

**Project name: TELECOTTAGE
LEONARDO DA VINCI Programme**

A Study on Practical Experiences with using E-learning Methodologies and Cooperative Transnational Development Methodology

October 2004

Prepared by

Morten Falch,
Center for Tele-Information, Technical University of Denmark

Executive Summary

The objective of this deliverable is to study international experiences with e-learning, and to analyse how these experiences can be used for development of a cooperative transnational methodology for use of e-learning in tele-centres.

First different concepts for e-learning and their suitability as learning methodologies in different contexts are discussed. E-learning covers a wide spectrum of learning methodologies which all include use of ICT technology.

This is followed by an overview of the European market for e-learning and the quality of e-learning systems used on this market is provided. E-learning is widespread among European training institutions, and there are a large number of small and medium sized suppliers of e-learning. However, user satisfaction with the current e-learning material is limited.

Thereafter the various concepts of tele-centres and tele-cottages are presented, and their role in training is discussed. E-learning is important for tele-centres in general and in particular for tele-cottages, where training is an important part of their activities. E-learning will enable tele-cottages to broaden their supply of courses, and they may be able to rely on expertise from other regions or even other countries. These advantages can benefit most types of users of e-learning, but are particularly relevant for tele-cottages, which most often are located in remote areas.

It is finally concluded that transnational cooperation on provision of e-learning systems will be of benefit for tele-cottages. The European market is however, rather fragmented due to differences in culture and languages. There are a few transnational suppliers of e-learning, but they are mainly serving the large business market and are not targeting the needs of small enterprises like tele-centres. Therefore there is a need to promote transnational co-operation between national suppliers of e-learning material designed for serving the particular needs of tele-centres.

Table of contents

| | |
|--|----|
| Executive Summary | 3 |
| 1. Introduction..... | 5 |
| 2. What is e-learning? | 8 |
| Model A: E-learning without presence and without communication | 9 |
| Model B: E-learning without presence and with communication | 10 |
| Model C: E-learning with presence | 10 |
| Model D: E-learning used in class-room teaching..... | 11 |
| 3. The European Market for E-learning | 13 |
| 4. Evaluation of theQuality of e-learning..... | 20 |
| 5. The role of Tele-centres in training..... | 23 |
| Services provided by tele-centres | 25 |
| Business Models for tele-centres | 26 |
| 6. The potential of e-learning in Tele-centres..... | 30 |
| 7. Conclusion | 34 |
| REFERENCES | 35 |

1. Introduction

This deliverable is a part of the Telecottage project funded under the LEONARDO programme. The overall objective of this project is to provide the management of telecottages with relevant learning material produced by the project partners. This material includes course material on Telecottage ICT – needs for the future, Telecottage management and Telecottage rural development.

Other objectives are to provide a new methodology of transnational, cost-efficient ways of producing for vocational training materials. The consortium has developed together nation specific and non-nation specific English, Spanish and Hungarian language e-learning material and carried out pilot e-learning training to would-be telecottage managers in the participating countries. The impact will be a cost-effective method of sharing already existing national telecottage building and operating materials through a transnational learning material development method to a wide, geographically divided and varied audience of adults living in small villages around Europe.

The project addresses Leonardo second priority as it aims to improve the quality of, and access to, continuing vocational training and the lifelong acquisition of skills and competences (especially for people disadvantaged as they live in rural areas where such training is not so available to them as in towns and cities). It provides new forms of learning and teaching and basic skills in vocational and education training. This development is focused on use of a specific, existing and tested e-learning tool.

The target group of the project is adults preferably with higher education background living in small villages in Hungary and Spain. The potential users of the project's results are the adult educators, mostly educators of national telecottage organisations, who will carry out the actual trainings to reach the target groups. The target group is otherwise disadvantaged in reaching such learning material at their place of living.

Potential users will be the 60 telecottage managers trained by the pilot program of the project, plus an approximate 1000 telecottage manager trainees in the following 3 years those have to be trained by the partners in the consortium. The potential users could be a more diverse set of people in the mid-term: more partners will be able to use the English language telecottage managers training materials, and will be able to adopt it to their language, later they will be able to join the network of telecottage-related learning material development team. Our transnational cooperative vocational training material development methodology will be used for other telecottage-related material development, or could be put to test in vocational learning material development project in other issues than telecottages.

The telecottage is a unique infrastructure-intelligence base serving the local community. Its components are: modern communication technology, office equipment, computational and educational technology, community space, organizational capability and capacity, and accessible expert knowledge, know-how and information. While telecottages could be found everywhere in the EU (Austria, Belgium, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Norway, Spain, Sweden, United Kingdom), Hungary is a European leader in developing its network of telecottages, numbering 471 for its 10 million inhabitants this number has quadrupled during the last three years. During this work the Hungarian Telecottage Foundation and its partners developed a good quality, experience-based know-how on building and operating telecottages. This know-how is summarised in paper-based learning material. This learning material is used to teach the would-be Hungarian telecottage managers and it was used to teach some telecottage managers from different foreign countries. The Hungarian Telecottage Association found out that there is a need for good quality telecottage manager training material as they are constantly expanding generating a need for such trainings.

A sound reasoning for the project is that we found out that these learning materials were developed independently and overlapping by separate efforts done in geographical distant areas. Developing learning materials is a hard, time and money consuming tasks to do. Following identification of similarities in different telecottage learning curricula this project has experimented with a transnational learning material development methodology. In this methodology participants identify nation specific and non-nation specific modules of their

developable materials then develop them. However, non-nation specific material will be developed in a common language for easy translation and transportability. They are working in a common environment with a cooperative teamwork software where they can share best practices and lessons learned, while stimulating each others' creative work starting out a many-to-many dialogue.

The objective of this report is to study international experiences with tele-learning, and to analyse how these experiences can be used for developing a cooperative transnational development methodology for use of e-learning in tele-centres.

