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Irma Mänty, Pasi Nissinen

FROM IDEA TO IMPLEMENTATION:

planning and administration of online learning

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From idea to implementation: planning and administration of online learning

Irma Mänty, Pasi Nissinen

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FOREWORD

As the popularity and volume of online learning grow, quality takes on an increasingly central role. IT networks and online elements can be foundations for meaningful learning methods. One of our main future challenges is to create online implementations of broader scope than traditional study units. The conception of online learning should always be rooted in pedagogy, promoting in depth learning and growth into multidisciplinary expertise.

This publication was created as a virtual collaboration between its authors. Irma Mänty has developed, coordinated and maintained various services to support eLearning at Laurea, acting as Online Study Coordinator and Virtual Polytechnic contact. Pasi Nissinen has developed online learning in Social Services, Health and Sports and carried out research for the Helsinki University of Technology (HUT) SimLab™ research laboratory's HELMI project (Holistic Development of eLearning and Business Models). Both authors are trainers and tutors in Laurea's Planning and Administration of Online Education training module and the professional development training in eLearning Expertise (20 credits) offered jointly by Laurea, Häme Polytechnic and HUT.

This text is based on the authors' views and experiences as developers of Laurea's online learning. We wish to thank all lecturers who have participated in the project for their interesting and fruitful contributions. The development of online learning has been a mutually informative experience.

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1 INTRODUCTION

This publication is intended as a guidebook for the planning and administration of online learning for lecturers and others who intend to carry out online projects. Its aim is to offer ideas, models and pointers to enable the creation of online projects of optimal quality. We believe we should avoid trying to provide universally applicable pedagogic directions, as each instruction scenario is unique and requires pedagogic training from the person who plans it. As instruction contexts are never alike and each student learns in a different way, the application of universal models is problematic. The final decisions are always made by a lecturer or team of lecturers by choosing the most appropriate pedagogic and technical solutions for their instruction needs.

Planning and implementing online learning for the first time always requires a lot of work. Lecturers who are beginning to plan an online study unit can seek assistance from a trainer or tutor to avoid the worst pitfalls in planning, but the basic pedagogic and communication-related issues should be resolved by the lecturer together with his or her group of students.

This publication has arisen from the authors' views and experiences as developers of Laurea's online learning. A need to develop online learning in the direction of an increasing amount of lecturers using information and communication technology (ICT) in their instruction work was identified in the late 1990s. This led to the creation of a strategy for how to fulfil this aim.

As the volume of online learning grows, an increasing amount of attention is paid to its quality. Diverse testing and evaluation processes for online study projects take centre stage in assuring the quality of these projects. This publication hopes to offer practical guidelines for implementing high-quality online learning.

2 TRAINING IN ONLINE PEDAGOGY FOR LAUREA LECTURERS

Online learning has been implemented at Laurea Polytechnic (previously the Espoo-Vantaa Polytechnic) since the mid-1990s. The first online study units were eLearning experiments carried out by individual lecturers. In 1998, staff were invited to attend the five-credit module Future Management – Information Network Services in Communication, Instruction and Education as part of their professional development training.

A need to expand online learning soon became apparent and a new strategy for the step-by-step development of Laurea staff training in online pedagogy was created with a basis in received experiences. The aim was to train a vanguard of online study experts who would gradually integrate online learning into the polytechnic's operating culture.

A pilot project for open polytechnic learning was launched at Laurea in 1999, training 24 lecturers and producing the twenty-credit course module Individuals in Society; Citizens in Finland and the World. The module's expert trainer was principal lecturer Veli-Pekka Lifländer from the EVTEK Institute of Technology. Participants were instructed in the production of an online study unit centred on project-based learning with the use of basic ICT tools.

Online instruction began to be offered in a web-based learning environment on the polytechnic's own server. This environment did not, however, offer the kind of interaction and communication tools contained in existing group work programmes and learning environments. There began to be a need for a web-based learning environment specifically adapted for instruction, which would facilitate a more extensive use of ICT in online instruction.

In 2000 Laurea adopted the use of the TELSIPro online learning platform, which offered more extensive and varied opportunities for implementing online learning. In conjunction with this purchase, Laurea commissioned training in pedagogic issues and the use of the platform from the University of Oulu. The trainer was Eric Rousselle.

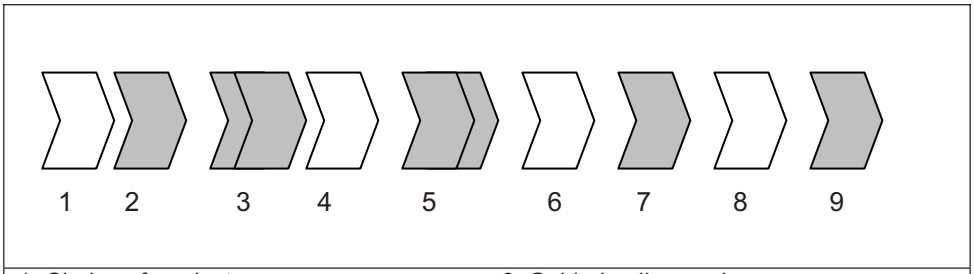
Lecturers could apply to take part in the training by presenting a proposal for an online study project, with a special focus on multidisciplinary projects linked in practice to the labour market and an explanation of the added value produced by the online implementation. Applicants were asked to consider added value from the perspectives of learning, the labour market and the polytechnic itself. Thirty-

five lecturers were selected on the basis of their applications, which were all related to online implementations of study units.

During the year 2000 the polytechnic offered training equivalent to six credits, containing seven days of face-to-face instruction and work in an online learning environment. TELSIPro presented a platform for discussion and guidance as well as allowing participants to build their own study units in the learning environment. This gave lecturers experience of studying online as part of their training, and technology and pedagogy went hand in hand throughout the course. The online study units were piloted in practice that same autumn and December saw the final day of face-to-face instruction, where completed online learning projects were assessed and plans were made for their development.

Of the lecturers who participated in the training, five were trained by the providers of the TELSIPro platform to be internal trainers. In subsequent years they have participated in training other lecturers and mentoring their colleagues in matters related to online learning.

The training in Planning and Administration of Online Education for lecturers has been developed continuously, with actual implementations in 2000, 2001, 2003 and 2004. By autumn 2004, 117 people had been trained in online pedagogy.



1. Choice of projects
2. Planning how to implement projects 0.5–1 day
3. Workshop 2 days
4. Guided online work
5. Workshop 2 days
6. Guided online work
7. Peer evaluation 1 day
8. Piloting
9. Assessment, agreement on further measures 1 day

Figure 1. Programme for Planning and Administration of Online Education course

In order to ensure the development of online learning, 20 credits of professional development training in eLearning Expertise were offered to teaching staff at Laurea and Häme Polytechnic between 2001 and 2003. A total of some 50 lecturers attended the training, organised by the two polytechnics in cooperation with the Lifelong Learning Institute Dipoli at Helsinki University of Technology.

The TELSIPro learning environment platform was replaced by the Discendum Optima platform during the 2002-2003 academic year and completed online implementations were transferred according to the online implementation schedule. Annual training in the use of the Optima platform has been arranged for staff since then.

In our opinion some of the main challenges for staff training will be the propagation of good practices and expertise in online pedagogy within Laurea, an increasingly diverse use of media in the production of study materials and instruction, and the provision of support for research and development activities related to online pedagogy within the polytechnic. In order to develop we need to implement continuous training and networking with partners as well as active research and development work. The use of increasingly demanding media elements and technologies means that lecturers must receive good technical support, as for instance the use of voice, video and web conferencing tools requires specialist knowledge even on the part of support personnel.

3 DEFINING ONLINE LEARNING

3.1 Online instruction

'Online learning' is not semantically an established concept. Other terms used include web-based learning, e-learning, eLearning, online teaching, online learning, virtual learning and virtual teaching. In terms of content, however, the definition is clear in that it relates to computer-assisted instruction or teaching over a network. The term used depends on the user and the purpose. Tella, Vahtivuori, Vuorento, Wagner and Oksanen (2001, p. 21) relate online learning to instruction, studying and learning supported by or at least partly based on materials and services available on an information network, particularly the Internet.

With regard to instruction carried out over a network we can also talk about specific 'web didactics'. Pesonen sees web didactics as consisting of two elements: 1) the plans and targets of the instruction, and 2) the procedures (methods) by which these targets are attained. By web didactics Pesonen means that in planning instruction through Internet-based learning environments we take into account the content of the studies and the aims of the instruction, as well as planning appropriate structural and functional elements, while recognising the challenges related to a hypermedia environment (Pesonen 2000, p. 89).

We still see myths related to the superiority of technology linked to online learning. Some people unrealistically believe that everyone likes online learning and considers it to be an attractive study method. Some students, however, find no motivation to study through an online learning environment. An often heard mantra is that the web offers opportunities to complete studies without committing to a specific place or time. Studies are not carried out automatically in any environment, however, without systematic activity and efforts on behalf of students to achieve the targets set for their studies. Lecturers and students alike must plan their schedules and set a time and place for their work. The online study environment is especially susceptible to technical problems, which could arise from a multitude of elements – software used, telecommunication, users' skills, poor planning of online implementations, etc.

3.2 Learning environment, teaching environment or study environment?

Certain IT concepts have become established in everyday language use through the social changes brought by information and communication technology. Living in an information society requires lifelong learning and the perpetual maintenance of our understanding. Ongoing social changes pose a learning challenge in themselves. The challenge grows due to our inability accurately to predict what the future will bring in this constantly and swiftly changing society (Linturi 1998, p. 35). A concept often used in parallel to 'information society' is 'learning society', which refers to the new learning challenges set by our society, to the emphasis on information and knowledge, and to the networking of social structures (Heiskanen 1999a, 1999b). An essential requirement for favourable social development is often seen to be the free access of individuals to networks and information highways (Castells 1999).

These social developments have also left their mark on education and learning. Study environments have diversified through the creation of web-based learning environments. Individuals continue learning throughout their lives, and from the point of view of lifelong education this is not limited to formal instruction and education. According to Linturi (1998), the concept of 'learning environment' was born from the need to challenge the traditional classroom paradigm. In his opinion, the learning environment is no longer linked solely to educational institutions but it permeates our entire lives. Learning environments strive to attain an open structure which offers the raw materials needed for learning rather than ready-made contents or products (Linturi 1998, pp. 38–39).

As a concept, learning environment is linked to both learning and instruction. According to a belief that is currently accepted widely, learning does not happen mechanically through a transfer of information from a teacher or expert to a student through a lecture or similar learning package. According to Wilson (1995, pp. 25–27), seeing teaching and instruction from the point of view of an environment gives students more opportunities for independence and decision-making. Students must receive the necessary tools and access to as diverse a set of information sources as possible. They must also be given support and guidance during their studies. As such, the concept of a learning environment seems more appropriate than that of a teaching environment. In a learning environment the central focus is on learning.

According to Panzar, the learning environment includes the learning materials used and the physical and mental framework that facilitates goal-directed lear-

ning. The framework may be chosen by the student or offered by the educator (Panzar 1995, p. 86). If we wish to emphasise the technical elements of a learning environment, the essential factors are hypermedia-based study materials, problem-solving tools and communication tools (Multisilta 1997, p. 102).

Tella (1997) uses the concept of 'study environment' rather than learning environment, thus emphasising the active studying phase of the teaching-learning process. According to Tella, the task of the teacher or lecturer is to assist the student in making the study environment as attractive as possible. The combination of an attractive study environment and the teacher's teaching activities may lead to the creation of a learning environment, which is a model or internal representation of the external reality constructed in the student's mind (Tella 1997, p. 52).

