction employed by NETTUNO transfers knowledge through online instruments of varying interactive capacity: satellite TV, the public television network, internet, interactive databanks, videoconferencing (ISDN), computer conferencing, e-mail and the telephone.

9.1.7   The TRAINET experience

Trainet is a Rome-based training and company service organisation founded in 1992. From 1992 to 1995 Trainet trained about 60,000 people a year and led to 3,000 jobs in Italy and abroad; it provided 500,000 hours of distance training per year, with a library of 120 courses and 1,200 teaching units. Since 1995 Trainet has been developing a distance training management system called Hypercom Virtual Campus (HVC) in the web environment. HVC is a platform with a high level of personalisation in order to construct the right training environment for the specific needs of an organisation.

The most innovative feature of HVC is to make it concretely possible for users to use learning/informative resources both of a "structured and collaborative training" type and of a "non-structured learning" or "information-retrieval" type.

In the first type, the user has an actual virtual training environment in which to carry out structured study programmes. The user is part of one or more class-groups composed of users doing the same training course, has access to tutoring and can be followed and evaluated also for certification purposes, with the recording of online activities on the system.

In the second type (non-structured learning), the user freely accesses the learning/informative resources available without using the services characterising structured and collaborative education/training. In this way, the user can select the material of interest and can organise it into a basis of personalised knowledge.

HVC is also used by Trainet to support its face-to-face training programmes, where it has turned out to be a valid tool for introducing ICT in traditional training activities.

9.1.8   Telecom Italia Learning Services (TILS)

Telecom Italia Learning Services was started up by Telecom Italia in September 2002 in order to bring together the technological skills and training experience of some companies of its group.

Telecom Italia Learning Services is one of the leading firms in the market of Learning & Knowledge Management. The system of services is provided through a technologically advanced platform designed in order to:

- provide full coverage of the basic processes of e-learning with innovative methods;

- link the training process to the choices concerning personnel management;

- improve business performance in a measurable way.

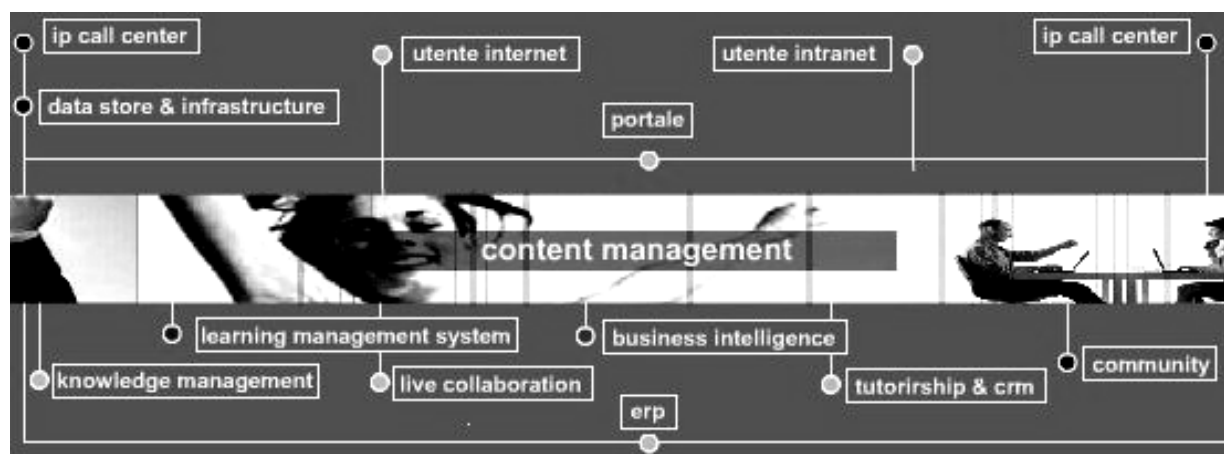Figure 1 illustrates the TILS service platform structure.

Figure 9-1: Structure of the TILS service platform.

In particular: The knowledge management (KM) system provides information and constant updates on topics of interest automatically selected for users, according to their individual needs and characteristics, and sent directly by e-mail. KM is thus a fundamental tool to deal

with the continuous legislative, technical and management changes. Unlike search engines, KM identifies the most interesting and reliable information and automatically sends it to the right electronic and paper-based notebook for the user.

The learning management system (LMS) is a tool for handling the traditional and web-based training offer. LMS governs every type of training from the traditional to the virtual classroom; it handles professional roles and the complex training processes typical of the new business environment; it allows controlling the logistics and organisational processes, the management of course catalogue and contents and is able to monitor teaching activity and skill management.

Live collaboration (LC) faithfully reproduces the features of a school classroom. Course participants can see and talk to each other, and the experts always have complete visibility of what is happening in the virtual classroom. LC avoids movement costs, the tedium of the physical classroom, dead time and the forgone production by offering the advantages of training with experts in one's home, online materials, practical exercises and tests.