Chapter two discusses the different concepts for e-learning and their suitability as learning methodologies in different contexts.

Chapter three provides an overview of the European market for e-learning, while chapter four analyses the quality of the e-learning systems used on the European market.

Chapter five provides an overview of the various concepts of tele-centres and tele-cottages, and discusses their role in training.

Chapter six analyses how e-learning can be used to facilitate tele-centres and tele-cottages and discusses various bottlenecks in that respect.

Finally chapter seven provides a summary of the conclusions from the previous chapters.

2. What is e-learning?

The idea of using computers as a learning tool is almost as old as the computer, and e-learning is one out of several concepts which are used for describing a host of new learning methodologies using e-learning in parts of or in the entire learning process. Concepts like flexible learning, distance learning, tele learning and computer supported learning cover to a wide extent use of similar learning methodologies.

The EU e-learning Action defines e-learning as “the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration.”¹ This definition is rather broad as it neither specifies the kind of learning methodologies nor the kind of technologies supporting it (multimedia technologies may cover almost any kind of computer based applications). It does however distinguish itself from distance learning, which can be done without use of ICT technology. Moreover distance is not a necessary condition for application of e-learning, although one of the most important advantages by e-learning is the flexibility it offers with regard to distance.

E-learning can be facilitated by use of the Internet or other types of communication technologies but not necessarily. E-learning per se does not demand any type of on-line access.

E-learning is not confined to any particular part of the educational system – rather the contrary: one of the advantages by e-learning is that it makes it possible to extend the reach of educational and training systems into new areas. Thus e-learning can be applied both in the formal educational system (public schools, colleges, universities etc.), as well as for vocational training. It can be used both for private use as well as in the public and the private sector.

¹ The eLearning Action Plan – Designing tomorrow’s education. COM(2001)172 final
Communication from the Commission to the Council and the European Parliament, Brussels, 28.3.2001

A report from the Danish Ministry of Science, Technology and Innovation operates with four different types of e-learning methodologies, which illustrate the wide spectrum learning methodologies covered by the concept of e-learning:

- Model A: E-learning where the teacher and the students never meet physically, and where no dialogue between students or students and the teacher takes place.
- Model B: E-learning where the teacher and the students never meet physically, but where the dialogue between the participants is supported by use of IT based communication services.
- Model C: E-learning where parts of the learning takes place in a class room and parts of the learning is done elsewhere, where the students work on a computer on their own – e.g. at home or at their place of work.
- Model D: E-learning where all teaching is done in a classroom, and where computers are used as a learning tool.²

Model A: E-learning without presence and without communication

This type of e-learning can be done entirely off-line as all information can be stored on a CD-ROM or on a hard disk. Continuous or occasional on-line contact will however enable up-date of the teaching material.

The user is provided with information on a certain topic, and may thereafter be given training through a number of exercises. The user may also be tested through a number of multiple choice tests. The user may seek guidance through a help function or similar.

The main advantage by this type of e-learning is its flexibility. The learning can take place everywhere and at all times. This enables use of this type of e-learning exactly where and when there is a need to acquire a certain type of competence. On the other hand it is difficult to design the learning process according to the needs of the individual user, and the user

² Danish Ministry of Science and Innovation: Perspectives for competence development: Report on E-learning, Copenhagen 2003.

cannot seek guidance beyond what is included in the e-learning system beforehand. The users must be able to work independent and solve unexpected problems by themselves.

This type of e-learning is mainly used for teaching in very specific competences such as use of a particular IT-system, training in a new sales concept etc.

Model B: E-learning without presence and with communication

This type of model demands some type of connectivity. Communication can either be off-line (e.g. e-mail communication) or on-line (e.g. chat rooms). Communication can either be with a tutor or with fellow students. The model is almost as flexible as model A. As a tutor is involved in the learning process, use of an e-learning system will often demand the user to register as a participant if he wants to receive advice from the tutor.

The use of a tutor enables use of less automated training exercises and tests. The model can therefore be used for teaching where reflection and dialogue is important for the learning process. The model is often used in situations where flexibility in time and space is important. For instance the model is used for cross-border teaching by American universities.

Model C: E-learning with presence

In this model e-learning is combined with traditional class room teaching. A wide spectrum of models is here possible. The 'electronic' part can be with or without communication and it can either be a minor supplement to the traditional teaching or the traditional teaching can be a minor supplement to the 'electronic' part of the course.

Use of classroom teaching adds to the economic costs, but it also helps to make e-learning more efficient as it facilitates a dialogue between students and between students and the tutor also outside the classroom.

This model is often used in postgraduate university programmes, where the students are employed full time and maybe spread all over the country. The teaching could then be a combination of intensive 1-2 days seminars and use of e-learning systems, where the students

prepare a number of exercises provided via the Internet in dialogue with teachers as well as other students through e-mail.

This model has for instance been applied on a master programme in Mobile Internet Communication offered in a co-operation between two technical universities in Denmark. The two universities are located in different parts of the country and students are spread over a wide area. Therefore the classroom teaching is limited to a few intensive seminars, while the remaining part of the teaching is mediated via the Internet. Even during the seminars e-learning is applied, as video-conferencing is used in some of the lectures. This enables students to follow the lectures from both universities, and use of lectures located in other countries. Even the final examinations are conducted by use of video-conferencing facilities connecting the two universities.

The International shipping company Maersk uses e-learning as part of their Maersk International Shipping Education. This is a two 2-year education with 600 students from 80 different countries³.

Model D: E-learning used in class-room teaching

E-learning can also be used as a tool in the traditional classroom teaching. The major advantage is here that this enables use of new pedagogic teaching methods. For instance use of games and scenarios in realistic settings.

The usefulness of the different models depends on the environment, the kinds of users and the type of competence that the learning process is aimed to develop. Different types of learning can be categorised according to the aims of the learning process⁴:

1. Learning as a process for acquiring information;
2. Learning as a process for acquiring information and processing experience;

³ Danish Ministry of Science and Innovation: Perspectives for competence development: Report on E-learning, Copenhagen 2003.

