STATISTICAL ANALYSIS OF STUDENTS-SATISFACTION INQUIRY RELATED TO E-LEARNING CHALLENGE AT DENNIS GABOR COLLEGE

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E-learning project at Dennis Gabor College

Dennis Gabor College is dealing with distance learning since more than a decade, within Hungary and in the neighboring countries. The number of enrolled students varies year to year, but actually the total number of students is some 13000. Over the 12 years of our existence, the technology of knowledge-transfer has been changed dramatically. At first we have used only paper-based materials, video cassettes and floppy diskettes. Then in 1996 we have transferred a lot of materials to CD-s from the diskettes and from some paper based materials, because CD has 600 times more storing capacity than a normal floppy disk. Due to the high responsibility of dealing with very high number of students, we have to examine the penetration of the new media among our students with extreme care, and we can introduce the new media if the penetration is above 80%. In year 2000, the internet penetration between our students reached this critical threshold. We published the teacher's PowerPoint presentations and some other documents on the internet and we began to create our e-learning strategy. We are interested to use the latest technology achievements, in aiming to disseminate the knowledge of information technology with the maximum efficiency. That's why we are deeply interested in use of E-learning technology [1].

The precursor of the actual E-learning project was the multimedia project in our institute. Within the frame of this project we developed multimedia CD-s, each of them covering one module in our curricula. Next to multimedia CD-s, we published all of our lectures in HTML format on our website [5]. These HTML documents may serve as basis for our E-learning content development.

SW and HW development

In 2003 we invested a server park for hosting the E-learning frame system and to host the student administration and management system as well. This latter is a Hungarian software product named "ETR" (Uniformed Student Registration System), which is supported by the Hungarian Education Ministry and, it is used by several universities in Hungary. We have adapted it especially to conditions of distance-learning. As "ETR" registers the student's study credits and performances, it is very useful if it operates joined to the e-learning LMS. The students have to login only into "ETR", and they are connected to the e-learning system also. One of the most difficult problems was the safe entering of personal data from the old system to the new one.

In January 2003 we concluded a rent agreement with IBCNET Hungary, in aiming to rent their IntraLearn system. We established an E-learning project with joint participation of our and IBCNET personnel [6]. In the early phase of this project a translation engine was developed in aiming to translate SCORM compatible word documents to IntraLearn format.

The IntraLearn frame system

The IntraLearn frame system is a usual E-learning frame system, with the same components as in case of many other concurrent software. The main components are as follows: HTML documents with image, video and animation inserts, Forum, Chat, Agenda, Self-test, FAQ, References. Two different interfaces are proposed, one for the students and one for the personnel. The IntraLearn frame system

was hosted on our server, however it can be hosted anywhere at a third place also. We thought that when the frame system is hosted on our server, it may yield to easy data entering and modification.

It is an important decision where to host the frame system: on the server of supplier or on our own server. Now we think it is better if the frame system is hosted by the supplier. Naturally there are a lot of facts influencing this decision: the bandwidth, the expertise of the staff and so on.

E-learning object development

The first question is to select the traditional teaching module or object which we wish to be dealt in e-learning environment. The selection is depending on the introducing strategy. It is easy to make the selection, when the teacher of a given module is enthusiastic in E-learning application. Then we shall to analyze the needs of the college, e.g.: the facultative objects come first. Finally we have selected four modules to develop.

We prepared an MS Word and an MS FrontPage template sheet, with definition of structural and formal elements of E-learning documents, with respect to correct data linking, image and video references. The principle was that these template sheets must be in conformity with SCORM and LRN standards. Once the two template sheets were ready and acknowledged by the project team, the use of them became an obligatory guideline for all of our developing personnel. Our personnel have developed three lectures using the MS Word template and one using the MS FrontPage template. We prepared short videos by Snagit and some animations with Flash. Images were generated from the source software and treated with MS Photo Editor.

All documents were saved on CD, and then they were subject to detailed verification process. The verified documents were entered into the frame system by specialized staff members. FAQ, references and other components were elaborated by the authors.

