Content development steps,
teachers e-training

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THE CASE STUDY OF 'E-TEACHER' METHODOLOGY IMPLEMENTATION FOR E-LEARNING RESOURCES DEVELOPMENT

The paper discusses several methodological aspects of an on-line courses running that are dealing with e-learning technologies applied for teachers works at primary and secondary schools. The courses were developed within Leonardo da Vinci 'e-Teacher' project frames. The paper authors presented the possible choices available for these courseware development, teaching/learning strategies definition, various media delivery proposals, interaction methods and the training assAessment. Several factors of the resources decision making ability items were also discussed.

1. INTRODUCTION

Training teachers is a key problem for a modern education system definition and development. The Distance Education Study Centre AGH-UST is trying to tackle this problem by encouraging teachers to take the challenge of e-learning conception of improving their qualifications. After traditional 'hands on' workshops curried out in 2003 (for teachers from Trzebinia region DESC) we applied for EU funds for an online courses development, by an e-learning technologies usage.

The paper is a brief outline of the decision making process involved in the preparation of a preliminary plan for the development of the training courses. In Fig. 1 the sequence in which the decisions were made has been shown. It also presents the factors having major influences on this decision making process.

The factors are relate to the issues such as learners' characteristic needs, course context and the challenges that produce this new, specific training forms. Each step of the project was presented in the Fig. 1, then thoroughly discussed in subsequent chapters of the paper.

2. THE DECISION MAKING FACTORS

2.1. THE COURSE CONTEXT

The course developed in frames of "e-Teacher" project is aimed at educators and teachers working at primary and secondary schools. The main goal of the course is to introduce teachers to the notion of e-learning and to encourage them to make use of e-learning in their every day practice.

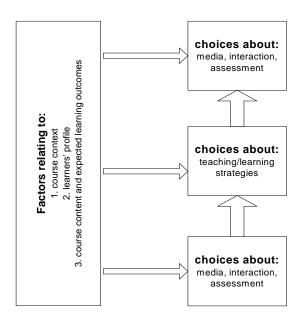[*]   AGH – UST, Distance Education Study Centre, Kraków, POLAND

Fig. 1. The flow chart of the decision making process involved into the course outline preparation

The idea of the course was defined by the Distance Education Study Centre AGH-UST, grown as a result of the experience gained from previous project: "Distance Education as an element of preparing teachers and students to the Information Society". The workshop was organised in 2003 for Trzebinia Commune in Malopolska, region on a group of 35 teachers. It revealed the need of a more complex courses preparation by an e-learning units delivered to the teachers entirely through the Virtual Learning Environment.

In order to get EC funds for development, delivery and the dissemination of e-courses the international partners were found. The application was successfully evaluated the project started in January 2005. The Distance Education Study Centre AGH-UST is the project coordinator. The project consortium is including three additional partners: the Institute of Education of the University of London, the Distance Education Centre of the University of Tartu and Trzebinia Commune (gmina).

2.2. LEARNERS PROFILE

In order to tailor the course modules to suit the needs of the learners living in three different countries a detailed needs assessment survey was carried out all partner countries. The survey was completed by 216 teachers all together (72 from Poland). The questionnaire included both closed and open questions. It revealed some interesting information concerning the prospective learners, their backgrounds, needs and expectations towards the course we are willing to prepare and towards e-learning as a new opportunity in education. It also revealed important differences between the target groups in the partner countries and confirmed our assumptions about the need to adjust the course modules to the different levels of IT skills, professional experience, existing knowledge about e-learning within the target group as well as to the national differences in ICT infrastructure and the progress made in e-learning. Therefore, instead of creating a single course specification for all three countries we decided to establish a data base of reusable learning objects which can be used by each country as they see them fit within their own course structure. In this way the different organizational settings, country-specific learners' needs and contexts will be considered and appropriately addressed in the course plan.