⁴ Graham Attwell a.o.: E-Learning in Europe Results and Recommendations – Thematic Monitoring under the LEONARDO DA VINCI-Programme. Nationale Agentur Bildung für Europa beim Bundesinstitut für Berufsbildung, Bonn 2003.

3. Learning as a process for acquiring information and processing experience that effects a long-term change in the consciousness of the learner;
4. Learning as a process for acquiring information and processing experience in which the learner integrates new information and experience into his/her current knowledge base;
5. Learning as a process for acquiring information and processing experience in which the learner perceives, selects and integrates new information and experience into his/her current knowledge base, thereby changing it;
6. Learning as a process for acquiring information and processing experience, in which the learner selects and constructs knowledge that is useful and appropriate for him/herself and in turn uses this to drive and determine his/her own continuous learning process;
7. Learning that becomes an individual process of interaction between the individual and his/her environment, in which the subjective reality of the learner is actively constructed.

Model A is most suitable for learning processes where little interaction is needed for instance acquiring of information. Model A may also provide individual exercises, but in many areas students will need at least some interaction with a tutor in order to discuss his/her solutions (model B). A long-term change in consciousness (3) may be difficult obtain without any social interaction with fellow students. This points towards model C or model D. All models will however be able to include examples and exercises, which it will be difficult to provide in a non IT environment.

3. The European Market for E-learning

Official statistics measuring the level of e-learning activities in Europe is rather scanty, but a number of indicators exist. They all indicate that the market for e-learning is growing rapidly and that e-learning will become widespread in most types of private and public institutions engaged in training.

Table 1 Depicts the share of the population using the Internet for educational purposes. Although the definition education purposes in this context may vary from the definition of e-learning, it provides a fairly good indicator on how widespread use of e-learning is. It follows from the table that Iceland with 41% has a much larger share of the population using Internet for educational purposes than any of the other countries included in the table. It is also remarkable that in Sweden and Denmark, countries which both are considered to be among the leading countries with regard to use of e-learning systems, only 4% are using the Internet for educational purposes.

Table 1 Users of the Internet for educational purposes in the last 3 months. 1st quarter 2002

| | |
|----------------------|-----|
| Denmark | 4% |
| Finland | 28% |
| Germany | 19% |
| Iceland ¹ | 41% |
| Sweden | 4% |

¹ Iceland: 4th quarter 2002.

Source: Statistics Denmark: *Indicators for the Information Society in the Baltic Region, Action line 6, Northern eDimension Action Plan, 2003*

Alpametrics has in co-operation with Bizmedia in 2001 and 2002 made surveys on the use of e-learning in Europe⁵. In 2002, 638 organisations involved in training (538 from Europe) responded in the survey. As many as 83% of the European respondents reported that they have used e-learning in some way as part of their training. Although organisations with an

⁵ Jane Massy, Tim Harrison And Terry Ward: *The European E-learning Market*, BizMedia 2002.

interest in e-learning will be more inclined to respond, this indicates that experiences with e-learning are widespread in Europe among institutions involved in training.

It must however be emphasized that the study by Alphametrix focus on institutions involved in training. The penetration among private companies in general is much lower. For instance did only 6 out of 27 SMEs included in an Austrian survey use e-learning⁶.

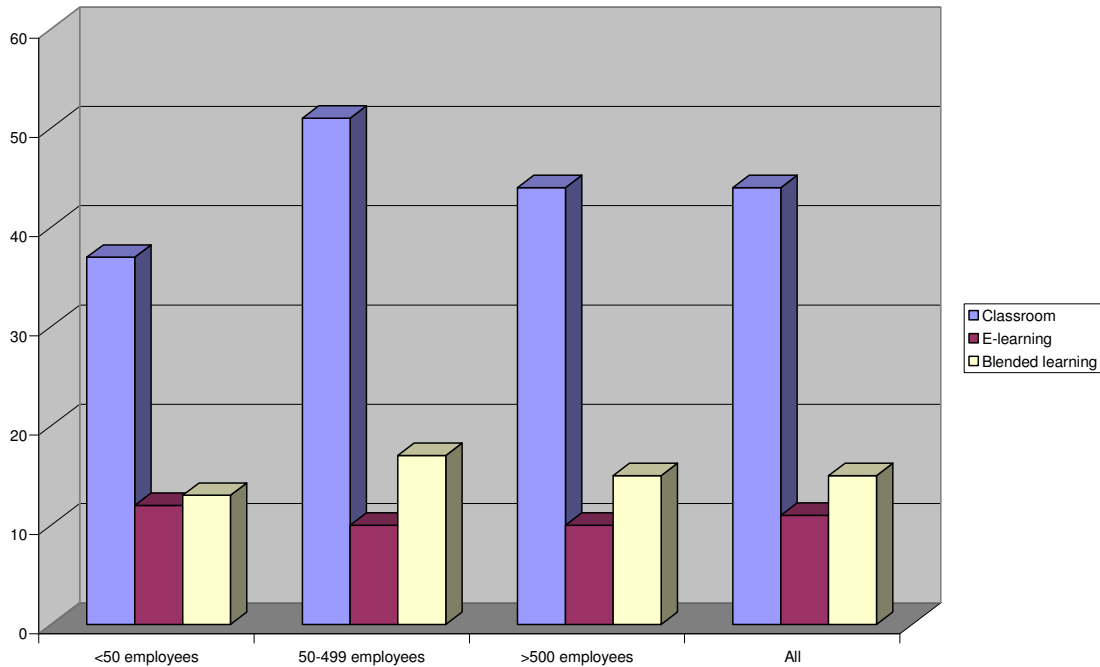
According to the survey prepared by Alphametrix in 2002, 45% of the time users in the EU spent on training was spent in the classroom, 12% was spent on e-learning following model A or model B outlined above and 15% was spent on blended solutions following model C.