Mononen-Aaltonen (1999) presents the view that the translation of the English concept of 'learning environment' into Finnish is problematic. According to Mononen-Aaltonen, the learning environment should be seen as a purely psychological concept, whereas the study environment would come under didactics. The learning environment can be a didactical concept only as a theoretical and abstract construct, whereas the study environment is related to the level of activity and must be paired with the teacher's perspective, the teaching environment (Mononen-Aaltonen 1999, pp. 225–226).

Koli views the learning environment as a combination of internal and external learning environments. The internal learning environment is constructed within the student's mind and is affected by the student's individual experiences. In other words, the individual's attitudes, beliefs and emotions would affect learning positively or negatively. Koli's external learning environment consists of the physical and social factors which guide and direct learning (Koli 2003, pp. 157–160).

In this publication we will use the concept of learning environment as it is widely used in Finnish research and literature, conscious of the conflict that arises from a single concept being simultaneously an explanative principle and a target of concrete study (Mononen-Aaltonen 1999, p. 225).

An online learning environment is implemented using the Internet and web technology. This kind of learning environment differs from others mainly with regard to its structure and functions. An online learning environment is built up of hypertext structures, hypermedia, links, discussion boards and other interactive channels (e.g. email and chat rooms) as well as possible interactive programmed web pages and word processing software (Manninen 2000, p. 37).

In this publication, by learning environment we mean the operating environment in which students and lecturers operate. By an online learning environment we mean a learning environment created with the use of web technology and with a basis in the Internet as a technical platform.

3.3 Classifying education on the basis of different instruction methods

In spring 2003, the Finnish Virtual Polytechnic agreed to classify education by dividing it into four categories based on instruction methods: education based on face-to-face instruction, education based on guided online learning, education based on online self-study materials, and blended learning. This classification and definition process carried out by all polytechnics together will help students in creating their study plans. Online learning and blended learning add flexibility to students' schedules. The joint classification also improves the reliability of the statistics and reports compiled by polytechnics on students' performances. The classification was approved by the Finnish Ministry of Education.

The four instruction methods are defined as follows.

1. Education based on face-to-face instruction (Face-to-face instruction)

Face-to-face instruction is instruction that mainly takes place in a specific place at a specific time in the presence of both the lecturer and the students. Face-to-face instruction can also be web-supported, which means that reporting and materials such as overheads, photocopies, exercises and study material lists are provided online. Students may have access to online services which support the face-to-face instruction, such as discussion boards or group work platforms. Students' work may be published online. The web is, however, in principle used solely to distribute information and materials.

2. Education based on guided online learning (Guided online learning)

Guided online learning is instruction based on group work in which the lecturer and the students interact actively through various digital tools. The studies may include work done independently, in pairs or in teams, with simultaneous communication for instance through chat rooms or video/audio links. Some online learning may require presence at the polytechnic for an examination.

3. Education based on online self-study materials (Online self-study)

Online learning based on self-study materials refers to studies in which students learn independently with the help of online materials and instructions contained

in these. Students can solve problems and receive feedback through these materials. Online self-study does not involve guidance or teaching from a lecturer or necessarily interaction with other students.

4. Education based on both face-to-face and online learning (Blended learning)

Blended learning refers to an implementation involving various instruction methods. Instruction is organised through both face-to-face and online learning. Students' work may take various forms and be carried out independently, in pairs, in teams or in larger groups. Studies may take place at an institution, in the workplace or through information networks. Blended learning implies that students must be present for face-to-face instruction and also work in an online environment.

4 CONCEIVING ONLINE IMPLEMENTATIONS

When conceiving an online learning programme, lecturers should consider what kinds of projects are worth implementing in an online environment. Although IT networks open doors to flexible learning independent of time and place, the needs of the target audience must take centre stage in the planning of studies and work methods. In many cases, face-to-face communication cannot be replaced entirely by online interaction and collaboration. Implementations can also only be based on technologies to which the target group has access.

Often, however, learning results can be improved significantly with the use of ICT. The starting point for the conception of online learning should always be pedagogical. The use of technology and access to well-structured information do not in themselves guarantee a quality learning experience. Many believe unrealistically that the presentation of information in a well-structured and interesting way supports in-depth understanding and learning. As a consequence, discussions on virtual learning have focused excessively on the transfer of information, neglecting to investigate the processes of social interaction and participation (Hakkarainen 2001, p. 19).

When building an online study unit, the main question to consider is what added value is created by transferring the study unit to an online environment. If the only answers are that the production of online study units supports the image of the educational institution and that it is a modern way to do things, the use of ICT as an instruction tool is probably fairly useless in pedagogical terms.

Polytechnics have three main tasks as defined in Finnish legislation: teaching; research and development; and regional development. In conceiving online learning programmes, it is worth considering how the online implementation will support the fulfilment of these basic tasks.

The Ministry of Education's Development Plan for Education and Research in 2003–2008 (2003, p. 45) stresses the importance of offering flexible studies; the role of personal study plans should be strengthened and all students, regardless of their degree programme, should have the opportunity to take 20 credits of their studies in an online format. Polytechnics have good prospects of reaching this target by extending their own selections of online study units and making use of products created by the Finnish Virtual Polytechnic. Until now, our polytechnics' online learning selections have been fairly marginal, so a lot remains to be done. The quantitative targets for the growth of online learning should not, however, take precedence over qualitative requirements. The online environ-

ment should be an attractive learning method, and its use must not become an end in itself. If better learning results can be achieved through more traditional instruction methods, there should be no obstacles to their use. The challenge lies in how to implement innovative study modules in which the use of ICT is appropriate.

4.1 Networking and inquiry learning in projects

A central challenge for polytechnic education in the future will be the creation of even more solid and tightly knit cooperation networks between polytechnics and the local labour market. Finland's welfare and international competitiveness levels are partly reliant on the role of polytechnics, which help to invigorate activity in their areas of expertise. The task of polytechnics is to train experts who will serve the labour market. An expert could be defined as an individual who understands the principles behind things and uses them to provide solutions to encountered problems, and someone who is able to provide new information needed for problem-solving together with his or her working community (Hakkarainen, Palonen & Paavola 2002, p. 460). An expert must possess dynamic know-how, manifested as a diverse and active interaction between data, emotions and actions. This interaction leads to increased problem-solving (Isokorpi & Viitanen 2001, pp. 112–113; Hakkarainen 2003, p. 12).

Experts must promote the creation of innovative solutions through their work. In order to generate true expertise, the targets set for research and educational policies must be reconciled by increasing and reinforcing the collaboration between polytechnics and the local labour market. The fulfilment of the learning process in an authentic learning environment brings new opportunities for developing the cooperation between representatives of the labour market and polytechnics; this can be called situational learning (Anderson et al. 1996; Lave et al. 1996, Wenger 1998). Situational learning strives to break down the barriers between educational institutions and the labour market and conceives of learning as taking place in the cultural context around which operations are centred. Thus the focus is on learning based on social participation, through which students gradually become more and more integrated in the expert community (Kotila 2003, p. 18).

Today's information society demands that experts have cross-disciplinary know-how in order to understand the constantly changing phenomena of the world of work. This means that one of the most important tasks for polytechnics is to

train students in multidisciplinary expertise, which in turn calls for phenomenon-based learning.

Phenomenon-based learning can be brought about by intensifying collaboration between polytechnics and organisations representing the local labour market through the organisation of studies into larger modules. Learning is often linked to a project carried out for or with the labour market. Inquiry learning in projects is closely associated with situational learning, although it is more strongly linked to project-based learning. A project can be seen as a larger concept, containing several tasks or undertakings. The projects must be sufficiently long in duration to create a fruitful basis for interaction between the polytechnics and representatives of the labour market.

Inquiry learning in projects can make use of IT networks, particularly for the purposes of documentation and interaction. New learning environments are created as they shift increasingly into authentic work situations and away from the traditional classroom context. This brings significant challenges for teachers and lecturers, as a genuine atmosphere of collaboration must be created between polytechnics and the labour market to guarantee the future quality of polytechnic education. Polytechnics must be able to respond to the qualification demands of the labour market and to train experts who will serve the information society.

The intellectual capital of an organisation refers to the organisation's intangible assets and its capacity to transform its employees' know-how continuously into innovations. This success factor will be crucial – if difficult to control – in future (Ståhle & Gröönroos 1999). Innovation cannot, however, take place in isolation within the polytechnic environment, as it is strongly characterised by the principle of collaboration. The innovation process must involve not only the local labour market but also scientific higher education institutions, international educational organisations and various public sector bodies.

4.2 Experiential learning in authentic work situations

The challenges of learning apply equally to online learning. Online learning can significantly, even crucially affect the creation of a culture of lifelong learning, which in turn helps to safeguard a favourable social development (Markkula 2003, pp. 1–2). Lifelong learning is strongly linked to experiential learning (Korhonen 1992, p. 17). The experiential learning process is based on Kolb's (1984) experiential learning model (Figure 2).

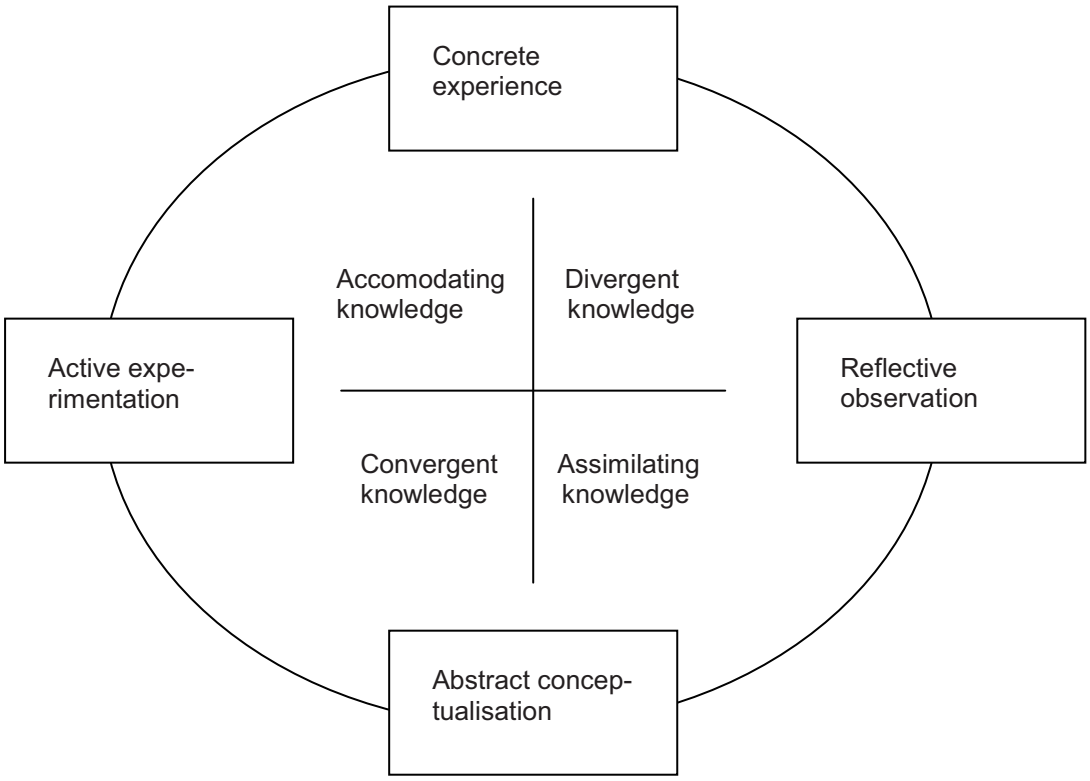


Figure 2. Experiential learning model (Kolb 1984)

According to Kolb, the learning process should be linked to an immediate, concrete experience, which emphasises involvement and feeling. Students should identify their own characteristic styles of learning, gathering information and increasing their understanding. Thus Kolb's model stresses the importance of different learning styles. Learning styles are often unconscious, but it is important for students to find pleasant ways of learning. Experience leads to divergent knowledge, in which the student's own knowledge is still somewhat separate from the generally recognised frame of reference. Through reflective observation, the student can structure his or her experiences, naming them and thus conceptualising them. At the same time the student broadens his or her concept of the learned phenomenon. Considering issues from various perspectives is essential to observation, which is also closely linked to reflection over that which has been learnt. At the assimilation stage, the individual's own knowledge is integrated into the existing broader frame of reference. This forms the basis for carrying out new experiments and testing what has been learnt, which requires

work and effort – i.e. convergent thinking. This causes new concrete experiences, active experimentation and learning situations, which lead to renewed reflective observation and accommodating knowledge. Thus an active relationship is created between the student and the learned phenomenon (Kolb 1984).

