

Distance Training in Information Literacy for Students of Telematics

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Abstract. Case study is presented on how training in information literacy is integrated in a study programme of Telematics students of Faculty of Radioengineering and Telecommunications of Riga Technical University. It is very important to educate young people in an environment that will be widely used in Information Society. Information literacy distance course has been developed in the framework of DEDICATE project.

Introduction

In Information Society significance of knowledge and education is tremendously increasing. Economic competitiveness and prosperity of the countries will depend firstly on the developments in the fields of education and training. Traditional education system will not be able to cope with the increasing demand for retraining and updating of knowledge. Distance learning as a tool of lifelong learning and new approach in education is recognised to be an efficient mean for human resource development in the European Community.

Telematics study programme

One of the definitions of telematics is convergence of telecommunication and information technologies. It is becoming more and more difficult to differentiate between these two technologies. Just few examples, personal computer can be used as TV receiver and TV set can be used as an Internet terminal, the same networks are used as telecommunication networks and as computer networks, Internet is used for audio and video broadcasting. At the same time in education there are separate study programmes in telecommunications and computer technologies. Following the practice of several universities we are introducing telematics training programme in the Faculty of Radioengineering and Telecommunications of the Riga Technical University from the next academic year. It will be an engineering two year study programme after bachelor degree. The aim of the programme is to give students basic professional knowledge and skills in the fields of electronics, telecommunications, information technology, lifelong learning and management needed for implementation of telematics application projects.

Training needs analysis was performed and demands of labour market determined. It shows that besides professional engineering skills, command of foreign languages (mainly English), project planning and management, communication, collaboration and team work skills are of high importance.

Developing this study programme we came to conclusion that the framework of traditional university education is not consistent with the aims of the programme. Therefore it was decided:

- to introduce flexible learning methodology combining traditional face-to-face lectures with open distance learning approach;
- to stress importance of information literacy enabling independent information search by telematics means.

Distance Education and Training

What is modern distance education? It is an open and flexible, learner centred approach in education. It is a new philosophy in education. It does not mean that there is no face-to-face contact. Just these contacts are not so often. Approach is based on some general principles but is very particular in every application. Distance courses could differ greatly from paper based study materials with face-to-face tutorials up to satellite TV lectures with Internet based study materials and computer-conferencing study support systems.

There are also different definitions of distance education. One of them, pointing to DE as something special, is given in [1]:

Distance education is planned learning that normally occurs in a different place from teaching and as a result requires special techniques of course design, special instructional techniques, special methods of communication by electronic and other technology, as well as special organisational and administrative arrangements.

Two basic principles, the distance education philosophy is based on, are *openness and flexibility*. Openness means access to education for all people neglecting their age, previous formal education, social status, occupation and place of living. It is also freedom in choice of subject, place, time and pace of learning. Openness could be reached by flexibility in choosing the most appropriate learning media and education strategy to reach the goal in each particular case.

Study materials are specially prepared for independent studies to compensate missing face-to-face contact with tutor. Therefore we call it materials-based learning. Self-assessment questions and activities with comments involve student in active learning and maintain feedback. But distance learning is not a self-instruction, because it is specially organised and *study support* is available to students. Counsellors and tutors are available for face-to-face, mail, telephone, E-mail and other forms of contact.

Distance education is learner centred. It means that needs of learners are to be analysed. Objective must be set to fulfil needs of learners providing them with necessary skills and knowledge. Telling and lecturing turns out to be very inefficient strategy for transfer of skills and knowledge. Learning by doing is the best option to acquire needed skills. Teacher must only motivate and support students in their active studies.

Is it possible to train people in engineering subjects at a distance? Very common opinion is that it is impossible because student's presence is crucial in problem solving and laboratory practice. Appropriate application of distance education methodology and modern telematics technology can help us to solve this problem. In many engineering subjects computer simulation is used and it could be easily done at a distance. The same applies to laboratory practice. Measurements are performed mostly by computer controlled equipment and it makes no problem to control process at a distance. Environment for simulation and virtual experiments is already created and tested [4,5].

The rise of modern DE in Latvia started in 1993. For co-ordination of the development of DE in Latvia, the Latvian Distance Education Board at the Ministry of Education and Science (the Chairman E.Bekeris) was created in 1994. With the support of the EU Phare Programme "Multi-Country Cooperation in Distance Education" basic DE infrastructure has been created in Latvia, awareness raised and more than 100 people trained in the basics of DE. Project was executed by the Latvian National Contact Point created in the framework of the Phare programme and approved by the Ministry of Education and Science of Latvia.

Distance Education Study Centre at the Riga Technical University is located in the Faculty of Radioengineering and Telecommunications. It was established by decision of Senate in May 1997 with support of the Phare Multi-Country Programme in Distance Education. Phare Programme fosters also distance course development in co-operation of institutions located in three or more countries. For development of 28 projects 4 MECU are allocated and course module development is in progress. Leading in one project and being a participant in 3 other projects RTU was among the most successful universities in Europe in this tender. Most of the projects are based on application of modern telematics technology in course development and distribution. We hope that it will be good resource for new Telematics study programme.

Information Literacy

It is very important to educate young people in an environment that will be widely used in Information Society. Information literacy distance course has been developed in the framework of DEDICATE project. Students will be trained to use electronic resources available.

How to survive in the situation when funding for education is not sufficient and to improve the quality of learning process. One solution is to use more cost effective and flexible distance learning strategy to achieve Information Literacy. There are various terms used to describe this new philosophy in education. One of the terms used is resource-based learning.