One interesting result is that the share of non-users is about the same in small and large organisations. This contrasts experiences made on diffusion patterns from a number of other new ICT based applications, where large organisations dominates the population of early adopters, while SMEs dominate the population of late adopters.

This indicates that e-learning is not only a technology, which provides economies of scale for large organisations, but also a technology, which can benefit small organisations. The survey indicates that classroom training is used less in small enterprises (37% of total time spent on training) than in middle sized (51%) and large enterprises (44).

⁶ Graham Attwell: The challenge of e-learning in small enterprises – Issues for policy and practise in Europe. Cedefop Panorama series; 82. Luxembourg: Office for Official Publications of the European Communities, 2003.

Figure 1. Users of training by time spent on e-learning, blended learning and classroom tuition by size of organisation in EU15



Source: Jane Massy, Tim Harrison And Terry Ward: The European E-learning Market, BizMedia 2002.

Although experiences with e-learning are widespread this does not indicate that the market for e-learning has matured. First of all the abovementioned survey only includes organisations involved in training. But the potential of e-learning goes far beyond such organisations. e-learning is a flexible tool that can be used by any company or organisation in their daily business.

Second there is a potential to a more intense use of e-learning among those organisations already using this technology. And third there is room for qualitative changes in the technology and the opportunities it offers.

An indicator for the growth potential of e-learning is the growth in expenditures related to e-learning. According to the Alphametrics/Bizmedia survey users of e-learning reports that their growth in e-learning expenditures was more than 70% in 2001 and just under 50% in 2002.

Suppliers of e-learning are reporting even higher rates of growth. This may be due to more optimistic market expectations than on the user side, but it may also be an indicator of increasing use of e-learning outside the traditional population of training organisations.

In the Nordic market, which is one of the strongest markets in adoption of e-learning, a compounded annual growth rate of 71% is expected up to 2005⁷. The development on the Nordic market is supported by a high penetration of Internet and a rapid adoption of broadband. In addition to this, a high proportion of the population speaks English and is used to conducting business in English. This makes the market attractive for international suppliers of e-learning solutions.

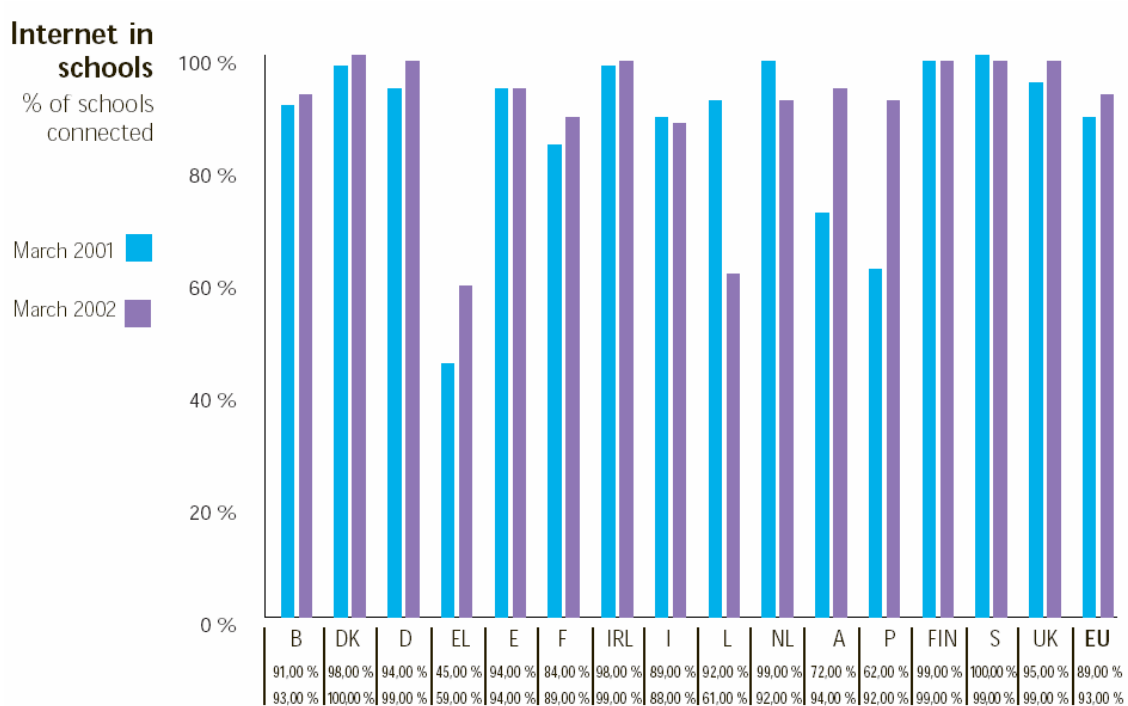
Connectivity is an important precondition for use of most types of e-learning, and provision of infrastructure and equipment was the first action line of the EU eLearning Action Plan⁸. Since then, much work has been done to ensure connectivity to educational institutions. From May 2001 to March 2002 the share of schools connected to the Internet rose from 80% to 93% in the 15 old EU countries.⁹

⁷ IDC-Norden <http://www.norgesuniversitetet.no/n.nsf/ak/1E41B4F2549020C1C1256A3A00417061>

⁸ Communication from the Commission to the Council and the European Parliament: The eLearning Action Plan Designing tomorrow's education COM(2001)172 final

⁹ European Commission: Better eLearning for Europe, 2003.

Figure 2. % of schools connected to the Internet in EU15



Source: Eurobarometer. Quoted from European Commission: *Better eLearning for Europe, 2003*.

Use of e-learning is not equally widespread among industries. According to a survey conducted by Danish Technology Institute,¹⁰ e-learning is used most intensively in business services including consultancy firms, auditors and traders in real estate, while usage is least intensive in the building industry. A similar conclusion has been made by E-learning Circuits¹¹. According to their survey Finance & Investment management is the largest user, followed by Consulting, Higher education and Manufacturing.