Experiential learning can also be defined in terms of education, work and personal development. The opportunities offered by IT networks for bringing these three factors together could be illustrated by adapting Kolb's model, as shown in Figure 3.

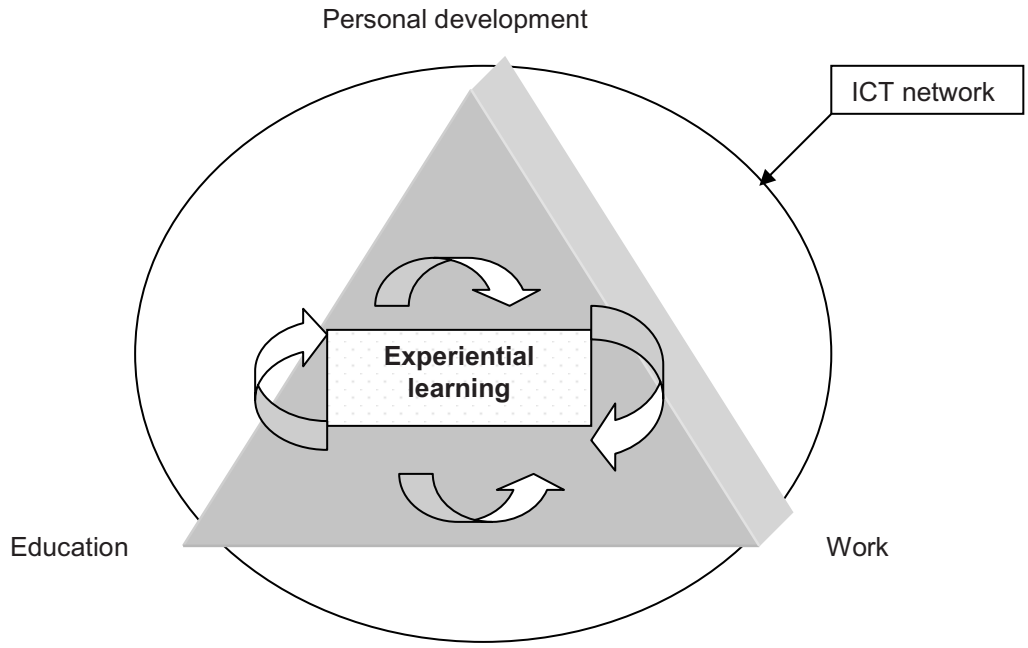


Figure 3. Experiential learning model (derived from Kolb 1984, p. 4)

Ideally, information networks create a culture and procedure which can erase the barriers between education and the labour market. Education should increasingly take place in authentic work situations, even once the individual is already employed in the labour market. Collaboration between educational institutions and the labour market cannot simply be intensified through technical solutions, however. Close collaboration implies that the interaction between the parties must develop sufficiently quickly. In addition, the parties must be able to create the necessary atmosphere of cooperation and maintain and develop joint

cooperation models and processes. This makes innovation possible. A close link between educational institutions and the labour market promotes the personal development of individuals and can thus be assumed to be connected to an increase in motivation levels.

One of the duties of polytechnics is to participate actively in their areas of expertise and to respond to constant changes in the challenges set by the labour market. The coordination of the know-how created in different fields of study and on different campuses is a critical success factor for polytechnics. IT networks offer excellent opportunities for sharing know-how. It is essential to create virtual meeting places for knowledge sharing to help in acquiring even more accurate and exhaustive information of the constantly changing phenomena of the labour market.

Learning environments will increasingly move away from the traditional classroom towards authentic environments moulded by the labour market. This constitutes a large challenge for teachers and lecturers, whose work is not just associated to pedagogical duties but also relates to developing the local labour market and adopting an investigative approach. The transformative and emancipatory learning process emphasises the importance of companionship with students. The involvement of students in the planning phase of online implementations of inquiry learning in projects increases their commitment and motivation for the implementation. By participating in these projects, students acquire skills related to project work, which form some of the crucial abilities in our future skill-based society.

In an ideal situation, inquiry learning in projects will transform the learning process into a cyclically deepening research process, where the research objects are the phenomena of the labour market. IT networks support this research process especially by offering a platform for sharing know-how. An online learning environment makes it possible to document project-specific plans and journals, as well as personal study plans and diaries, which furthers reflection on what has been learnt. Thus the online learning environment supports community-based learning through interaction between students and student groups.

To create an in-depth understanding of the phenomena of the labour market, the implementation of instruction programmes must involve multidisciplinary know-how. When conceiving online learning programmes it is therefore worth considering what kinds of expertise are required of the lecturers who wish to implement them. Online learning projects created by cross-disciplinary teams of lecturers can often be more innovative than those implemented by just one lecturer

or by a team of lecturers with the same training background. Ideally, experts from the labour market should participate with lecturers in conceiving online programmes and later in guiding students' learning processes.

4.3 Entirely or partly online?

At the early stages of online learning, many had visions of online programmes saving time and money as large student groups could be taught with the use of small instruction resources – almost as if students would learn by themselves as soon as they had been given online access to learning materials and tasks. Materials could certainly be distributed through the new technology, but online instruction was lacking in interaction. The development of learning environment platforms and other web applications in the late 1990s meant that teachers can now focus increasingly on pedagogy and supporting learning instead of technical issues. A general tendency adopted currently in the implementation of study programmes appears to be that of blended learning. Long-distance and face-to-face instruction are combined to create attractive modules, as interaction between people still appears to be activated most easily through face-to-face encounters. There is a constant need, however, for study units implemented entirely online. Online study units can be taken from any location in Finland and can include international students, which is why Laurea is increasing its use of online learning environments for online and blended learning, and as virtual classrooms or project spaces.

Hein, Ihanainen and Nieminen (2000) define the significance of IT networks in education as illustrated in Figure 4.

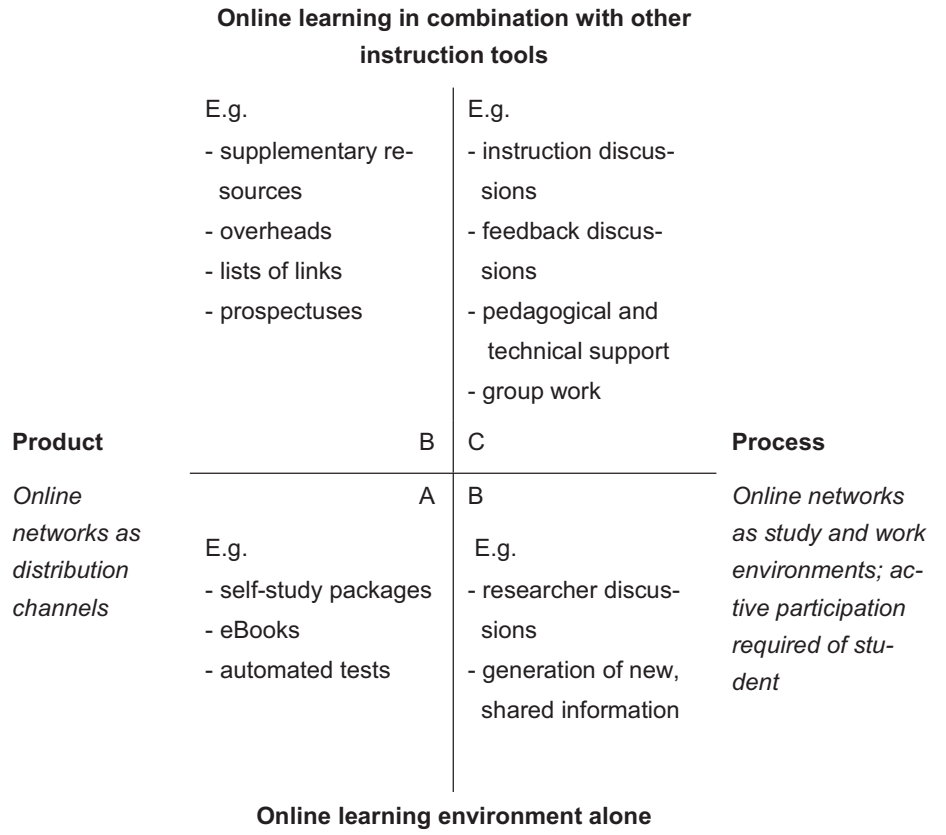


Figure 4. Forms of online learning (Hein et al. 2000).

The horizontal axis describes the division into product- and process-based online learning. The vertical axis defines whether online networks are used to support other instruction tools or whether the aim is to transfer the entire instruction and learning process into an online environment. Sector A describes the use of networks as a kind of resource database, which may contain automated tests, lists of links produced by the lecturer, entire textbooks or self-study packages. In sector A, instruction is carried out entirely online. In Sector B, online networks are used as an instruction tool in combination with more traditional tools. In these cases, networks are often used as resource databases – similar in content to those in sector A – which complement face-to-face teaching. Sectors A and B are characterised by the fact that communication is unidirectional (Hein et al. 2000).

Sectors C and D, on the other hand, are characterised by bidirectional communication. Online instruction and learning can take place in combination with traditional methods (sector C) or entirely online (sector D). These sectors embody the idea of students' active participation in online operations (Hein et al. 2000) and the use of networks as tools for collaborative and cooperative learning.

5 PLANNING ONLINE LEARNING

5.1 Pedagogical bases for planning

The planning of an online learning environment should always have a basis in pedagogic principles. The plans must take into account the students' previous knowledge of the phenomenon at hand. They must also consider which pedagogic principles or models are appropriate for use to guarantee an optimal learning experience.

Pedagogical and technical points of departure may lead to very different online learning methods. Online learning may consist of independent browsing through and searching for information or joint generation and editing of information between people. The principles of inquiry learning and collaborative and cooperative learning have been tested widely in online learning, so we will consider them in more depth in this publication. Other recommended frames of reference are various constructivist perspectives, authentic dialogic online learning (cf. Aarnio, H. & Enqvist, J.: Dialoginen oppiminen verkossa. DIANA-malli ammatillisen osaamisen rakentamiseen; Finnish National Board of Education, Helsinki, 2001), and the cooperative project-based learning model (cf. Lifländer, V.-P.: Verkko-oppiminen – Yhteistoiminnallinen projektioppiminen verkossa; Edita, Helsinki, 1999).