AGE, GENDER, PROFESSIONAL QUALIFICATIONS, EXPERIENCE AND SKILLS

Teachers who registered for the course and took part in the survey did so without any coercion from school authorities. This, along with the fact that 90% of Polish respondents are people between 26-45 years old leads to conclusion that mainly younger teachers display interest in e-learning. The attitude of older teachers towards online learning is rather skeptical. It seems that such an attitude can be derived from the low level of computer skills represented by this group of teachers in conjunction with the poor access to the technology at schools. In the context of the lack of an appropriate technological infrastructure older teachers simply do not see the need to develop their ICT skills. By contrast, in Estonia, where the level of access to the computers at schools is very high, older teachers are more interested in e-learning. The UK group contains mainly younger teachers and roughly the same number of men and women. In contrast in Poland and Estonia women outnumber men in teaching profession which was clearly reflected in the questionnaire. Being simultaneously wives and mothers female teachers have lots of responsibilities in addition to the vocational training programmes they try to complete. According to the survey results Polish male teachers are ready to spend on average 5,5 hours on the course each week while in the case of women 3,5 hours is the average figure.

PREFERRED METHODS OF LEARNING

In the survey we asked teachers several questions concerning their learning styles and strategies. Most of the teachers emphasized the importance of the social aspect of learning . They stated they learned better if they could discuss their thoughts with others. It confirms the widespread beliefs about the high social skills of this professional group. Almost all respondents agreed also on the importance of practical activities and the 'useful' knowledge which can be tested out quickly in the work environment. 72% of Polish respondents prefer to print things out and read them away from the computer. Surprisingly, this rate is a bit lower in UK (65%) and Estonia (62%). May be UK and Estonian teachers, who have better access to computers and to the Internet, simply got used to reading form the screen.

ACCESS TO TECHNOLOGY

Asked to indicate the level of access to desktop computer capable of connecting to the Internet in the workplace 87% of Estonian respondents said that it was easily available, while the rates in UK and Poland are 48% and 35%. Although in the last years many Polish schools were equipped with PCs connected to the Internet, the level of access to technology is still to low to be satisfactory.

PERCEIVED BARRIERS TO E-LEARNING

Lack of resources
Limited access to computers and to the Internet was cited most frequently as a barrier to implementation of e-learning in Polish schools. A number of respondents gave the lack of access to appropriate e-learning materials as a barrier to deployment.

Lack of skills
Lack of skills, both technical and in e-learning methods was seen as a barrier by almost 40% of Polish respondents. This rate is much lower in Estonia (18%) and in UK this issue was not raised by teachers. A small number of Polish teachers mentioned the lack of pupils' skills as a barrier to adopt e-learning.

Lack of time

Surprisingly only 8% of Polish and 10% of Estonian respondents indicated lack of time as the greatest barrier to e-learning. This issue was a significant factor for UK respondents – 30% of UK teachers gave the lack of time as a barrier to their use of e-learning.

EXPECTATIONS TOWARDS E-LEARNING

Most of the Polish teachers would like to learn how to prepare teaching materials. Interestingly, they do not seem to distinguish between e-learning and traditional materials and thus they wish to improve their general skills as designers for the teaching-learning experience. They would also like to learn how to exploit digital resources and Internet as a tool for their everyday teaching practice.

Many teachers would prefer to learn simple IT skills. It indicates the level to which computers are exploited at schools apart from the IT lessons. Definitely teachers need to go through professional IT training tailored to their specific needs in order to understand and fully exploit new technologies. Several teachers perceive the course as a way to learn new methods or adopt traditional methods to the new technologies. It suggests that the notion of e-learning is equal for them with mere exploitation of the computer (e.g. word processing, presentations etc.). Only few mentioned e-learning platform or authoring tool they wish to try out during the course. Such elements as improved communication skills, work group or course design, traditionally linked with e-learning, were not mentioned at all by Polish respondents.

2.3. COURSE CONTENT AND EXPECTED LEARNING OUTCOMES

The course 'e-Teacher' will cover circa 120 teaching/learning hours (90 compulsory and 30 optional). It will be divided into 3 main modules, described below.

THE COURSE MAP

Pre-Week

'Warm-up' activities aimed at preparing students to work in the VLE. Students follow instructions delivered in the form of an electronic tutorial.