Looking at the subjects in which e-learning is used, all surveys indicate that e-learning is used most intensively for training in IT and computing, other important areas are teaching technical (non IT) and teaching in languages. E-learning is mainly used by professionals – particularly

¹⁰ Danish Technology Institute: *E-learning in Practise* (2003).

¹¹ Ryann K. Ellis: *E-learning Trends 2003*. Learning Circuits
<http://www.learningcircuits.org/2003/nov2003/trends.htm>

IT-professionals – and technicians, while blue collar workers’ use of e-learning is very limited.

Table 2. Ranking of uses of e-Learning by time spent on e-learning as % of total time spent on training.

| | |
|------------------------|----|
| IT/computing | 1 |
| Technical (non IT) | 2 |
| Languages | 3 |
| Management | 4 |
| Process/production | 5 |
| Sales/marketing | 6 |
| Teamwork/communication | 7 |
| Quality | 8 |
| New products | 9 |
| Other | 10 |

Source: The state of e-learning in Europe – Results of a Survey conducted by Alphametrics in collaboration with Cedefop. http://www.euolearn.net/docs/CEDEFOP_ELEARNING.PPT

In general the European market for e-learning is a very segmented market split into a large number of regions. One reason for this is language and cultural differences. There are however, signs of change particular in working place related e-learning, where the market is becoming more international oriented.

A preliminary study prepared by Danish Technology institute in cooperation with Alphametrics indicate that the majority of suppliers of e-learning are small businesses or even micro businesses without cash reserves and with limited growth potentials. There is however also a small number of large suppliers, mainly with a US parentage, e.g. publishers, universities and broadcasters providing their services in several countries.

Box 1. E-learning provided by publishers

Publishers of university textbooks offer e-learning material, which supplements the textbooks. For instance has Prentice Hall produced a number tests and exercises connected to each chapter in a textbook, which students can use for testing their understanding of the texts. These texts are mad available on their web-site and can be used as part of the teaching at universities using books from Prentice Hall in their courses¹².

¹² See e.g. <http://www.prenhall.com/blanchard/>

4. Evaluation of the Quality of e-learning

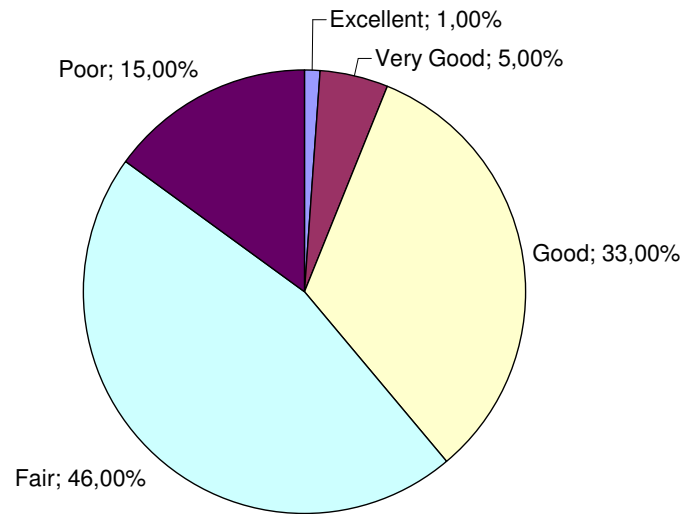
Although e-learning is flexible and provides substantial benefits for the users, there is still a long way to go before the potential of e-learning can be realised in full. Users of e-learning are in general very negative in their evaluation of e-learning systems. This conclusion can be made on basis of survey conducted by Bizmedia in 2002 on the quality of e-learning systems in Europe¹³.

The survey was made as a web based on-line survey carried out in five languages (English, French, German, Spanish and Italian). Most of the respondents were training professionals from the public or the private sector.

The respondents rated the overall quality and only 1% rated the quality of e-learning as excellent and only 5% as very good. In the other end of the spectrum 15% rated the quality of e-learning as poor and 46% as fair. 33% rated the quality as good.

¹³ Bizmedia: Quality and eLearning in Europe. Summary Report 2002.

Figure 3. Overall quality ratings of e-learning in Europe



1

Bizmedia: Quality and eLearning in Europe. Summary Report 2002.

The quality of e-learning was evaluated according to a number of different criteria, of which the user considered the following to be the most important (the first one being the most important):

- 1) Functions technically without problems across all users.
- 2) Have clearly explicit pedagogical design principles appropriate to learner type, needs and context.
- 3) Subject content is state of the art and maintains up to date.
- 4) Has a high level of interactivity.

The poor rating of e-learning systems may reflect the fact there still are technical problems related to access, computer break-down etc. Users may only have limited experience in using IT system and even simple technical problems may therefore have severe implications for the learning process.

Another problem is that design of teaching material for e-learning is a complicated task. It is much more difficult to develop material for e-learning than for the traditional classroom,

where the teacher is able to supplement the information provided and tailor the presentation to a specific context. An e-learning course must therefore be offered to a wide audience in order to justify the costs of producing the learning material.

Technology driven e-Learning products have mainly concentrated on learning as a process of getting information and have ignored the fact that learning is a social process.

5. The role of Tele-centres in training

Tele-based information community centres or just tele-centres have been seen as a tool for empowering local communities in developed as well as developing countries to meet the challenges of the information society.

The point of departure has been different in various parts of the world, and a number of quite diverse models for development of telebased information centres have been applied. While centres in developed countries, with an almost universal coverage of telephony services, have been focussed on enhancing IT capabilities and access to IT based communication services, developing countries have also focussed on provision of basic telephony.

The first telebased information centres established in Scandinavia were termed telecottages. They had much focus on provision of IT facilities and dissemination of knowledge on technology to the public¹⁴. Since then the concept has developed, and tele-centres are now in operation in most parts of the world.