5.1.1 Progressive inquiry learning

In their publication Tieto- ja viestintätekniikka tutkivan oppimisen välineenä, researchers at the University of Helsinki define a pedagogical model which supports students in acquiring the advanced IT skills required for successful operation in our information society (Hakkarainen, Lonka & Lipponen 1999, p. 9). The progressive inquiry learning model is based on the problem-based learning (PBL) model. According to the PBL model, the starting point for learning is not contained in ready-made data presented for learning but in a poorly defined, genuine problem to which students themselves must find solutions. Learning is therefore not directed by ready-made action plans or resources, but by problems, the students' preconceptions and particularly the deficiencies found in these preconceptions.

The progressive inquiry learning principle is based on the idea that creating new information is in essence a similar process to that of understanding existing in-

formation. When individuals try to understand existing scientific theories or frames of reference, they have to go through the same processes as the people who originally created the theories or frames of reference. According to the progressive inquiry learning principle, in its ideal form learning would be a research process, which generates new information and understanding (Hakkarainen, Muukkonen, Seitamaa-Hakkarainen & Lipponen 1998, p. 2).

The progressive inquiry learning frame of reference is based on the fact that the operation of the learning environment can be organised so that it is comparable to the practices used by scientific research teams or expert organisations. A central concept in progressive inquiry learning is the idea that learners do not assimilate new information in direct relation to their previous data constructs, but by adopting constructs and problems related to the understanding of the new information. In addition, the learner constructs individual theories and explanations of the subject of study (Hakkarainen et al. 1998, p. 2).

The objectives of progressive inquiry learning are the concepts of the subject, constructed during the learning process by the learners and the teachers. It is essential to see that the progressive inquiry learning process is a gradually deepening one. Thus attention is focused specifically on developing learning and, simultaneously, the learning environments. The learning process takes time and generates various working theories, which change and deepen as more information is gathered (Hakkarainen et al. 1998, p. 3)

Progressive inquiry learning could be structured as in Figure 5.

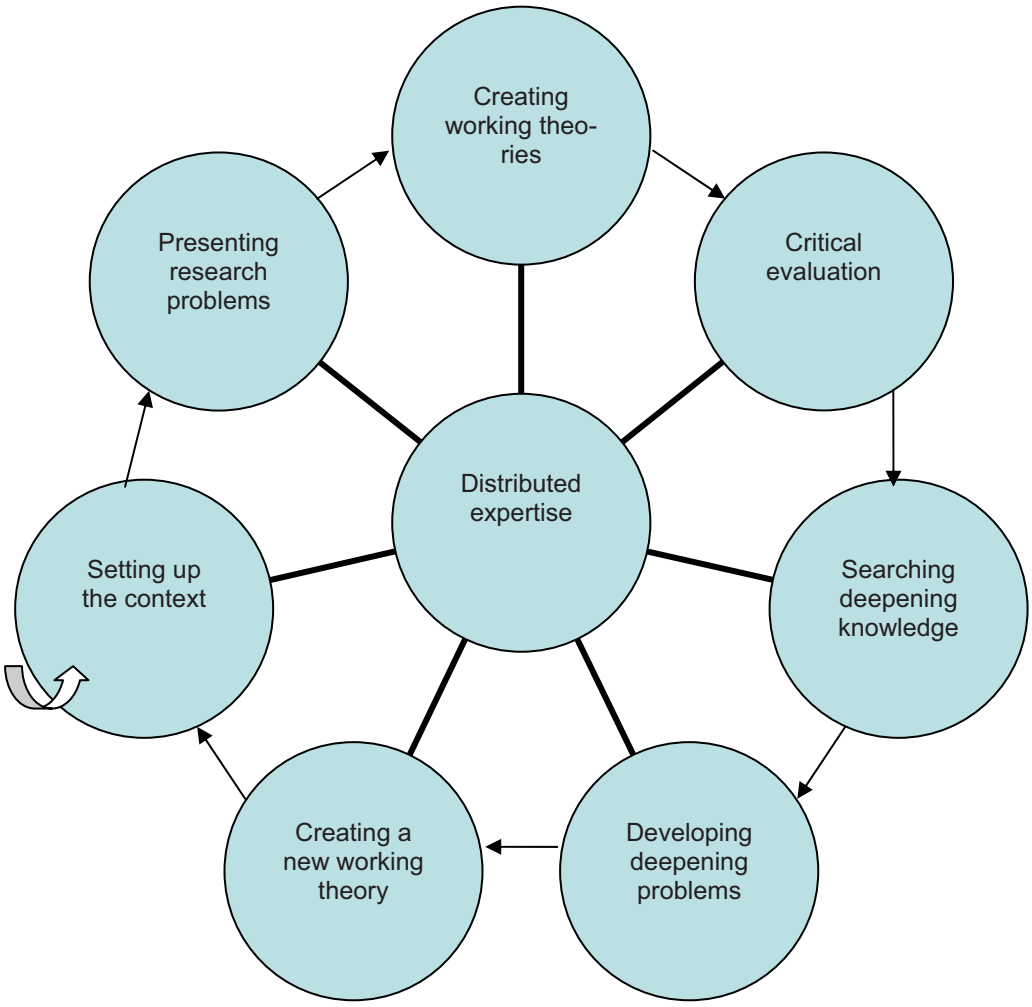


Figure 5. Progressive inquiry learning (Hakkarainen et al. 1998, p. 4)

Setting up the context

The object of analysis in the progressive inquiry learning process should be a problem related to a topic that is of central importance to the students' conceptual understanding. The topic should contain sufficient dimensions and perspectives to ensure that it can be treated from various points of view. It is important to set a context by linking the subject of study to significant and interesting scientific issues, actual problems arising from the labour market or the students' own conceptions and experiences (Hakkarainen et al. 1998, p. 4).

Presenting research problems

The point of departure for progressive inquiry learning is setting problems which will direct the learning process and which are central in terms of the students'

conceptual understanding. Although the lecturer may define the general framework for the subject of study, the students themselves must determine the problems they are going to investigate further (Hakkarainen et al. 1998, pp. 4–5).

Creating a working theory

The students' own working theories and interpretations take centre stage in learning by developing. The task of the lecturer is to encourage students to consider the problems in the subject of study and to present their own interpretations. The presentation of the students' own interpretations and explanations is essential if the newly found information is to be deepened (Hakkarainen et al. 1998, p. 5).

Critical evaluation

The idea behind critical evaluation is to encourage students to evaluate what they have learnt critically and constructively. The aim of critical evaluation is to develop and compare working theories, thus finding out their strengths and weaknesses (Hakkarainen et al. 1998, p. 5).

Searching deepening knowledge

The aim of learning by developing is generating new understanding and information. Thus it is strongly linked to effective information gathering from various sources. Students are guided by the problems they have set themselves, by their existing knowledge bases and by the assumptions they may form through their working theories. When gathering information, students must remember to assess the reliability of the data found in various sources.

Developing deepening problems

In terms of learning, inspiring commitment and motivation in students towards solving the problems they have set is essential in maintaining their incentive to learn. This also helps students develop towards true expertise (Hakkarainen et al. 1999, p. 82). By setting gradually more specific questions, students can deepen their knowledge of the studied phenomenon. In order to promote learning, conceptual changes should take place in parallel to information increases (Hakkarainen et al. 1998, p. 6).

Creating a new working theory

One criterion affecting the success of learning by developing is whether students can generate new working theories to explain the studied phenomena. To do this, students must gather gradually deepening knowledge (Hakkarainen et al. 1998, p. 6).

Distributed expertise

Learning by developing is based on including collaborative activity in the learning process. Shared expertise refers to a situation in which working theories and their stages are shared between all the parties participating in the learning process. The aim is to guide and encourage students to consider the best practices that arise from collaborative activities. The process of learning by developing may involve experts from the labour market in addition to lecturers and students (Hakkarainen et al. 1998, p. 6). IT networks and learning environment software offer an effective channel for sharing expertise.

5.1.2 Collaborative and cooperative learning

The importance of information networks in learning is often justified from the point of view of collaborative and cooperative learning. The collaborative perspective is very significant, as it is considered to support the growth of students to become true experts (Hakkarainen et al. 1999). When looking at learning environments from the collaborative perspective, it is important to define the idea of a community and the relationship between collaboration and cooperation. The definitions of these characteristics are based on the research tradition formed on the basis of Piaget's genetic epistemology (1970) and on Vygotsky's ideas on social and cultural development (1962, 1978). By learning together, students affect each other's knowledge constructs, thus generating new information and broadening their understanding (Korhonen 2003, p. 33). Both approaches are rooted in the ideas and thoughts of John Dewey, who sought to strengthen the interaction between students in learning situations. After Dewey's tests on learning and interaction, researchers in the mid-twentieth century began to search for teaching organisations based more specifically on group dynamics, in order to create well-functioning groups (Sahlberg & Sharan 2002, p. 10).

A community emphasises the importance of experience-based and interactive events (Tahkokallio 1998). Social interaction is a human need; collaborating with a community is important in the construction of our self-esteem. Social interaction signifies a kind of liberation of our emotions, which are the balancing force between the controlled (conscious) and uncontrolled (unconscious) levels of community (Isokorpi & Viitanen 2001, pp. 200–2001).

Collaborative learning focuses more clearly on the learning process. During their learning process, students analyse the subject of study, forming conceptions and explanations of it, which are examined critically and in a questioning mode jointly by the members of the community. The aim of the learning process is to

transform students' knowledge and know-how in a topic clearly by doing more than just increasing the amount of information they possess. Collaborative learning does not differentiate between students' roles as clearly as cooperative learning does, as it relates more to a joint attempt to understand something consciously and in detail (Korhonen 2003, p. 33).

Collaborative learning emphasises the use of dispersed cognitive resources – i.e. making other participants understand our thoughts through shared communication and reflection (Hakkarainen, Järvelä, Lipponen, Lonka & Lehtinen 1996; Hakkarainen 1997).

Individual and group participation in interactive learning is strongly related to the collaborative context and the adoption of the group's thinking and operating methods. By participating in a community, students can broaden their spheres of experience and receive feedback on their thoughts and actions from the other members of the community. Collaborative learning is characterised by interaction between students and the tools related to the learning environment produced by that culture. Significant knowledge is acquired when students strive to understand the processes affecting this interaction. The production of significant knowledge takes place as a shared social process, which can be defined with the help of Piaget's concept of the cognitive conflict (1970). Students try to solve the cognitive conflict, which arises between what we know, what we believe others to know and what we wish to or should know due to the challenges posed by our environment (Korhonen 2003, p. 34).

Cooperative learning could be defined as a learning project which focuses on cooperation and in which students act with joint responsibility in order to attain a specific target (Slavin 1985; Johnson & Johnson 1987, 1990a, 1990b). Cooperative learning stresses the importance of sharing study resources and responsibility. Learning is based on the creation of a fixed relationship between the students and the subject of study. The interaction that takes place in the learning environment has a deep impact on the social, cognitive and professional development of the students (Kagan & Kagan 2002, p. 24). When working in a learning environment, it is natural to allocate roles between the parties in accordance with the situation and the students' learning process.

