



Project no. 2005-3868 / 001-001 ELE-ELEARN, Education and training Programme



WP6: Report

EVICAB course evaluation

Prepared by:

Ragnar Granit Institute (RGI)
Tampere University of Technology

2007

Report

REPORT TITLE	
EVICAB course evaluation	
WORK PACKAGE	
6. Evaluation and dissemination of results	
RESPONSIBLE(S)	
Biomedical Engineering Institute, Kaunas University of Technology (KUT), Department of Biomedical Engineering, Linköping University (LiU)	
ABSTRACT	
<p>This document presents preliminary evaluation of the EVICAB course – Bioelectromagnetism. The course was prepared for traditional classroom environment and for virtual learning environment at Tampere University of Technology, autumn 2007. 18 students provided their feedbacks.</p> <p>The questionnaire form with 12 questions was prepared. Students were asked to evaluate educational materials (e.g., video lectures), provide comments in a free format. In average, the usefulness, technical quality, and pedagogical value of the video lectures were evaluated very well (4 out of 5).</p> <p>It was possible to compare final examination results of the students who spent most of their study time for traditional classroom activities and for virtual learning activities. The results were quite similar. It could be assumed that the virtual environment equals to the traditional classroom.</p>	
KEYWORDS	
EVICAB course, Feedback, Evaluation	
AUTHOR NAME(S)	
RGI	
DATE	CLASSIFICATION
	Public
EC EDUCATION AND TRAINING	
<p>Project: European Virtual Campus for Biomedical Engineering (EVICAB)</p> <p>Project no. 2005-3868 / 001-001 ELE-ELEARN, Education and training Programme</p>	

Introduction

18 students gave feedback on Bioelectromagnetism course which they took at Tampere University of Technology, autumn 2007. The course was prepared for the traditional classroom and for the virtual learning environment.

Students had different international educational backgrounds (Fig.1).

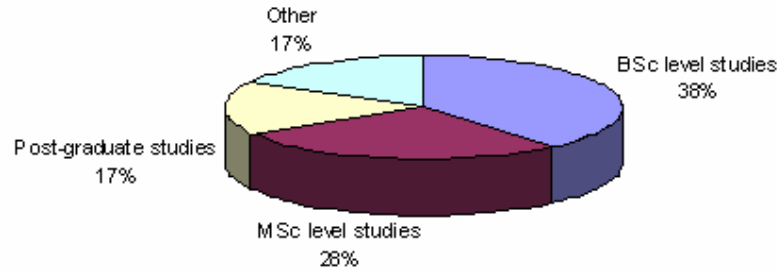


Fig.1. Educational background of the students who participated in Bioelectromagnetism course. Amount of students is defined in %.

There were 12 questions in the feedback form. Question 1 asked students to define their course study time in %. Questions 2, 4, 5, 6 and 9 asked to evaluate educational materials in the range from 1 to 5, where 1 was not very useful and 5 was very useful. Questions 3, 10 and 11 had three possible choices. Students were able to provide comments in a free format for Questions 7, 8 and 12.

Questions

Q1. How much of your study time did you spend for (define in %):

- attending classroom lectures
- attending classroom exercises
- studying video lectures
- studying e-Book
- making virtual assignments in Moodle

Q2. How useful you evaluate the following materials, evaluate in scale from 1 (not very useful) to 5 (very useful):

- classroom lectures
- classroom exercises
- video lectures
- e-Book
- virtual assignments

Q3. Which type of learning would you prefer as the only learning method? Why?

- traditional classroom
- virtual class

- other, what

Q4. What do you expect from the virtual course? How useful you consider the following items?

- learning material in video format
- downloadable material (e.g., for iPods)
- instructions in written form
- instructions in audio format
- animations
- interactive quizzes
- self assessing tests
- subtitles in your native language
- others, what

Q5. How would you evaluate the technical quality of the video lectures?

- audio quality
- video quality
- presentation

Q6. How would you evaluate the pedagogical value of the video lectures?

Q7. What improvements would you add to the video lectures as a learning tool?

Q8. What improvements would you add to the e-Book as a learning tool?

Q9. How do you like the open book Internet examination? What was good or bad?

Q10. Are you willing to communicate with your teacher/ instructor and class participants via Internet?

- yes
- no (why?)
- sometimes

Q11. Is English a suitable language for virtual learning?

- yes
- yes, but I prefer some help in my native language, too (like subtitles of the videos)
- no

Q12. What other virtual courses have you taken/ would like to take? (Why?)

Any other comments on virtual material of the course?

Results

The course study time, evaluation of usefulness of the different course materials, preferences for the learning methods, expectations of the virtual course, technical and pedagogical evaluation of the video lectures and e-Book, evaluation of open book Internet exam, willingness to communicate with teachers/ instructors and peers, suitability of the English language for virtual learning were expressed in numerical values and presented in figures (from Fig. 2 to Fig. 16).

Students' comments about learning methods, improvements on video lectures and e-Book, other experience of taking virtual courses and motivation to take ones are listed below.