UK has also a fairly long tradition for tele-cottages and the number of tele-centres is still increasing. However, the distribution of centres among regions is very uneven (with the highest concentration in Wales) and reflects variations in opportunities for public funding. Most centres function as telework centres and provide facilities for teleworkers. 80% of the companies provide facilities for teleworkers coming from more than one company¹⁵.

Germany has also a long tradition for tele-centres. Tele-centres were established in East Germany in 1992, to improve the access to telecommunication facilities after unification. Tele-centres are also operating in the Western part of the country.

¹⁴ Morten Falch: Community Impact of Telebased Information Centers. Michael Gurstein (Ed.): Community Informatics: Enabling Communities with Information and Communications Technologies, Idea Group Publishing, Hershey PA, 2000.

¹⁵ Cogburn, Derrick, a.o.: *Knowledge in development: Multimedia Multi-purpose Community Information centres as catalysts for building innovative knowledge based societies*. World Bank Background Paper, 1998.

In France teleworking plays an important role in the creation of tele-centres, the most successful centres act as IT service companies with little or no emphasis on local development objectives. Tele-centres are a recent phenomenon. The tele-centres are generally very large, but the number of centres is limited.

The development Southern Europe began some years later than in Scandinavia and UK. Italy had in 1997 only two rural based centres. Spain had about six centres all established quite recently in 1999. Since then many more centres have been established and particular Spain is among the most active countries in developing use of tele-centres.

The concept of tele-centres has also been used to promote rural development in Eastern Europe, most notably in Hungary¹⁶. Estonia has also quite an active telecottage movement, which has received support from Sweden¹⁷.

Australia provides as one of the few high-income countries with a very sparse population a unique experience of operation of tele-centres in remote areas. Both in Australia and in Hungary and Estonia, a very broad range of activities is included in the concept. The most important is that the activities contribute to development of the local community, and some of the services provided have very little relation to IT or to telecommunication.

In the US many tele-centres have teleworking as their primary activity, in particular California, have established quite a number of teleworking centres. However, there is also a number of community- based technology centres employed in training of marginalized people.

Tele-centres have also been established in many third world countries. Many of these are essentially phone shops sometimes also offering fax or other supplementary services. But more ambitious centres offering a multitude of services like IT training, distance learning, tele-medicine, informational services etc. have also been established. This type of centres are

¹⁶ Center for Tele-Information: *Telecottages in Estonia*. <http://www.itu.int/ITU-D-UniversalAccess/casestudies/estonia.htm>

¹⁷ Center for Tele-Information: *Telecottages in Hungary*. http://www.itu.int/ITU-D-UniversalAccess/casestudies/hun_mct.htm

usually established in co-operation with international agencies like the ITU (International Telecommunication Union), FAO (Food and Agricultural Organization) and UNCTAD (United Nations Conference on Trade and Development) in an increasing number of low income countries (e.g. Benin, Mali, Tanzania and Surinam) or as part of national programs financed by telecom operators (e.g. South Africa and Tunisia).

It follows that the concept of tele-centres embraces a wide spectrum of strategies for using Information and communication technologies in development of local communities. This variation complicates a strict definition of the concept that embraces all relevant developments.

Often a distinction is made between “telecottages” and “tele-centres”¹⁸. While telecottages are community based and emphasize social objectives, such as learning, access to technology, access to work etc., tele-centres are more commercially focussed and emphasize provision of a working environment for teleworkers.

The concepts of Community Tele-Service Centres (CTSCs) and Multipurpose Community Information Centres (MPCICs) correspond to the concept of telecottages. These are multipurpose centres that ventilate a number of different activities for the local community, in specific, local community within a rural area or a deprived urban area, so that communal use can be made of the facilities available.

In this context tele-centre is used as a common term covering all of the abovementioned centres, while the term telecottage is reserved for tele-centres providing some kind of training or information services to the local community as part of their activities.

Services provided by tele-centres

There is a wide variation in the kind of services offered by tele-centres, as each country often has chosen their own model. Most centres provide however access to computer facilities and training in use of these facilities. Some centres also offer other types of training – often by use

¹⁸ Simmins, Ian: *What is the difference between a "Telecottage and a "Telecentre"?*
<http://eto.org.uk/faq/faqtcvtc.htm>, 1999.

of e-learning. Offering of various types of community services and facilities for tele-workers are also included in the activities of many tele-centres.

Box 2. Examples of services offered by tele-centres

- Computer facilities
- On-line facilities
- IT support and service
- Information dissemination
- Networking
- Education and training
- Administrative services e.g. accounting
- Consultancy work
- Office and business services
- Community services
- Social care

Business Models for tele-centres

A key issue for all types of tele-centres is funding. It is essential that telecentres have an economically sustainable strategy right from the beginning. In this context it is important to distinguish between demand driven tele-centres and tele-centres established as part of special programs.

The latter model has been the dominant one in Europe. Typically, the establishment of tele-centres in rural areas has been initiated through some sort of public funding - sometimes supplemented with grants from the national telecom operator. Public funding is usually given for a limited period of time. Either because they are given as part of a program with a limited lifecycle or because the intention is only to finance the start-up costs, having in mind that the centres ought to be economically viable in the long run. Many countries have developed national programs supporting tele-centres and at the international level the EU has initiated a number of supporting programs.

It is however difficult to make a sharp distinction between a demand-driven tele-centre with a commercial orientation and a tele-centre set up as part of a special program. Most centres have a commercial orientation and have been created as the result of a local initiative, but they have also received some type of financial support. In addition many commercially oriented tele-centres generate a substantial part of their income through provision of services to the public or participation in public funded projects.