In cooperative learning, the members of the group are positively dependent on one another. A relationship of positive dependence is created when individuals realise that the success of one signifies the success of another (Kagan & Kagan 2002, p. 41). It may appear in the form of dependence on resources, materials, tasks or the reward that is received for completing a task. Positive dependence

promotes learning. Collaborative learning focuses on participation and interaction; cooperative learning emphasises the allocation of roles (Korhonen 2003, p. 33). Cooperation does not imply the elimination of individual responsibility; each member of the group is responsible for his or her own input to the group and therefore also for his or her own learning. In order for the group to work successfully and its learning process to develop positively, there must be a strong team spirit (Kagan & Kagan 2002, p. 42).

Team spirit does not appear by itself. The orientation phase is particularly important in the creation of team spirit; the lecturer must successfully divide the students into groups and create a favourable atmosphere for work in small groups. The grouping process can be supported by various activities which help to create a feeling of openness and cooperation between the students. In online learning, as interaction in the learning process is transferred to the online environment, the division into groups is especially important. Students who have been grouped together unsuccessfully cannot be expected to participate in an active dialogue in the online environment.

Cooperative learning is situational in the sense that beginners can acquire knowledge and skills by participating in the community's social and cultural practices, in order to gradually become full members of the community (Korhonen 2003, p. 32; cf. also Wenger 1998). Through the participation of beginners, the learning process becomes a socialising and participation process (Korhonen 2003, p. 32).

We could say that in cooperative learning the aim of the learning process is clearer from the start than in collaborative learning, where it is formed gradually through the interaction of the participants. Collaborative learning centres on the significance of dialogue in the creation of common understanding and in-depth knowledge. Collaborative and cooperative learning are not mutually exclusive: for instance choral singing is simultaneously collaborative and cooperative. In a choir, each singer is given a specific role as a tenor, bass, soprano, etc., but some of the singers may occasionally have solos while others remain in the background. The conductor is responsible for ensuring that the singers learn all the songs and that the results are high in quality. All choir members share the aim of learning the songs they are to perform. In this example, collaborative learning could be seen as the result of the learning, which is complemented by cooperative learning.

Sahlberg and Sharan define cooperative learning as a collective term for the pedagogic methods which are based on organising large student groups into

smaller units with scientific principles (Sahlberg & Sharan 2002, p. 11). Defined thus, collaborative learning would be a subgroup of cooperative learning. For everyday instruction work, however, it does not make sense to define cooperative learning so broadly. In the light of the descriptions given above, it is also difficult to see collaborative learning as a subgroup of cooperative learning – it would more likely seem vice versa. In a nutshell, we could call cooperative learning a learning process in which students work together and with joint responsibility to achieve a specific aim, through a relationship of positive dependence. The subject of study varies depending on the role but always serves the joint learning targets for the group.

Collaborative learning could then be defined as a learning process during which students assess the subject of study, creating concepts and explanations for it which are assessed critically and questioningly among the members of the community. The subject of study remains the same throughout the process.

Rauhala considers collaboration to have been analysed too uncritically, as if it were an ideal goal to aim for. Social interaction is based on advanced individuality and personality, which is why Rauhala emphasises the importance of evaluating the individual growth processes of the group's members (Rauhala 1991, 1998).

5.2 Operating environment

The foundations for the planning of online learning should lie in the polytechnic's strategic aims and in the framework provided by its operating environment. Otherwise the online implementations will lack continuity and development opportunities. Laurea's Information Technology Strategy describes matters related to the polytechnic's infrastructure (machinery, equipment, networks, employees' basic IT skills). The Strategy for the Use of Information and Communication Technology in Instruction, and the Pedagogic Strategy set the targets for staff and student skills.

Sufficient personnel and man hours must be reserved for planning online implementations. One lecturer's enthusiasm is not enough to provide an online implementation which could be turned into a successful product and distributed for broader use within the organisation. The projects to implement online must be chosen together with a superior to ensure that there is sufficient demand and resources for them.

The polytechnic's activities in regional development, networking with the labour market and international projects facilitate studies that cross the boundaries of the polytechnic. Online learning can increase the flexibility and openness of studies. Currently, the Finnish Virtual Polytechnic and the Study Pass system in the capital city area provide opportunities for degree students to take study units in polytechnics other than their own. The Open Polytechnic could offer even more online study units than it does. The Virtual Polytechnic offers lecturers opportunities for developing as experts and content producers in online learning. National content-production networks are in place to produce study units which can be used broadly across various fields of study and polytechnics.

A learning environment consists of all the material and immaterial frameworks within which the lecturer and students operate. An online learning environment is an operating environment that combines pedagogical choices, selected methods and tools, and teaching and study resources. The online learning environment must never be seen as a purely technical product; in polytechnics, it is made up of the entire operating environment, not just a technical platform.

With the use of various online learning platforms in combination, students, lecturers and representatives of the labour market can be brought together without commitment to a specific time and place. It is particularly important to strive to break down the barriers between educational institutions and the society around them with the use of IT and networking. This means students will participate in external activities that are essential in terms of their expertise (Nissinen 2003, p. 226).

The available software options vary greatly in terms of the 'pedagogical freedom' they offer the creator of an online study unit. Some programs are structured in accordance with specific pedagogical models, which means that the structure will control the pedagogy of the study unit rather strictly, allowing the creator very little pedagogical freedom. In polytechnic instruction, the learning process is characterised by close interaction between the institution and representatives of the labour market. This means that the online learning environment used must be easy to adapt to support this interaction as much as possible (Nissinen 2003, p. 227).

5.3 Planning phase

At Laurea Polytechnic the planning process for online implementations consists of eight stages:

- conception
- script-writing
- creation of the learning environment
- testing
- piloting
- evaluation and development
- agreement on rights of use
- use and maintenance

Planning work carried out collaboratively, through open interaction with a team of lecturers and support personnel, results in high-quality online implementations. By documenting each stage of the planning phase we can guarantee the continuity of the work even if individual participants leave the team.

After conceiving an online implementation, the lecturers and any other production team members begin to plan the script of the implementation. Depending on the extent of the project, the script may contain a synopsis, a project plan and a structural and material plan in addition to the user scenario. At the script-writing stage the production team should identify the learning processes, contents, evaluation and tutoring of the study unit, always keeping in mind the needs of the target group.

After creating the learning environment and the necessary materials (exercises, learning materials, guidelines, etc.), the environment should be tested before initiating a pilot project. During the pilot project, feedback on the implementation is gathered from all participants and used to improve the project. The makers of the online implementation will make agreements on the rights to use the implementation so that it and the materials it contains can be used inside the polytechnic and, if necessary, shared with other institutions. Well-designed online implementations may be used extensively within the polytechnic and may be long-lived if they are adaptable into different versions for different purposes.

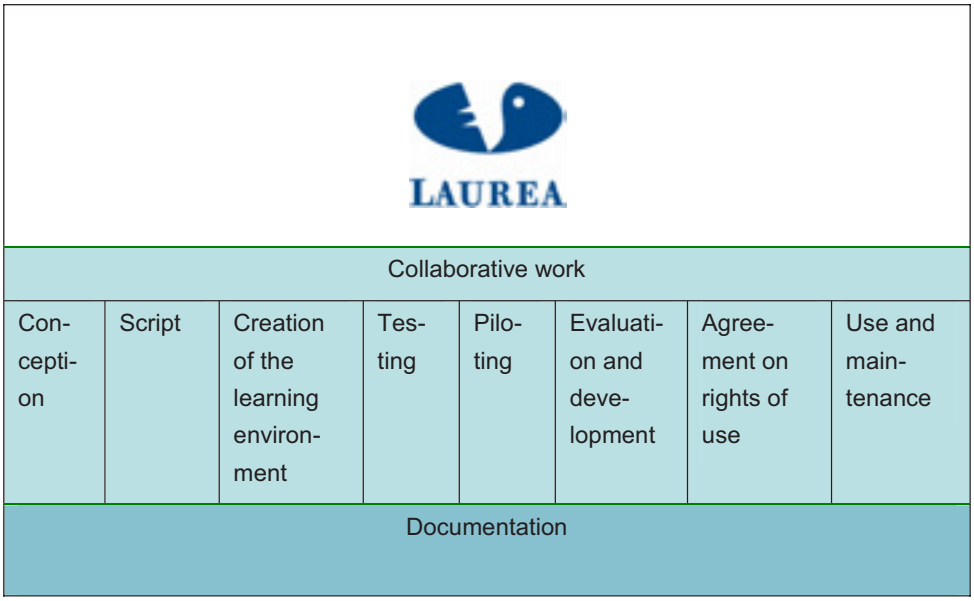


Figure 6. Factors that make up the planning of online implementations

In terms of the script-writing stage, this publication will look more closely at the user scenario, the synopsis, the project plan and the structural plan. For more information on script-writing, please refer to content production guides. For reference, we have used two printed works: Jussi Luukkonen's Digitaalisen median käsikirjoitusopas (2000) and Jyrki Kanerva, Jukka Packalén & Maarit Puttonen's Ideasta multimediaksi (1997), as well as the script-writing website created by Suvi Keituri (http://virtuaaliyliopisto.jyu.fi/oppimateriaali/suvi/). Other good reference materials in planning online implementations are the content production guides, support materials and online tools provided by the Finnish Virtual Polytechnic and the Finnish Virtual University.

5.3.1 User scenario

The user scenario helps to align the implementation to the needs of the correct target group. Quite a few creators of online implementations believe that their project will serve various different target groups, without concretely identifying the needs of these groups. For instance mature students may find themselves in a very different situation than younger students. Each user has different reasons for choosing an online implementation, and their learning styles also vary. If the

online implementation is designed to serve various target groups, it must include alternative learning paths.

The user scenario should describe for instance two or three different users of the online environment. The following issues may be used as a basis for the plan:

- the user's name, age and gender
- why the user has chosen the online environment
- what the user is interested in and motivated by in online learning
- the user's information and communication technology skills
- the situations in which the network will be used
- the tools that are available to the user

5.3.2 Synopsis

The synopsis is a short, one- or two-page abstract of the project. It describes the content-related and technical implementation and gives an estimate of the cost, production time and resource requirements. The synopsis should look at the following issues:

- the idea behind and target group of the implementation
- the main characteristics of the content: e.g. limits, scope, pedagogical principles
- methods of use of the implementation
- how the implementation fits in with the rest of the polytechnic's supply
- creators
- calculated useful life
- preliminary schedule
- preliminary cost calculation

The synopsis is a tool to use when the project is beginning to take shape and requires the approval of the client or partners. The idea and methods of use of the implementation should be written up creatively. A few pertinent illustrations may help the reader to understand the idea behind the implementation quicker.

Partners and participants in the projects will often find it easier and quicker to comment on a concisely written synopsis than on an in-depth project plan. The synopsis may be used as a basis for agreements on the planning and fulfilment of the project.

5.3.3 Project plan

The project plan for an online implementation must include all the general elements of a project plan. In addition it should focus on determining the operators, learning process, ways of achieving targets, study contents, evaluation and tutoring plans of the implementation.

Lecturers are usually experienced at planning studies and projects, so in planning online implementations they can focus on how best to attain the targets set for their teaching work through an online environment. If the planned implementation has previously been carried out through face-to-face instruction, we must especially avoid transferring well-known practices into the online environment as they are. Pedagogic solutions must be rethought completely. The amount of work required of the lecturer and students must be realistic and form a suitable module. Online learning must not be included 'on top of' face-to-face instruction so that it results in additional work for the students and lecturer.