Experimental education with participation of 120 students

In November-December 2003, we organised a test course series for voluntary students. A total of 120 students decided to take part in this experience in four different topics, that is to say an average of 30 students per courses followed their studies by electronic way [2]. The courses were as follows:

- Spreadsheet methods with MS EXCEL
- Project management with MS PROJECT
- 3D modelling with CADKEY
- Computer graphics

The total number of received-back questionnaires was 33. We are convinced that this number of returned inquiries is too small for a general statistical evaluation; however we suppose that it could serve as guideline to understand the students behaviour related to electronic learning. The main weakness of this test is the voluntarism of the students, as this way we tested only that part of the totality which was favourable of E-learning methods by default. That’s why some criticism shall bee applied to too much positive opinions.

During the test period we established an agenda for the students, and we assured 2x2 hours/week of online chat for them. Next to the online chatting we assured a moderated forum in each topic. The students had the possibility to exchange their ideas and the concrete solutions of the discussed problem. At the end of the test period we organized an exam for the students with the same conditions as it is used in our traditional education. An average of 67% of success rate was obtained. The students were invited to fill the enquiry sheet after finishing the exam.

The enquiry sheet

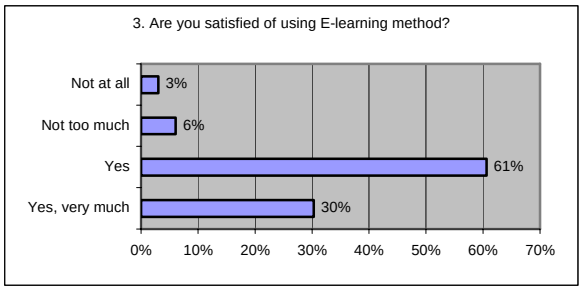
There were 17 questions on the enquiry sheet with 4 answers to each in the majority of cases. We used the experiences of Bernath [3] and Guidorzi and Giovannini [4] when developing our enquiry sheet. The questions were targeting:

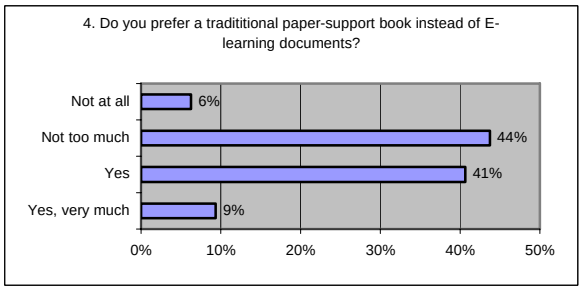
- the method of E-learning,
- the quality of the course,
- the HW/SW conditions
- and the quality of the tutor.

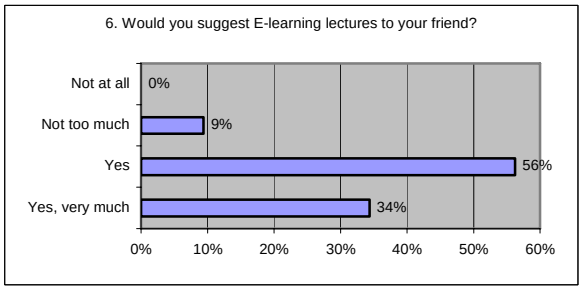
The 4 answers were classed as: yes very much, yes, not too much, not at all. In aiming to check the seriousness of the answers, some control questions were inserted. The 17th question was reserved for any free remarks. As the answer on this question was not canalized within the above frames, their statistical analyses not also exact as that of the others.

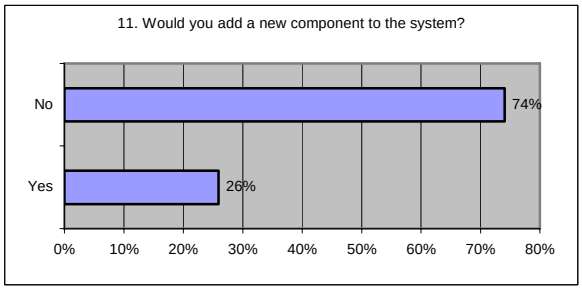
Analysis of answers to enquiry questions

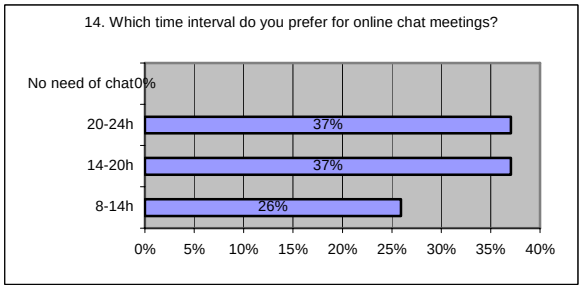
In the present paper the authors are dealing only with questions related to Methods of E-learning. See the students' answers in the diagrams below. On the horizontal axis of the diagram, see the percentage of answers.