According to the "Nine Information Literacy Standards for Student Learning" accepted by American Library Association and Association for Educational Communications and Technology, the student who is information literate:

- accesses information efficiently and effectively;
- evaluates information critically and competently;
- uses information accurately and creatively.

the student who is an independent learner is information literate and:

- pursues information related to personal interests;
- appreciates literature and other creative expressions of information;
- strives for excellence in information seeking and knowledge generation.

the student who contributes positively to the learning community and to society is information literate and:

- recognises the importance of information to a democratic society;
- practices ethical behaviour in regard to information and information technology;
- participates effectively in groups to pursue and generate information.

Of course, the basic goal of information literacy is to enable students to become lifelong learners. Information literacy is a process related to different subjects and learning experiences. So we must integrate information literacy courses throughout the curriculum. Development of information literacy courses is shared responsibility of faculty, librarians, and administration. Faculty should provide a basic understanding of importance of gaining information literacy skills in our technological age.

Information literacy and resource-based learning are two processes which should be used together. Resource-based learning means that the student, not the teacher is central to the learning process. Teachers show direction, but not provide all information needed. But they guide students in finding, evaluating and using information. In such a way we are refocusing education away from lecturer centred model where the lecturer is the expert on a teaching subject and study materials are lecture contents or study guides in the case of distance education.

Now students should use:

- paper-based resources (course guides, manuals, textbooks, lecture notes);
- computer-based materials (computer-based tutorials, on-line multimedia);
- networked-learning resources (on-line tutorials, networked study programs, computer conferences and seminars);
- media-based materials (audio tapes, video tapes, transparencies, slides).

Now there is such an abundance of information available that students cannot be expected to remember everything they are taught in lectures. They must be able to find information as and when it is needed. Students must have information finding skills to enable them keep up to date. Students learn better when they are interested in a topic and when they actually need specific skills and knowledge to solve some problem. From such a point of view the best results in acquiring the Information Literacy skills could be achieved by subject based Information Literacy courses.

The first step toward Information Literacy Courses in Electronics is course developed by Riga Technical University Scientific Library team together with Radioelectronics faculties staff member participating in DEDICATE Project (Distance Education Information Courses with Access Through Networks). As the final result was Information Literacy Course in Electronics. This course is meant for the second year students of the Faculty of Radioelectronics and Telecommunications. This Information Literacy course is a part of the subject "Introduction in Electronics ". In this transition period the course will be introduced in Telematics study programme with some modifications.

If we divide all the process of acquiring Information Literacy skills in three levels, then this course is covering the first two levels:

- Library procedures as circulation and special services;
- Introduction to classification and shelving, the catalogue, reference sources, information formats;
- Use of computerised catalogue, use of journals, techniques for searching for information.

During the next Information Literacy courses students should cover the third level:

- Advanced information searching;
- Scientific reference techniques, selection, analysis, interpretation, systematisation of information;
- Storing compiled information for reference.

So, starting with basic library skills and developing toward cognitive skills such as synthesising and evaluating information students would achieve Information literacy goals.

Goals of the Information Literacy Course

There are goals of the Information Literacy course defined in cognitive, affective and psychomotor domains.

Cognitive goals are concerned with understanding various concepts of the process of scholarly communication and information retrieval tools and types. Cognitive goals could be described through cognitive objectives. These objectives are telling what the students should obtain after the completion of that course:

- a life long need for information obtaining;
- knowledge of different types of information retrieval;
- knowledge of different tools for information retrieval;
- ability to use different information retrieval tools;
- ability to compare and evaluate the information obtained;
- ability to use obtained skills for information retrieval in another subject field.

Affective goals are concerned with the student emotional behaviour throughout the life-long learning.

These objectives are telling how the students should behave after the completion of the course:

- students should have desire to use RTU library for information searching (library resources);
- students should have desire to use RTU library for information searching using RTU Internet Classroom;
- students should have desire to use Radioelectronic's faculty Computer Centre for Internet searching;
- students should have desire for life-long learning.

Psychomotor goals are concerned with co-ordinated physical activity. Psychomotor objectives are telling what ability they should obtain after the completion of the course:

ability to locate information in RTU Library;

ability to use RTU Librarie's Internet Classroom for information retrieval;

ability to use RTU Radioelectronic's Facultie's Computer Centre for information retrieval.

Conclusions

As on the eve of Feudal Society new terminology, opportunities and attitudes emerged, the same is happening now on the eve of Industrial Society. Telematics, information literacy, resource-based learning and lifelong learning are good examples. Modern information and telecommunication technologies are opening new opportunities. Integration of lifelong learning skills with telematics will lead to the delivery of education services right to the customer's home or work-place world-wide. Remote delivery of multimedia study materials in electronic form, electronic information resources, study support via Internet are future applications of telecommunication networks.

References

1. Moore, Michael G. Distance education: a system view / Michael G. Moore, Greg Kearsley. Wadsworth Publishing Company, ITP. 1996.
2. "Nine Information Literacy Standards for Student Learning" http://www.ala.org/aasl/ip_nine.html
3. Levinoka L., Kravcinska J., Krauze S., Jautre I., Brivkalns K. "Information Literacy Course in Electronics", Report on DEDICATE Project, 1999.
4. Lustigova, Z. & Zelenda, S., Remote and open laboratory. *Proc. of the Int. Conf. Telecommunications for Education and Training*, Prague, Czech Republic, 78-82 (1997).
5. Hoyer, H., Virtual University: Challenge and chance. *Proc. of the 7th European Distance Education Network Conference*, Bologna, Italy, 329-332 (1998).