The workload caused by the online implementation may be shared by a team of lecturers, where each lecturer has a specific role. These roles may include that of a teacher, a tutor, a producer of learning materials, a text writer, a producer of graphical elements and an environment manager. The responsibility for tutoring may be shared on a weekly basis between lecturers. The responsibility for the progress of the studies should, where possible, also be shared with the students.

The project plan for an online implementation should consider the following issues:

- the title and scope of the online project
- the lecturers participating in the project and their respective areas of responsibility
- the target groups for which the project is being planned
- the schedule and resources for the project
- the aims of the implementation; i.e. what students are expected to learn through it
- how the students will learn
- the kinds of tasks and exercises that will be set and the work students are expected to produce
- the assessment methods that will be used
- the role of the lecturer during the online implementation

- how tutoring will be organised

The project plan should also include the following:

- a detailed plan of the learning process
- a description of the implementation and teaching methods
- the risks and limitations of the project
- planned right of use agreements

5.3.4 Structural plan

A well-designed online work space will support the learning process and help students progress through the learning environment. Designing the structure of the work space means creating a structural plan for the operating concept of the online implementation. The structure may be based on various principles, e.g. supporting the learning process and the students' activities, the sequence of the content of the studies, knowledge construction or a theoretical model.

Each person can visualise the structural model in their own way. The **mind map** technique can be used to visualise thought processes and to structure contents in relation to each other. Appendix 1 has an example of a mind map with the structure of a study unit. A **flow chart** or **tree diagram** can be used to organise all the elements to be fitted into the online work space, classified under folders or other work structures. These elements include exercises and their delivery, learning materials, various guidelines, discussion areas, other communication tools, calendars, etc.

The structure of the work space and the progress of the work can be simplified in the following ways:

- **organising and classifying** the structure, e.g. through numerals or alphabetically
- **phasing** the work process, e.g. through modules or calendar weeks
- **subdividing** the structure, e.g. on the basis of study methods, activities or work groups
- relating the structure to an apt **metaphor** that describes the content and target group. Metaphors commonly used in online environments include a path, a road, steps, a café, an arena, a marketplace, a ballpark, a building, a hotel and a classroom.

- **using symbols and images**. Visualisation can be used to support the metaphor, to simplify navigation through the online environment and to add a sense of style.

A site map will help students see the online work space as a whole. If there is no fixed structure at the beginning and it will instead be built up during the learning process e.g. through group work, it is important that students be informed initially of what will take place in the work space.

Koli and Silander (2003, pp. 34–44) structure learning situations by using online learning 'building blocks' placed in a form they themselves created. The building blocks are piled up in the order of the learning situations, and the piles form the structure of the online implementation. Not all building blocks have to be used each time; instead, they select the appropriate blocks for each specific part of the online implementation.

The building blocks consist of:

- aims, practices
- creation of a context
- activation
- presenting a learning task
- knowledge construction
- collaborative knowledge construction
- reflection
- tutoring
- peer feedback
- delivery of exercises
- learning diary
- lecture
- self-assessment
- portfolio
- learning objects/learning materials
- assessment

Appendices 1–4 contain examples of the structure of an online implementation carried out in the Optima environment. *Introduction to Statistical Methods* is an online study unit that progresses in accordance with a previously agreed weekly plan. Specific learning materials and a learning exercise are assigned weekly and must be delivered into that week's folder. When the delivery deadline has passed, the lecturer publishes the correct answers and the following week's exercise. *Planning and Administration of Online Education* and the *Virtual Classroom for Group AA* are examples of virtual work spaces that are constantly available to students. The virtual classroom's work space reserves as much space and visibility as possible for the students' own outputs. The students have personal folders in which they keep their personal study plans and study portfolios. These folders may also be used for publishing materials needed by other

participants. The virtual classroom is used for informing the group of any important messages and for carrying out projects.

The *Baltic Sea Network* -workspace is an example of an online project work space, which is used for storing the agreements, schedules, seminar agendas and announcements related to the progress of the project. Some of the internal communications related to the project are carried out through personal emails, but all documents that apply to the entire project are saved in the work space. Subprojects have their own folders, used by participants for carrying out joint work.

5.4 Producing learning materials

Some of the criteria suggested by researchers as determining pedagogically sound learning materials include learnability, a good graphical layout, ease of use, suitability for various user groups and situations, interactivity, reusability and cost-effectiveness (cf. e.g. Horila et al.: Pedagogisen käytettävyyden kriteerit, 2002). A focus on the idea that learning materials should be useful for a variety of purposes has given rise to the concept of 'learning objects'. According to Koli and Silander (2003, p. 67), learning objects are individual multimedia- or hypermedia-based learning material 'bits' or instruction programmes which can be used in various types of learning processes or at various stages of a learning process. A learning object could for instance be a text file, picture, video, table, exercise or evaluation form in digital format. The versatility of learning objects can be improved by dividing wholes into smaller modules which are easy to combine in different sets.

The things to consider in producing online learning materials, however, are primarily accessibility and usability, and secondarily their facility of implementation and maintenance. The most common tools for producing online materials are programs designed for planning teaching and lecturing materials. Most lecturers are familiar with Word, Excel and PowerPoint in Microsoft Office. Materials are often distributed through personal email; some lecturers have individual websites on which they publish teaching materials. Lecture materials designed for face-to-face instruction are often not directly suitable for online distribution technically or content-wise. For instance the production of materials with MS Office applications implies that students must have the same applications on their computers.

Therefore, after designing the structure of an online implementation, we must focus on planning the contents and their production. A production plan is drawn up

to consider and describe the contents to publish and the media to be used. Lecturers who plan to produce online materials by themselves in a fairly limited time-scale should choose media elements which are easy to produce. Perfectly acceptable results can usually be achieved with text files, digital photography and the tools included in the learning environment platform. If you wish to include more demanding elements such as moving images, sound or multimedia, the project should involve experts in web communications and multimedia. Students should be invited to participate as assistants in various phases of the online implementation. In larger projects the production of challenging media elements may be outsourced.

5.4.1 The use of learning materials in a learning environment

The use of the online learning environment platform is usually fairly easy to learn and most lecturers who have used the platform for one online implementation continue to use it for subsequent ones. Materials produced with the tools included in the platform are not easy to transfer to other platforms, however. Generally the learning materials contained in an online learning environment are easy to update and develop and students can use them without purchasing specific software.

One alternative is to use the communication and interaction tools offered by the learning environment platform (discussion areas, chat rooms, forms, multiple choice and 'fill in the blanks' tasks, ready-programmed exercises, etc.), while producing the rest of the learning materials outside the platform. Completed learning materials can be transferred to the platform or published on a separate web server linked to the learning environment.

Table 1 shows some of the software available for producing learning materials that can be transferred to Laurea's Optima online learning environment.

Table 1. Producing learning materials outside Optima

Producing learning materials outside Optima			
Application	**Presentation method (format)**	**Updates**	**Use**
Word, Excel, PowerPoint	text, spreadsheets, presentations (doc, xls, ppt)	using same application	student must have same application installed
Word, Excel, PowerPoint saved as web page	web pages (htm, html)	Word, Excel, web editor	no separate application needed
PowerPoint saved as web graphics	image (gif, jpg)	PowerPoint, image editor	no separate application needed
FrontPage, DreamViewer or other web editor	web pages (htm, html)	web editor	no separate application needed
Adobe Acrobat	document presented with original layout (pdf)	Adobe Acrobat	free Acrobat Reader application
Photo Editor, Photoshop or other image editor. Ready-made digital images.	image (gif, jpg)	image editor	no separate application needed
Adobe Premiere or other video editor. Video saved in Real Video format.	video (ram)	video editor	free Real Player application
Macromedia Flash MS	animation (swf, html, gif, jpg)	Flash MS	free Flash Player
HotPotatoes	interactive exercise (htm, html)	HotPotatoes	no separate application needed
MultiMaker	multimedia presentation (htm, html)	MultiMaker	no separate application needed

Original copies of learning materials produced outside Optima must always be stored on the lecturer's own computer or e.g. a CD-ROM. Updates should be done on the lecturer's own computer and then transferred into Optima by replacing the previous version with the new one. Learning materials may also be transferred to other learning environment platforms if necessary.

Learning materials produced inside a learning environment platform do not generally work outside it, but it is normally fairly easy to make updates within the

platform. Materials produced inside the platform can be used by students without purchasing separate applications.

Table 2 displays some tools for producing learning materials available within Optima.

Table 2. Producing learning materials in Optima.

Producing learning materials in Optima.			
Application	**Presentation format**	**Updates**	**Use**
text editor	text	using same application	no separate application needed
html and web editors	web pages	using same application	no separate application needed
link to Internet	reference to materials outside Optima	using same application	no separate application needed
Image Map editor	links added to images	using same application	no separate application needed
form editor	base for creating form for learning exercise, feedback or e.g. learning journal	using same application	no separate application needed
'fill in the blanks' and multiple choice exercise editor	interactive exercises	using same application	no separate application needed

5.4.2 Producing online texts

The next challenge in producing learning materials is in writing texts for online use. The techniques for writing online texts differ somewhat from the production of supporting materials for face-to-face instruction or of printed materials. Online texts are always conditioned by the structure of the learning environment, meaning that the texts will be shorter and the links between pages, which help to structure the text, must be planned carefully. Reading techniques are also different when looking at a computer screen rather than paper. The creator of the text must be aware of the readers' needs and always keep in mind who the text is for, what the content should be and in what situations the text will be received by the readers.

To create the instructions presented below, we have made use of Anja Alasilta's books Verkkoajan viestintä: tulkinta, ilmaisu, vuorovaikutus (2000), Näin kirjoitat tietoverkkoon: viestintäopas paperin maailmasta verkkojen aikaan (1998) and Verkkokirjoittajan käsikirja (2002), as well as Jakob Nielsen's book WWW suunnittelu (2000) and the web publication "Good Documents" from http://www.gooddocuments.com/techniques/techniqueshome.htm.

Structuring and subdividing the text

- Place the most important information at the beginning. The structure of an online text is like an inverted pyramid.
- Make each web page make sense independently (without the need to refer to other pages).
- Use lists and tables.
- Limit the need to scroll.
- Use no more than 2 – 3 levels in title hierarchy

Using effective titles

- Titles should be descriptive and compelling.
- Titles should be intelligible and compact.
- Titles should be applicable only to one text (similar titles on different pages will confuse readers).
- The first word of the title is important.
- The site should have a proper home page with a main title for the whole site.
- The main points should become evident just from reading the titles.

Using short texts

The length of online texts should be around 50 % of comparable printed versions, so:

- write concisely, using short paragraphs and sentences
- include one important issue in each paragraph
- divide a long chunk of text into different pages
- store learning materials, exercises and instructions as separate files
- inform users concisely of what is going to take place in the learning environment and when, where and for whom
- provide concrete instructions to support independent work

Using links

- Make sure links guide readers along rather than confuse them.
- Use links carefully, not excessively.
- Create links to detailed information from the main page, keeping detailed information on secondary pages.
- Help readers structure the information and receive further information; do not use links to force readers to follow a specific route.
- Bring out important words content-wise in links to highlight them in the text. E.g. WRONG: Read more about study instructions here. RIGHT: For more instructions, see the Study instructions page.
- Use links for easy navigation, e.g. next, previous, back, back to top, see also, read more, home.

Livening text up

- Use images, graphics, animations, video and audio items and multimedia presentations to complement text with consideration.
- Use large pictures or presentations that take a long time to open only with consideration.