The possibilities for funding are related to the services provided and the objectives to be met. Many centres have focused on creation of local coherence by creating a meeting place for economic or cultural activities, and many services have been provided free of charge. This type of centre has been found to be the most eligible for public funding, but they have on the other hand found it very difficult to redirect their activities in a way that can generate a sufficient income to survive after funding has ended.

The general experience from Scandinavia and other countries with a long history of tele-centres is that tele-centres, which are independent and not integrated in a larger organization, have found it very difficult to survive on public grants alone. Sooner or later they have to generate their own funds in some way or another.

Some of the most common business models applied are:

- 1) Integration with local institutions (training centres, schools, libraries etc.)
- 2) Service provision for local authorities, e.g. training courses, cultural information centres etc.
- 3) Service provision for (local) businesses, e.g. accounting, web design etc.
- 4) Provision of public access to IT and telecom facilities (internet cafés, tele-centres etc)
- 5) Telework facilities for a number of companies.

Centres operating as part of a larger organization do not have to depend on external funding if their operations contribute to the overall objective of their parent organization. They can e.g. provide training courses for unemployed as part of a labour policy scheme if integrated in a training centre; or they can provide electronic access to library databases if they are located in a library etc. The drawback is that the activities may be limited by the objectives of the parent

organization. Centres, which are part of a public institution, may for example be restricted in their supply of services to private businesses.

Centres can also operate as independent entities, but provide public funded services. This model gives more flexibility as the centre more easily can develop and supply services for other customers as well. Different models exist. Some centres can produce IT-services or similar services, which also could be obtained from any consulting or accounting firm. Such centres are hard to distinguish from any small local private company. Others may provide training courses, public information and cultural services for which they receive some payment from public authorities. A mixture of the two can also be found. The drawback will often be lack of basic funding. A centre will generate its income from production of services sold to public authorities, but the centres themselves are responsible for generation of a sufficient income to survive.

Usage and knowledge of IT are promoted both through the mere access to facilities and by training. Training is an important ingredient in the activities of many tele-centres. In particular in their initial phase, many tele-centre programs have focused much of their attention to training activities.

Training is a major activity of many tele-centres and can, if successful, be a major source of income for a tele-centre. Training activities also contribute to the establishment of a centre as a central meeting place in the community, and strengthen other informational activities.

Informational activities are usually supported by public funds, and it is unlikely that commercially based tele-centres will engage in this without any support from special programmes or the district council.

Other sources of income is provision of business services to local businesses, e.g. IT-consultancy, accounting services or services with some ingredient of IT: provision of public access to IT and telecom facilities; and provision of working places for teleworkers – a model which has been quite widespread in the UK. As computers in private homes have become more common, such centres can also act as providers of an IT-hotline for people working

from home and supply them with more advanced facilities such as high quality colour printers etc.

In the long run viability of the tele-centres will depend on their ability to upgrade their services into new areas. This requires that the employees of the centres develop their expertise and their access to relevant knowledge and information.

6. The potential of e-learning in Tele-centres

Training is an important ingredient in the activities of most tele-centres. First of all tele-centres provide training for the local community. In some centres, training is restricted to cover ICT-related topics, but in others other topics are included as well. Two of the most important factors affecting the viability of various types of training courses are:

- The local demand: the training needs of the local community including the training needs of small and medium sized enterprises in the area.
- The local supply: The ability of the tele-centre to provide cost effective training in a particular area. This will depend on the expertise available at the centre as well as the possibilities to receive support from experts and others.

E-learning offers a number of opportunities for tele-centres. A thematic monitoring based on a review of 150 e-learning projects under the LEONARDO programme has identified a list of benefits, which can be added by use of e-learning¹⁹:

1. It facilitates access to learning not only for all categories of employees by developing the educational offer but also for immobile persons
2. It increases learning opportunities
3. It stimulates the learning process by using the flexible learning concept
4. It brings learning and learners closer together
5. High quality and relevance of training programmes. The materials get better.
6. Decision makers can benefit to a higher degree from the training when it is workplace related and can be planned as an integrated part of the job
7. Independence of time, place and speed gives the possibility of individualised and differentiated learning

¹⁹ Graham Attwell a.o.: E-Learning in Europe Results and Recommendations – Thematic Monitoring under the LEONARDO DA VINCI-Programme. Nationale Agentur Bildung für Europa beim Bundesinstitut für Berufsbildung, Bonn 2003.

8. E-learning has helped in the shift from a teacher centred model (lecture, notes, examination) towards a learner centred model (problems, literature, information, investigation, discussions). This paradigm shift started within education after “The Independence”, however e-learning supports this change of direction”
9. The formalisation of the learning process may help companies to gain a general view of the planning of strategic development of competencies
10. The browser based evaluation system allows continuous evaluation in order to reach the best practice
11. The virtual city metaphor is an interesting new metaphor for developing virtual vocational learning environments.
12. That e-learning makes the management of project based learning much more effective
13. The size of the class or the basic group can become much bigger, there is an example of more than 200 students doing project work in small groups
14. The scaffolding process of the students become more easy and efficient
15. It provides the possibilities for making international projects
16. It may offer disabled people new opportunities for supporting processes of social integration
17. It offers new problem solving oriented approaches.

Many of these benefits are highly relevant for tele-centres. First of all e-learning enables peoples in remote areas to participate in training that otherwise only would be available in urban areas. E-learning also enables an upgrade in teaching materials. When the same course is made available in many different areas, it is possible to pool resources in order to produce better teaching materials. The same teaching material may even be used in several countries if translation of teaching material is facilitated as it has been done in this project, where a number of courses developed locally in Hungary and Spain have been translated into English and offered in a common framework.

The economies of scale offered by e-learning are of particular importance in areas, where it is impossible to identify a sufficient number of participants to offer training locally in a cost effective way. By use of e-learning it will be possible to design courses on very specific topics

and the users will better be in a position to tailor their own training according to their own personal needs.