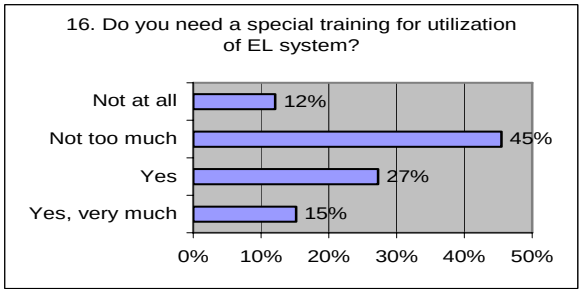


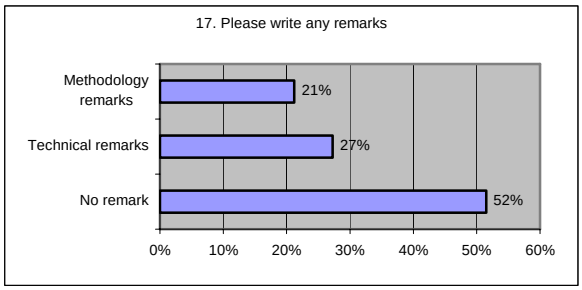


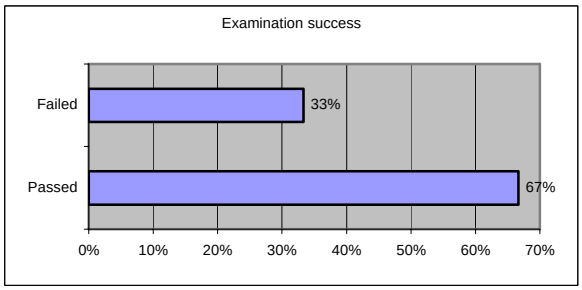












It can be concluded from answers to questions No. 3, 4 and 6, that the majority of the participant students were favourable related to E-learning methods. Even the answer to question No. 4 is somewhat surprising, say 50% of the students does not require traditional paper-support book for E-learning lectures. Sure that this ratio would be lower if the totality of students would be interviewed in this question. In this moment we think that in spite of high overheads we have to support the students by supplying proper books as well.

It should be noted that all failed exams were detected in one and the same topic over the total of four. Consequently in this case there is some contextual or methodology problem with the course, which shall be identified cured carefully.

It can be seen from the answer to the 17th question that about one quarter of the responding students has dealt with methodology problems. The majority of these remarks were stating that the level of the examination was too high. Some of them claimed for other way of online communication such as videoconferencing. We do not pay too much attention to technical remarks, as these technical problems will be more and more eliminated during the development of the project.

The remark related to the too high level examination is closely related with the “Examination success” diagram. In normal cases 33% of failed candidates mean no important deviation from the average. But in our case 100% of the failed examination was found in one module, consequently sure, there are other content or methodology related problems with this topic, which require further detailed analysis. However for the first view it seems that the learning objects of this module do not cover entirely the topic, and there was a considerable difference between teaching and examining level.

Conclusion

Due to relatively low number of enrolled students, the results of the enquiry shall be considered with certain precautions. It should be taken into consideration that volunteers were favourable to E-learning methods by default. In spite of above weaknesses it can be concluded that:

- In the overwhelming majority of cases the students were favourable related to E-learning methods.
- The traditional paper-support book is suggested to be used even with E-learning methods.
- The majority of students prefer the afternoon hours for online meetings.

Beyond the above experiment the main conclusion is that the introduction of e-learning system is a long procedure in an alive and ever changing environment. We may not interrupt or disturb the every-day activities and the customs of students. We have to tune very carefully the teachers for the content development, so that they feel fun to do it.

References:

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