Word use

- Use varied, strong verbs.
- Apply a rich vocabulary.
- Use the active rather than the passive voice.
- Make use of pronouns.
- Keep in mind the target audience.

Things to avoid

- Involved metaphors
- Underlining (underlined text can be understood as a link)
- Abbreviations
- Long and unusual words
- The use of block capitalisation other than in titles, as it slows down the reading process and can be interpreted as SHOUTING.

5.4.3 Producing images

Online learning materials should where possible be enriched with the use of illustrations. Images can either form a part of the learning materials (thus fulfilling a pedagogic aim) or help to create the image of the learning environment. Digital images can be produced:

- directly with a digital camera
- by scanning a printed picture or slide
- with an image editor or paint tool
- by purchasing them from a suitable service provider
- by finding and saving them from the Internet.

Pictures can be created and saved directly as images using PowerPoint. Another good tool for use in creating instructions is the Print Screen key to make a screen shot and save it as an image.

Image editing is demanding and time-consuming. Basic skills in image editing are usually sufficient for the purposes of producing online learning materials, and lecturers can create illustrations independently or with their students' help using a digital camera. The main graphical image of the learning environment is provided by the platform.

The main principle to remember is that digital pictures must be stored in a format that is viewable on the Internet, the most common formats being .gif and .jpg. Images should be kept small (approx. 30 KB) to ensure they load as quickly as possible. The Internet differs from printed media in that pictures printed from it do not need the same resolution levels as those published in print.

Image settings often have to be modified before images are ready for online publication, particularly through cropping, changing the width and height of the image, and changing the format to optimise image size (in KB). Different users will see colours and images in different ways depending on their Internet skills, browser, monitor size and resolution and monitor settings (brightness and colours). A projector will display colours differently from monitors.

The Internet contains many image archives which offer free downloads of images to personal computers, from which they can be transferred into the online learning environment. Pages should be kept simple in terms of colours and illustrations, however, so use images and animations with consideration. Even if copying and saving a specific picture from the Internet may be quick and easy, remember you may only use images for which you hold the copyright.

It is worth involving students from Digital Communications degrees and experts in the field in online implementation projects which require the use of demanding graphics and moving images (e.g. animations or streaming media). Web technology develops constantly, so in creating online implementations we have to find a balance between producing high-quality learning materials and maintaining their usability and accessibility.

5.5 Building and testing an online implementation

Our culture of lifelong learning stresses the importance of meta-skills such as learning to learn, social skills, communication and problem-solving abilities. Individual learning styles and needs should be taken into account when planning learning programmes (Linturi 1998, p. 37). The problem-solving skills required in today's labour market mean that employees must acquire new kinds of know-how. According to Hakkarainen, interaction between students and experts in various fields can be used to support the development of IT skills. Students should solve complex problems in their fields in the manner of experts, participate in determining problems and take part in explaining phenomena and evaluating results (Hakkarainen 1997).

Close collaboration with the labour market is especially important for polytechnics, which focus on training experts who will participate in the labour market. The use of applications offered by information and communication technology in supporting this interaction is becoming increasingly appropriate (Nissinen 2003, p. 223).

Instruction and learning processes that make use of ICT highlight the importance of the students' active roles and responsibility for their own studies. In project-based learning each student or group of students must become deeply involved with their projects and the issues surrounding them (Koivisto et al. 1999, p. 59).

Squires (1999) uses the concept of 'peripatetic electronic teacher' to refer to teachers' new roles as transmitters of information, study tutors, managers, multimedia designers and publishers. The existence of a teacher is dependent on the teacher's ability to create his or her own visibility in a virtual learning environment. The following skills are required of teachers:

- Pedagogical skills for operating in a virtual environment
- The ability to create a virtual community in which learning takes place so that the teacher is simultaneously able to develop his/her own expertise
- Time management skills

- The ability to control the online study units they have created, as well as the students taking them and the work produced in the learning environment
- The ability to market and commercialise their own know-how (Squires 1999, pp. 328–333).

The task of lecturers and online tutors is to guide their students' personal learning processes and interaction. It is particularly important to help students to become self-directed and to create functioning communities, in which students will ideally help to direct each other's learning processes (Hakkarainen et al. 1999). The transformation in the role of the teacher from a transmitter of information to a student coach or mentor is essential for the success of an online learning process (Hiltz & Turoff 1996, p. 5–34).

After an online implementation has been built, it is important to test it. A well-functioning structure will increase a lecturer's confidence in using a certain tool. Ease of use will increase the students' motivation levels. It is worth requesting feedback from colleagues on how well the implementation works. Testing should be done sufficiently early also from the user's perspective, to ensure that there is enough time for changes. In testing it is important to consider how user-friendly the implementation is and how easy it is for a student to navigate through the environment. Also check that all pages and links programmed into the implementation work. A good online environment includes sufficient instructions on how to use the environment and how studies are expected to progress.

The usability of online implementations can be evaluated and tested very thoroughly. Evaluation criteria and ready-made tests are available for example on the Internet. It is particularly important to test all online implementations from the students' point of view, asking both students and colleagues for help. The authors have used a method in their training by which the creators of online implementations test the environment themselves from the students' perspective before asking for feedback from colleagues and some students. Testing should be carried out in good time before piloting begins, so that there is enough time for changes. Appendix 6 contains an evaluation sheet used in online implementation training at Laurea.

6 ONLINE GUIDANCE FOR STUDENTS

6.1 Tutoring tasks

One of the most important factors in organising online implementations is the development and maintenance of a learning support system. According to Lehtinen (1992), tutoring is an individual guidance process whose aim is to help students achieve the targets set for their studies. A tutor is a guide who applies his or her time and expertise increasingly to guiding studies, supporting the student, helping to solve problems with studies and activating the learning process, instead of information transfer and teaching (Lehtinen 1992, pp. 167, 170).

According to Kiviniemi (2000), new kinds of operating environments – e.g. an online learning environment – do not necessarily cause changes in the basic tasks of tutoring and guidance. The application of ICT may, however, add certain special characteristics to the work, including the technical guidance of studies. Technical guidance implies that tutors be web-literate and know the logic of operating in an online environment, in order to make comprehensive use of the opportunities offered by the environment (Kiviniemi 2000, p. 83).

Other special characteristics of online work include an emphasis on the textual nature of communications, the different contacts created between participants and the unpredictable character of the operations. It is harder to 'read' the work atmosphere online than in face-to-face instruction.

Planning an online learning or guidance process is difficult for lecturers who lack first-hand experience of online learning. According to Koli and Silander (2002, p. 83), skills in online learning are essential for the development of online guidance skills. Lecturers could acquire experience of online studies and extending their education by taking some of the online study units offered by their own polytechnics or other higher education institutions. By organising further and continuing education programmes for teachers at least partly online, we can offer many teachers experience of online learning and possibly spark an interest in organising online study units in future.

The tasks of a tutor can be roughly subdivided into pedagogical, technical and administrative support duties. Table 3 is an adaptation of the subdivision used by Mäkinen (2002).

Table 3. Tasks of an online tutor (adapted from Mäkinen 2002).

Pedagogical support tasks	
	- Supporting the learning process - Creating an atmosphere that supports learning - Planning and guiding work methods - Supporting dialogue and collaboration - Controlling the content of studies - Evaluating and giving feedback
Technical support tasks	
	- Supporting and knowing the logic of operations in an online environment - Supporting the use of the learning environment platform and other systems, when needed, in addition to IT support
Administrative support tasks	
	- Managing the online implementation as a whole - Managing the schedule - Assuring the quality of results

6.2 Guidance tools

Online tutors have various tools for use in their guidance work. The choice of tools is affected by the pedagogical principles of the online implementation and the opportunities offered by the online learning environment. Tools include various instructions produced for the online environment, discussion areas, email, chat rooms, web boards, portfolios, journals and net meetings.

Tools used for communications within an online learning environment can be described as time-dependent (synchronous) or time-independent (asynchronous). The real-time chat rooms that are normally included in online learning environments are an example of synchronous tools. Synchronous communication implies that participants must be online in the environment, using the tool simultaneously. Asynchronous tools on the other hand do not require simultaneous use; users can check messages whenever it suits them. Asynchronous tools include email, discussion areas and web boards (Multisilta 1997).

Communication tools can also be defined according to whether they are unidirectional or bidirectional. Unidirectional communication tools work through an individual sending a message to another individual or group, who are unable to respond using the same tool. Unidirectional tools include notice boards and websites, where users can read messages but cannot reply to them directly using the same medium. Bidirectional tools such as email, chat rooms and discussion areas allow responses to messages (Multisilta 1997).

Finally, communication tools can be defined depending on the number of recipients of the message. Tools that support one-to-one communication makes it possible to specify individual students as recipients of a message, excluding other students from seeing the content. The most common example of this kind of tool is email, although email can naturally also be used as a 'one-to-many' tool if a whole group of people is defined as the recipient (Multisilta 1997).

Table 4. Communication tools in Optima

Form of communication	Communication tool in Optima
Synchronous, time-dependent communication	Chat, Forum voice conferencing
Asynchronous, time-independent communication	Discussion forum
One-way communication	Notice board, websites (ex: main page)
Two-way communication	Discussion forum, chat, voice conferencing
One-to-one communication	Personal messages in discussion fora and chats
One-to-many communication	Public messages in discussion fora and chats, voice conferencing

6.3 Supporting dialogue

One of the crucial issues in terms of the success of online learning programmes is the orientation and motivation phase. At the early stages of the creation of an online implementation common rules should be created for the interaction that will take place online. You should agree who will comment on messages received in the learning environment, when and how. Online discussions must have clear aims and they should be monitored to keep topics from drying up or becoming mixed up. In online learning environments, dialogue is used for sharing information and increasing shared understanding, which promotes individual learning. Online environments with abundant dialogue lead to expertise being shared between all the people participating in interaction, which means that participants can increase their understanding together. The aim of dialogue is to achieve a deeper understanding of one's own and other people's concepts.

When an online learning environment is strongly dialogic, it is important for each person to achieve cognitive insight into other participants' situations (Aarnio 1999, p. 20–31) and to create a feeling of kinship between participants (Mononen-Aaltonen 1999, p. 227–228).

Argumentation skills form an important element of the dialogic nature of interaction. Argumentation forms a part of the dialogic process and an essential part of scientific thinking (Perry 1981). Argumentation means the justification of one's own opinions with sufficient and relevant reasons (Tolumin et al. 1984; Hintikka & Bachman 1991). Today, argumentation or debating in an online environment is a social skill, with which we participate in social discussions on contemporary issues. Argumentation skills also form an essential part of collaborative learning.

It is not easy to create dialogue in an online environment. Dialogue is more than just online conversation; it is a search for common understanding through interaction. Dialogue requires sensitivity on the part of the students (Aarnio 1999, p. 212). Dialogue has fewer social implications, which reduces consciousness of the self and of other students (Matikainen 2001, p. 26). At the early stages of an online implementation, it is natural for the teacher to participate in creating a dialogic culture. To become active, online dialogue requires clear rules, encouragement and active maintenance. Even in virtual learning environments, the presence of the teacher is important, which is why the lecturer should regularly leave digital signs of having visited the learning environment to indicate that he or she is monitoring the activities taking place in the environment and supporting the students' learning processes.

It is often good to publish exercises online for other students to see early on in the learning process. Collaborative discussions on exercises may bring whole new dimensions into the learning process, extending the students' knowledge of the phenomenon at hand. Thus students can support each other's learning processes and teachers and representatives of the labour market can make comments on the exercises.