Module 1: E-learning – main issues (20 hours)

Aims and objectives:

On the completion of this module learners will be able to:
- demonstrate understanding of key theories and issues underlying the practice in e-learning
- identify the areas of application of e-learning in their own educational context
- use online technologies to communicate with the tutor and study peers

Topics:
- What is e-learning?
- E-learning: new horizons in education
- E-learning: positive and negative aspects for learners and teachers
- E-learning in Polish schools- application areas

Module 2: E-learning – course design (30 hours)

Aims and objectives:

On the completion of this module learners are expected to have developed:

- an understanding of various factors that have to be taken into account while designing e-learning courses
- theoretical and practical skills in designing and managing the online learning experience
- an awareness of the potential of CMC for the education at secondary level
- a grasp of what an online moderator does

Topics:

- Front-end analysis (learners' needs, context and content)
- Interactive multimedia in teaching and learning
- Interaction and assessment in e-learning
- Principles for web page design: text and graphics
- Evaluation of your course

Module 3: E-learning – technical aspects (40 hours)

Aims and objectives:

On completion of this module learners will be able to:

- demonstrate basic knowledge on LMS and LCMS systems, authoring tools, SCORM standard, learning objects
- develop and incorporate teaching materials into the MOODLE platform
- handle the software available on the platform to organize and manage communication between learners

Topics:

- Introduction: LMS vs. LCMS; SCORM standard, LO- learning objects; tools for content creation
- Creating content: using WBTEkspress tool for content creation
- Principles of online course technical design using Moodle platform

3. THE COURSE DEVELOPMENT AND TEACHING/LEARNING STRATEGIES

3.1. APPROACH TO THE COURSE DEVELOPMENT

Depending on the learning goals, two different approaches to the course design were chosen by the course providers. Modules 1 and 2 are prepared according to a *process model*, whereas Module 3 follows a *systems approach* to the course design. The criteria used to reach those choices are as follows:

Modules 1 and 2

- underlying theory: socio-constructivism
- the goal of both modules: to introduce learners to the issues underlying the practice in e-learning and to encourage them to use new technologies in their own educational context
- the course will have a status of a training course – there is no need to take exams
- our learners are teachers with a pedagogical background, teaching experience and clearly defined interests and expectations
- learners themselves are a valuable source of knowledge and experience in educational areas, they should build upon their experiences

- there is no content to be learnt, rather issues to be discussed from different viewpoints

Module 3

- underlying theory: behaviourism
- the goal of the module: learners should develop some mechanical skills in operating the software
- learners must show that they have mastered specific routines

To sum up, Modules 1 and 2 will be rooted in a socio-constructivist learning theory. Providing many opportunities for discourse and appointing a variety of activities to be worked on in a collaborative way should generate among the learners the sense of trust and belongingness to the virtual community- a factor essential for reducing teachers' reluctance towards using new technologies.

The major part of Module 3 will be rooted in behaviourist learning theory since the goal for the learners is to acquire some basic technical skills in developing teaching materials to be delivered through the VLE. Trial and error approach will result in learners mastering the required skills.

3.2. TEACHING/LEARNING STRATEGIES SELECTION

Given the learners' characteristics, course context and content as well as the chosen design model the Authors tried to identify teaching and learning strategies to be incorporated into the course instruction:

- providing authentic learning context; virtual learning environment,
- providing opportunities to learn independently: compulsory learning materials and readings, additional resources, reflective activities, case studies and examples of different approaches to e-learning,
- providing opportunities for academic discourse: ongoing discussions, commentaries, debates,
- providing opportunities to work in pairs and in groups: collaborative problem solving; sharing experience, perspectives, viewpoints and ideas; developing skills for working online,
- providing opportunities for receiving support: study guides and provision of interaction with tutor,
- on-site practice: mastery of skills needed to plan, design and manage e-learning in the context of Polish secondary schools.

3.3. CHOICES ABOUT MEDIA, INTERACTION AND ASSESSMENT

RATIONALE MEDIA SELECTION FOR THE COURSE PRESENTATION

Since the course is about e-learning, it seems appropriate to give its participants the opportunity to be themselves online learners. That is why all teaching and learning activities will be organized in the VLE. There are two main reasons for the MOODLE platform to be chosen as the course delivery medium for Polish teachers. First, this platform encompasses a wide range of tools that foster communication and collaborative learning. Secondly, it is an Open Source software and may be downloaded and installed for free in Polish schools.

One of the project priorities is to make the course accessible to a wide audience, including also those teachers who struggle with time constraints or lack technology such as powerful PCs or constant Internet connection. Therefore, the multimedia used for the provision of content won't be

state-of-the art, rather the simplest technology to accomplish the goal. Moreover, the teachers with limited access to the Internet will be provided with a CD ROM version of electronic materials available via the VLE. This, in conjunction with the asynchronous communication that will considerably reduce the time spent on-line, by the learners. Study guides, monographs, papers, books, proceedings will be provided for learners in print.