The tutorship service deals with all the informative-didactic and administrative type requests thanks to the IP call centre, which enables talking, explaining, showing and assisting all in real time.

The community services of the TILS portal enable the exchanging of materials and service information through forums, news bulletins, newsgroups and FAQ, and greatly contribute to the empowerment of course participants by constructing strong bonds between them. The community grows with the participants/experts' contents and is destined to last over time as a virtual community of in-training for the development of professional expertise. The communities are a valid updating environment where other TILS services, such as KM or tutorship, can also be used.

9.1.9   The Libera Università Guglielmo Marconi (LUGM)

The LUGM is an open university that aims to disseminate and enhance knowledge production, facilitating access to more suitable tools for learning and creating room for experimentation, for the development of an advanced teaching/learning model which, through the use of digital and internet technologies, offers high quality university courses.

The LUGM has started up Master's courses in various professional fields with specific attention to the issues and scenarios of European integration. The courses are within the European Union programmes for research and education. The specialisation and other advanced courses organised by the LUGM use distance education methodologies and technologies also providing for moments of face-to-face instruction. The pride of the LUGM is the "School of High Specialisation in Television and Cinematographic Arts", based in Ruvo di Puglia (Bari, Italy). The aim of the school is to train highly skilled professionals in audiovisual production and post-production. The courses are addressed to upper secondary

school leavers and university graduates and envisage internships at TV and radio companies at national and local level in order to favour quick job placement.

The LUGM is also preparing first and second level degree courses in order to bridge certain gaps in the offers of both public and private university institutions, and to meet the growing market demand for specialised professionals ready for a working position. The spheres will concern communication and relational skills as well as the ability to deal with and solve problems in a cooperative manner, but also to respect rules and to master office automation and web communication systems.

The training model applied by the LUGM uses modern ICT as a meeting ground for virtual communities involved in collaborative and cooperative learning processes. To this end, the LUGM has created Virtual Campus, an integrated multimedia platform for online training. Through Virtual Campus, users can check course timetables and programmes, take part in video-lessons and download learning materials.

The Virtual Secretariat service allows registration to courses and, for those registered, the issuing of certificates and other documents as well as a check of one's administrative position.

Virtual Campus also offers interactive supports to students in order to interact with teachers, tutors and other students (e-mail, notice board, chat line and forum).

9.1.10 ICoN - Italian Culture on the Net

ICoN is a consortium of Italian universities that aims to promote and disseminate online the language, culture and image of Italy in the world. The ICoN consortium was set up in January 1999 with the patronage of the President of the Parliamentary Chamber of Deputies' Office and with the support of the Italian Prime Minister's Office and of the Ministry for Universities and Scientific and Technological Research. The consortium operates through an agreement with the Italian Ministry of Foreign Affairs.

The universities taking part in ICoN are those of Bari, Cassino, Catania, Florence, Genoa, Milan State, Padua, Parma, Pavia, Perugia for Foreigners, Pisa, Rome "La Sapienza", Rome "Tor Vergata", Roma Tre, Salerno, Siena for Foreigners, Teramo, Turin, Trento, Venice; the Libera Università di Lingue e Comunicazione (IULM) of Milan, the Istituto Universitario Orientale of Naples, the Scuola Superiore di Studi Universitari "S. Anna" of Pisa and the NET.T.UNO consortium.

ICoN offers its users a combination of services and resources through its didactic portal, http://www.italicon.it/:

A degree course in Italian language and culture for foreigners, provided online by the ICoN consortium on behalf of the participating universities; Italian language courses; digital library, museum and encyclopaedia; interactive didactic community and services.

The support activities for ICoN students is guaranteed by the administrative secretariat, by the didactic secretariat and by the technical support unit. The administrative secretariat deals with the management of course fee payments and provides the relative documentation. The didactic secretariat answers queries on degree course enrolment documentation, certificates, exam dates and results as well as any other query concerning the course. The technical support service offers assistance in relation to any technical difficulties.

ICoN also offers the chance to access a forum to favour exchanges and interaction between users and between users and teachers/tutors.

9.2 Conclusions

Starting from this initial overview of e-learning initiatives in Italy, it seems evident that student support services (of a didactic, administrative and technical kind as well as the offer of online resources and a virtual community) are attended to with varying degrees of attention, but they are not entirely overlooked. This shows the awareness of the importance of this type of support for the success of an e-learning process.

However, there is a certain neglect in attending to services specially designed for people with particular needs (e.g. the disabled) and in the affective-motivational type of support, which is thus implicitly left to the spontaneous consideration, if any, of tutors and/or peers within forums, chat sessions and virtual communities in general.

The latter criticism should, in any case, be checked further since it has to do with aspects that can only be properly ascertained after a detailed analysis of what actually happens in the different environments of e-learning and not just on the basis of what is published on the respective websites.

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