

APPLICATION OF INTERNET FOR COURSE EXAMINATIONS

J. Malmivuo*, J. Nousiainen* and T. Hasu*

* Ragnar Granit Institute, Tampere University of Technology, Tampere, Finland

jaakko.malmivuo@tut.fi

Abstract: We describe the application of Internet in examinations. The paper is based on the experience we have obtained when using this method in connection with courses on bioelectromagnetism. These have been arranged locally in Finland and also abroad in connection to intensive courses.

Introduction

Internet is more and more frequently used in education. Its benefits in distant learning and as a support in classroom learning are already widely acknowledged. In this paper we introduce the use of Internet as a platform for course examinations and assess its benefits and drawbacks.

Materials and Methods

Internet examination was used in connection with a course on Bioelectromagnetism lectured by the author, Professor Jaakko Malmivuo, four times during the past year [1]. Two of these courses were traditional lecturing courses (Tampere [2] and Helsinki [3], Finland) and two were one week intensive courses (Tallinn, Estonia [4], and Prague, Czech Republic [5]). There were arranged two examinations for the traditional courses and one examination for the intensive courses. The examination was realized on the Moodle platform [3, 4].

During the examination the students may use all the material available on the Internet, including the course book [1]. The only thing which is not allowed is communicating with other persons with e-mail or other means. This changes the style of the questions: In ordinary examinations, where the students may not have the material available, it is more tested whether the students remember certain details from the course. In an Internet examination, where all material is at hand, the examination tests whether the students have fully understood the concepts and have the ability to combine various issues and to give rationales for their conclusions. The latter method corresponds more closely with the professional skills what the students need when they move to the working life.

Depending on whether the course is part of the degree studies or supplementary education, the students participate in the examination in different way.

In a degree studies examination the students take the examination in a computer class. Their identity is checked and the supervising assistant controls that the students log on the examination with their own name. It

is also important to have a list of the participating students so that no student outside the classroom participates the controlled examination.

If the students are from several universities, the examination may be arranged in their home university at the same time provided that the aforementioned conditions are ensured.

In supplementary education examination the students may take it anywhere because there is no need to control their identity. This is one important feature of the Internet examination. In supplementary education courses, arranged for instance in connection with international scientific congresses, the students may be from several countries and different cities and universities. Because the examination is usually arranged a couple of weeks after the course, arranging it on the course site would then be impossible for the students.

Results

We have evaluated the features of the Internet examination both on the basis of a questionnaire and free comments given by the students and on the basis of the teachers' experience. The results are very encouraging and support wider use of Internet examination. At the moment we may briefly summarize the results as follows:

Students' opinions:

- It was considered valuable that the students did not need to remember small details but important was to understand the principles. The details were found from the source material.

- The examination session serves as educational session because the issues asked in the examination may be further studied during the session.

- Small, but disturbing detail was the considerable noise in the examination room caused by a large number of students working with computers.

Teachers' opinions:

- It is clearly seen that if the students do not have the sufficient understanding of the issues asked, they can not give logical and clear answers even though all the material is available. Though the students had all the material available, several students did not pass the examinations.

- A practical benefit is that the Word files were much easier to read as individual handwriting of the

students. This was a benefit despite the length of the answers was generally longer than in traditional handwritten answers.

- Important is that the examination may be made on several places simultaneously.

Discussion

Internet examination is a new application of the net. We need more experience to assess its value in the learning process. It is very practical to be used in examinations where the answers are of essay type. More difficulties appear when the examination includes mathematical problems. Then the writing of equations or illustrations to the answer may technically need more time from the student. On the other hand, multiple-choice questions are more easy to realize on the Internet. Such examinations may be even automatically evaluated. Therefore they are very practical for courses with large number of participants.

Because Internet is an open media, the identification of the students in the examination is one problem which must be carefully considered. There exist, however, several solutions for this: The identity of the students is normally checked on the examination site. In addition, the examination may be made to be opened only with a password which is only given on the examination site.

Another issue is: How to control that the students have themselves produced the text and not made a direct copy of material found from the Internet? Including material from other sources is, of course, recommended. But the reference shall be included to the answer. An experienced teacher may quite easily find what text in the answer is produced by the student and what text is copied from other sources. There also exist tools which may be taught to detect the writing style of each student and help in identifying the texts written by him/her.

Conclusions

The students' mobility within the universities during their studies is one important target of the Bologna process. The Internet examination will considerably facilitate this because the examinations do not necessarily have to be made in the university where the course is lectured but the students may make them in their home university as well.

References

- [1] www.tut.fi/~malmivuo/bem/bembook/
- [2] www.rgi.tut.fi/edu/msc/rgi/index.htm
- [3] www.rgi.tut.fi/edu/msc/hut/index.htm
- [4] www.rgi.tut.fi/edu/05tallin/index.htm
- [5] www.rgi.tut.fi/edu/05prague/index.htm