Improved contact between learners and teachers is particularly important in a tele-centre environment, where the necessary expertise seldom is available locally and it therefore may be difficult to establish a long-term relationship. Here e-mail provides an important learning tool, which can be used outside the classroom.

E-learning is particularly relevant for small and medium sized enterprises in rural areas. Many of these lack an internal learning infrastructure including the ability to assess their own training needs, and knowledge about how to respond to these needs. Provision of the basic ICT infrastructures, enabling these enterprises to get access to e-learning, will not be sufficient, as it seems unrealistic to expect that they will be able to develop the necessary learning cultures in short term.

Here tele-centres may play a role as mediators – not only of ICT facilities, but also in terms of assessment of training needs and identification of e-learning.

Tele-learning is not only relevant for tele-centres as a potential service and potential source of income. E-learning is also important as a tool for enhancing the capabilities of the staff employed at the tele-centres. As tele-centres often are located in rural or remote areas, the staff will have difficulties in upgrading their own qualifications without leaving the region. Therefore one of the most important areas for e-learning in relation to tele-centres is to develop courses in topics with relevance for operation and management of tele-centres.

Development of e-learning courses is however a major task, demanding a wide range of skills in such in areas such as IT and learning methodologies in addition to expert knowledge in the areas covered by the e-learning courses. Surveys of user satisfaction with e-learning courses indicate that the current suppliers often lack the necessary skills and resources to produce e-learning courses of high quality.

One problem is here that the local markets for e-learning often are too small to justify the often substantial investments necessary to produce the right courses in a good quality and pedagogy. Such courses have been developed for instance in Hungary and in Spain, and through the LEONARDO funded Telecottage project, these courses have been made available in English.

7. Conclusion

The objective of this deliverable is to study international experiences with e-learning, and to analyse how these experiences can be used for development of a cooperative transnational methodology for use of e-learning in tele-centres.

E-learning covers a wide spectrum of learning methodologies which all include usage of ICT technology. E-learning can either be used as a methodology based on self study with little or no interaction with a tutor or in a mixed model combining e-learning with traditional learning methodologies. E-learning is widespread among European training institutions, and there are a large number of small and medium sized suppliers of e-learning. However, user satisfaction with the current e-learning material is limited. In a European survey conducted in 2002, 61% of the respondents rate the quality to poor or fair. Technical functionality and explicit pedagogical design principles appropriate to learner types, needs and context were among the most important criteria.

E-learning is important for tele-centres in general and in particular for tele-cottages, where training is an important part of their activities. E-learning will enable tele-cottages to broaden their supply of courses, and they may be able to rely on expertise from other regions or even other countries. These advantages can benefit most types of users of e-learning, but are particularly relevant for tele-cottages, which most often are located in remote areas. In addition they are usually small organisations, which are unable to provide expertise in all areas, which are relevant for their target groups. In addition it may be difficult for them to achieve sufficient volume in order to provide cost efficient training.

The European market is however, rather fragmented due to differences in culture and languages. There are a few transnational suppliers of e-learning, but they are mainly serving the large business market and are not targeting the needs of small enterprises like tele-centres. Therefore there is a need to promote transnational co-operation between national suppliers of e-learning material designed for serving the particular needs of tele-centres.

REFERENCES

Alphametrics: The state of e-learning in Europe – Results of a Survey conducted by Alphametrics in collaboration with Cedefop.

http://www.eurolearn.net/docs/CEDEFOP_ELEARNING.PPT

Graham Attwell: The challenge of e-learning in small enterprises – Issues for policy and practise in Europe. Cedefop Panorama series; 82. Luxembourg: Office for Official Publications of the European Communities, 2003.

Attwell, Graham a.o.: E-Learning in Europe Results and Recommendations – Thematic Monitoring under the LEONARDO DA VINCI-Programme. Nationale Agentur Bildung für Europa beim Bundesinstitut für Berufsbildung, Bonn 2003.

Bizmedia: Quality and eLearning in Europe. Summary Report 2002.

CEC: The eLearning Action Plan – Designing tomorrow’s education. COM(2001)172 final Communication from the Commission to the Council and the European Parliament, Brussels, 28.3.2001

CEC: The eLearning Action Plan Designing tomorrow’s education. Communication from the Commission to the Council and the European Parliament. COM(2001)172 final

CEC: Better eLearning for Europe, 2003.

Cogburn, Derrick, a.o.: Knowledge in development: Multimedia Multi-purpose Community Information centres as catalysts for building innovative knowledge based societies. World Bank Background Paper, 1998.

Danish Ministry of Science and Innovation: Perspectives for competence development: Report on E-learning, Copenhagen 2003.

Danish Ministry of Science and Innovation: Perspectives for competence development: Report on E-learning, Copenhagen 2003.

Danish Technology Institute: E-learning in Practise (2003).

Ryann K. Ellis: E-learning Trends 2003. Learning Circuits

<http://www.learningcircuits.org/2003/nov2003/trends.htm>

Falch, Morten: Community Impact of Telebased Information Centers. Michael Gurstein (Ed.): Community Informatics: Enabling Communities with Information and Communications Technologies, Idea Group Publishing, Hershey PA, 2000.

Henten, Anders: Telecottages in Estonia. <http://www.itu.int/ITU-D-UniversalAccess/casestudies/estonia.htm>

Henten, Anders: Telecottages in Hungary. http://www.itu.int/ITU-D-UniversalAccess/casestudies/hun_mct.htm

IDC-Norden

<http://www.norgesuniversitetet.no/n.nsf/ak/1E41B4F2549020C1C1256A3A00417061>

Massy, Jane, Tim Harrison and Terry Ward: The European E-learning Market, BizMedia 2002.

Simmins, Ian: What is the difference between a "Telecottage and a "Telecentre"? <http://eto.org.uk/faq/faqtcvtc.htm>, 1999.

Statistics Denmark: Indicators for the Information Society in the Baltic Region, Action line 6, Northern eDimension Action Plan, 2003.