Limited budgets are one of two reasons for which the 'hands-on' workshop is going to be organised in the VLE as an online tutorial and not in the traditional classroom. It would be certainly more appropriate to teach such skills as operating a software programme in the traditional face-to-face learning environment. The course is intended to reach teachers living in different regions. It would be extremely difficult or even impossible to set a date for a workshop that would suit all course participants.

THE INTERACTIONS SELECTION MEDIA

One of the critical factors in the process of media selection was the ability of the technology to support human interaction. In a socio-constructivist learning environment the emphasis is put on continuous discourse and collaboration among learners and between learners and tutors. Text-based computer conferencing was chosen to support human interaction in the course 'e-Teacher'. Time-delayed forum and messaging are the main tools to foster discussion, reflection and group work. The asynchronous inherent into those tools will give the teachers freedom from time and place constraints. Moreover, the time spent online can be considerably reduced if contributions are edited offline [1] [5]. Both features are very important in the context of limited resources of the target group.

PURPOSE, FREQUENCY AND TYPE OF INTERACTIONS

The goals of learner-to-learner interaction are both *cognitive* and *affective* [7]. The cognitive goals include: sharing ideas, negotiating the meaning and examining the issues from different perspectives, whereas the affective goals are to maintain motivation, foster mutuality and reduce drop-outs.

The goals of learner-to-tutor interaction in the course 'e-Teacher' differ according to the teaching – learning situation. Tutor acts as: a *facilitator* who mediates the course content and provides learners with formative feedback and support, *leader* who directs learners' attention to important issues and asks questions, *consultant* who answers students' queries, *moderator* who manages discussions, *participant* who belongs to the learning team and finally *expert* who knows the right answer [6].

Activities designed for Modules 1 and 2 encourage the learners to interact frequently with one another. Each week of study includes an activity or two to be prepared in a collaborative way. In Module 3 learners spend most of their time learning independently – the emphasis is put on learner-to-content and learner-to-tutor interaction.

The opportunities for learners to contact the tutor aren't scheduled. However, the learners should not wait longer than one day for the tutor to respond.

PURPOSE AND TYPE OF ASSESSMENT

The primary purpose of the assessment in the course 'e-Teacher' is to enhance participation of learners in teaching and learning activities and to provide them with formative feedback on their progress. Assessment in this course is regarded as "an engine that drives and shapes learning, rather than simply an end-of-tem event that grades and reports performance [4]. For the course providers

the assignments are a source of important information about the relevance of the course design and effectiveness of the course materials and teaching activities.

There are two kinds of assessment activities in the course. Firstly, learners are assessed by contributing to online discussions. Several original contributions as well as comments on the input from co-learners are required for the satisfactory completion of the course. This task is thought to encourage the learners to participate actively in online discussions which is one of the course goals. Secondly, learners are required to prepare a preliminary plan for the use of e-learning in their own educational context. The plan is to be developed gradually during the course. Learners may prepare the plan individually but they are encouraged to work in pairs or in groups to develop a draft for a programme that would involve two or more schools. After the plan was developed learners are asked to prepare and implement into the MOODLE platform one learning session of 2 – 5 learning hours. The learning session must be consistent with the premises of the course plan designed by the learners. This assignment is based on an open-ended assessment [4], which ensures that the learners have freedom of choice of how to make best use of the knowledge gained from the participation in the course. It combines two approaches to assessment: constructivist (developing a plan for a learning session) and behaviourist (mastering the skills in operating the software). The first part of the assignment is shaped entirely by the learner, whereas in the second part the learner must show that she/he has mastered some mechanical skills.

The grading is based on two-point scale: pass or fail. The role of the pass or fail grade is to set a minimum level of achievement required to award a 'Certificate of completion'.

4. CONCLUSIONS

The course 'e-Teacher' will equip learners with both "how" and "why' knowledge concerning the effective use of e-learning in schools. The emphasis in the course is put on providing opportunities for interaction and ensuring continuous, developmental support and feedback throughout the course. Computer Mediated Communication has a great potential to reinforce such an approach and this is exactly what we want our learners to experience during the course. Our goal is to show the learners that new technologies mean new practices and "the challenge of online learning is to use the qualities of the medium to advantage rather than replicate existing teaching, learning and assessment practices"[4]. The evaluation of the pilot course will help us to identify weaknesses grounded in the design and will allow us to make necessary improvements before the course reaches a wider audience.

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