7 ADMINISTRATION

By considering online implementations as products, we can make it easier to administer individual implementations. Teachers work together with teaching support staff to ensure that the implementation's work space is ready in time and the correct group of students can be involved as a member. If the teaching is scheduled in good time, the online implementation can be marketed inside and outside the polytechnic.

At Laurea, each online project or online study unit implementation forms a work space within Optima. Each person can be a member of more than one work space in Optima. The main users of the environment are online learning support staff members, who administer the creation of work spaces and the maintenance of user IDs. The responsibility for each project's work status lies with a lecturer or group of lecturers.

The administration of an online project consists of ten phases (Figure 7). A work space is created for the project in the online learning environment, where lecturers begin to build the online implementation either through training or independently with the help of support staff. The lecturers test the implementation from the point of view of the student and ask colleagues to evaluate it before actual work begins. Before the beginning of the actual study unit, the lecturer will ask online learning support staff to create a student group in Optima, consisting of students accepted for the study unit in the student administration system. The lecturer will appoint the group as a user of the work space in Optima once the study unit begins and remove it at the end.

At the end of the studies and other online work, the contents of the online implementation are compressed into one file and archived by support staff. The lecturer can store a personal copy of the compressed file that contains all the materials included in the work space and the exercises completed by the students. If the online implementation is to be used again later, it will be updated on the basis of new experiences and stored as a work space model. This model can be used by lecturers for development and for copying for other work spaces.

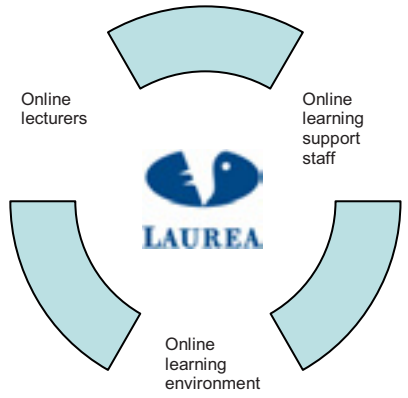
1. Creation of a work space 2. Building of an online implementation in the work space 3. Testing 4. Request sent to online learning support staff for the creation of a student group in Optima 5. Students included as members of the work space. 6. Instruction and tutoring. Work within the project. 7. Students removed from the work space. 8. Compression and archiving of work space materials. 9. Updating and maintenance of online implementation and storage of work space as work space model. 10. New work spaces copied from model.	

Figure 7. Administration of the work space in an online project.

Laurea makes copyright agreements between the creators of online implementations made as part of training programmes and the employer. These copyright agreements define that Laurea receives the right to use and change the online learning materials. The creators retain the proprietary rights to the materials. The creation of these copyright agreements forms an essential part of the commercialisation of our online implementations. Students accept an agreement on the right to use the online learning materials when they first log in to the online learning environment. They must agree to use the learning materials only for the purpose of their studies within Laurea's online learning environment. The lecturer may not use any materials created by students without separate consent from the students in question.

8 EVALUATION AND DEVELOPMENT OF AN ONLINE IMPLEMENTATION

As the volume of online learning programmes grows, the importance of comprehensive evaluation of online learning increases. Online learning should be developed through the evaluation of the polytechnic's entire online learning selection. Successful online learning solutions should be distributed effectively within the polytechnic to create a good basis for innovations. Good practices cannot be transferred directly into different environments, but they can be learnt from. Tried and tested online study units can be shared by their original creators for use by other lecturers. The systematic development of online learning requires an organisation which focuses on shared know-how. Awareness of current know-how is essential for the creation of new know-how.

The process of learning by developing in projects, emphasised in polytechnic pedagogy, creates significant challenges for online learning. Information networks and online learning can be important in creating foundations for meaningful learning methods. It is worth arranging separate presentation days for projects which are being implemented, providing students with substantial skills related and unrelated to the project. Students can increase their social capital by cooperating closely with the representatives of the labour market who are participating in the projects.

By organising these kinds of presentation events we can further the sharing of know-how between projects. Information networks can also be used to create virtual project 'campuses' in which the lecturers, students and labour market representatives participating in various projects can share their know-how. We have had positive experiences of how cooperation with international partners can be made effective in projects using an online learning environment as a discussion and work platform. Laurea has for example coordinated the Youth at Risk and Baltic Sea Network projects using an online learning environment. These projects included participants from various polytechnics in different countries. The internal communications and group work that took place as part of the projects in between face-to-face meetings was arranged in the online learning environment.

The effect of online projects should be evaluated in relation to the polytechnic's three basic tasks (pedagogy, regional development, and research and development). This is a continuous process which progresses throughout the projects' lifespans and which can be used for developing new projects together with representatives of the labour market.

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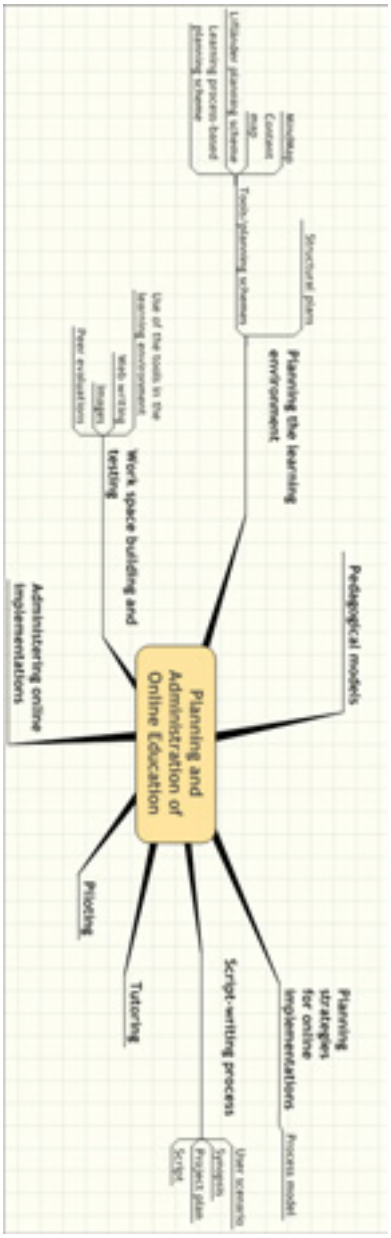
APPENDIX 1


Planning and Administration of Online Education
Pedagogical models
Planning strategies for online implementations
Process model
Script-writing process
User scenario
Synopsis
Project plan
Script
Tutoring
Piloting
Work space building and testing
Planning the learning environment
Structural plans
Tools/planning schemes
Administering online implementations

APPENDIX 2

Introduction to Statistical Methods, 1,5 ECTS

- Description of study unit
  - Aims and content
  - Completion method and schedule
  - Assessment
- Learning materials
  - Introduction
  - Basic concepts in Statistics
  - One-dimensional empirical distribution
  - Two-dimensional empirical distribution
- Exercises and delivery
  - Exercise 1
  - Exercise 2
  - Exercise 3
  - Exercise 4
- Guidance, messages, questions
  - Statistics discussion board
  - Feedback questionnaire
- Images

Planning and Administration of Online Education, 9 ECTS

- Aims and schedule
- Training calendar
- Discuss, Ask, Give feedback
- Students' training applications
- Planning strategies for online implementations
  - Process model
- Pedagogical models
- Script-writing process
  - User scenarios
  - Synopsis
  - Project plan
  - Script
- Students' project plans
- Planning the learning environment
  - Structural plan
  - Tools / planning schemes
    - MindMap
    - Content map
    - Lifländer planning scheme
    - Learning process-based planning schem
- Students' structural and material plans
- Tutoring
- Work space building and testing
  - Use of the tools in the learning environment
  - Web writing

 Images

 Peer evaluation

 Piloting

 Administering online implementations

 Images

Virtual Classroom for Group AA

- Tutors' folder
- Orientation site
- Timetable
- Ask your tutor
- Students' discussion room
- Instant Messaging chat
- Students' folders
  - Student A's folder
    - Personal introduction page
    - Personal study plan
    - Portfolio
  - Student B's folder
    - Personal introduction page
    - Personal study plan
    - Portfolio
  - Student C's folder
    - Personal introduction page
    - Personal study plan
    - Portfolio
- Development project
  - Group X's project
  - Group Y's project
  - Project plans
    - Project plan form
  - Opposition results
    - Opposition forms
  - Completed project reports
    - Group X's end report
    - Group Y's end report
- Pictures

Baltic Sea Network -workspace

- Comments and discussion
- Chat
- Network information
- Networking days 26.-27.1.04
  - Presentations - general
    - Presentation Dr AA
    - Conclusions Mr BB
  - Presentations - partners
    - Presentation Dr CC
    - Presentation Ms DD
- Partners
- Funding
- Baltic Sea Network Bulletins
  - Bulletin 3/2004
  - Bulletin 2/2004
  - Bulletin 1/2004
- Business skills
- ICT
- Sustainable Development
- Tourism
- Welfare
- Pictures

APPENDIX 6

Evaluation of online work space before start of study unit's implementation

You should evaluate the work space yourself from a student's point of view ('Oppilas Oiva' test ID) and ask a colleague to evaluate it for you as well.

Evaluated work space/study unit: _____

Evaluator: _____

Date: _____

General information on the study unit

1. The title of the study unit reflects its content.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

2. The details of the authors are clearly visible.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

3. The details of the tutor are clearly visible.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

4. You receive a comprehensive overview of the topic.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

Studies and learning

5. You receive a comprehensive overview of the progress of the online implementation.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

6. The aims and content are expressed clearly.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

7. How will students be encouraged to commit to their studies (e.g. personal targets, study journal, portfolio, etc.)?

_____

_____

8. How are different types of learners taken into account?

_____

_____

9. Interaction exists between the following groups:

Student – student

Student – lecturer

Student – other expert

10. Students are clearly explained what is expected of them and how they should act.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

11. The work students are expected to complete and the assessment process are explained clearly.

Strongly agree

Agree

Agree somewhat

Satisfactory

Disagree

Exercises and learning materials

Tick the statements which in your opinion reflect the status of the work space

12. The exercises correspond to the aims of the study unit

13. The exercises are easy to find

14. The exercises are easy to understand

15. Students can follow each other's learning processes and results

16. Students receive sufficient instructions

17. The various guidance opportunities offered are explained clearly (from who, how, how often)

18. The learning materials are graphic and clear

19. The learning materials are up-to-date and sufficient in quantity

20. The learning materials are in easily accessible formats for student (the most important materials are stored as e.g. html, txt or pdf documents or images)

21. The learning materials clearly reference source materials where other people's work is quoted

Ease of use

Tick the statements which in your opinion reflect the status of the work space

22. Students understand clearly which groups (if any) they belong to

23. The structure of the environment is clear and easy to navigate through

24. The links work

25. The home page and the folders' front pages are informative

26. The discussion boards or groups have clear titles and instructions

Final feedback

27. Other comments, suggestions for improvements, comments for author, etc.

_____

_____

15 March 2003 Irma Mänty

Adaptation of the quality requirements of the Finnish Virtual Polytechnic

The implementation of online learning requires know-how, skills and the assimilation of new work methods. This publication provides guidelines for teacher training and introduces Laurea's model for the planning and administration of online learning.

This publication is intended as a handbook for anyone who wishes to carry out online eLearning projects. Laurea uses Discendum Optima as its online learning platform, but the process described here can well be applied to other technical solutions.

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