A1. The course study time (in %)

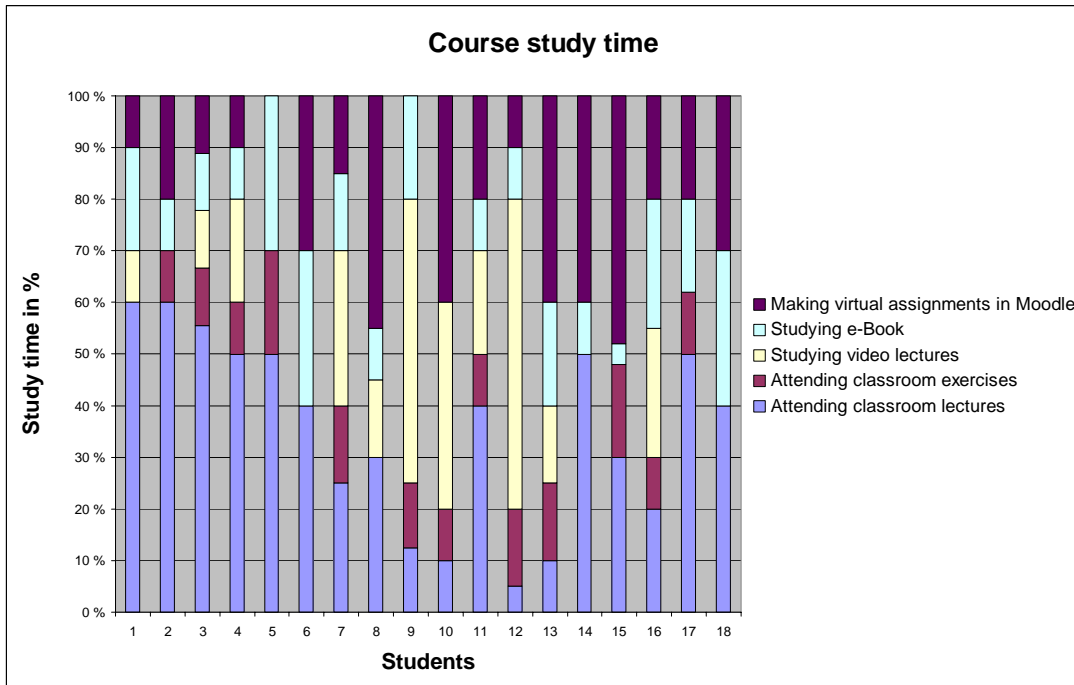


Fig. 2. Course study time of each student

The course study time in average is shown in Fig. 3. The average student spent 35% of his/ her time for attending classroom lectures; 23% - for making virtual assignments in Moodle; 17% - for studying video lectures, 16% - for studying e-Book, 9% - for attending classroom exercises.

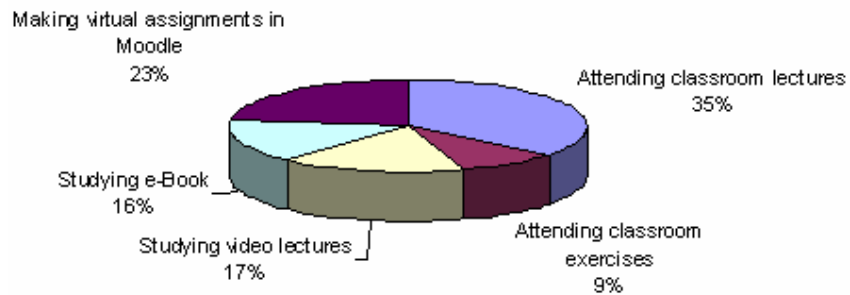


Fig.3. Time (in %) spent by average student for different learning methods

A2. Evaluation of usefulness of the material in the scale from 1 to 5.

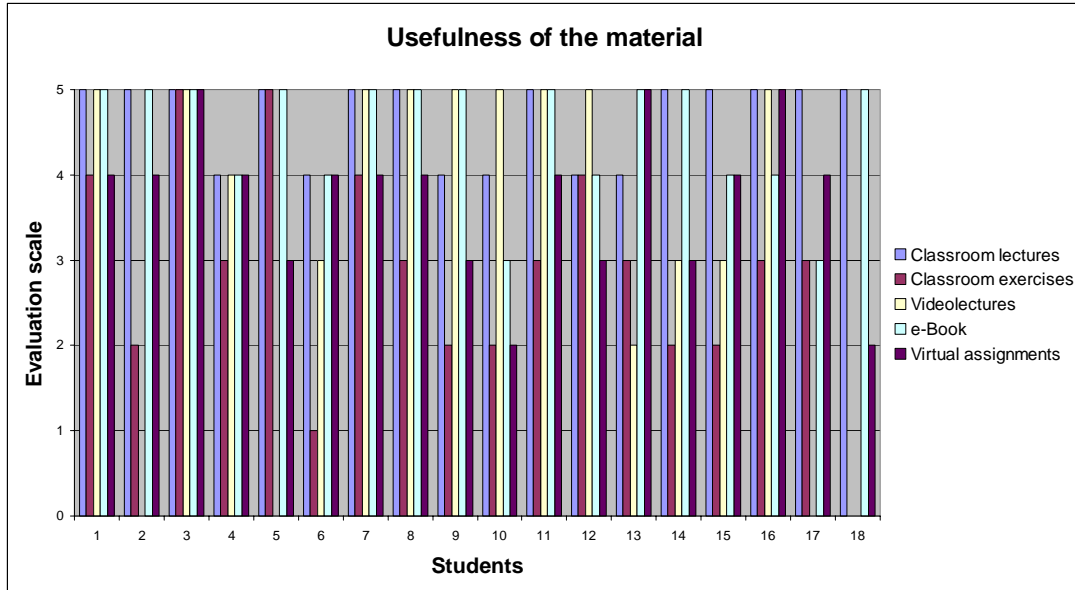


Fig.4. Usefulness of material by each student

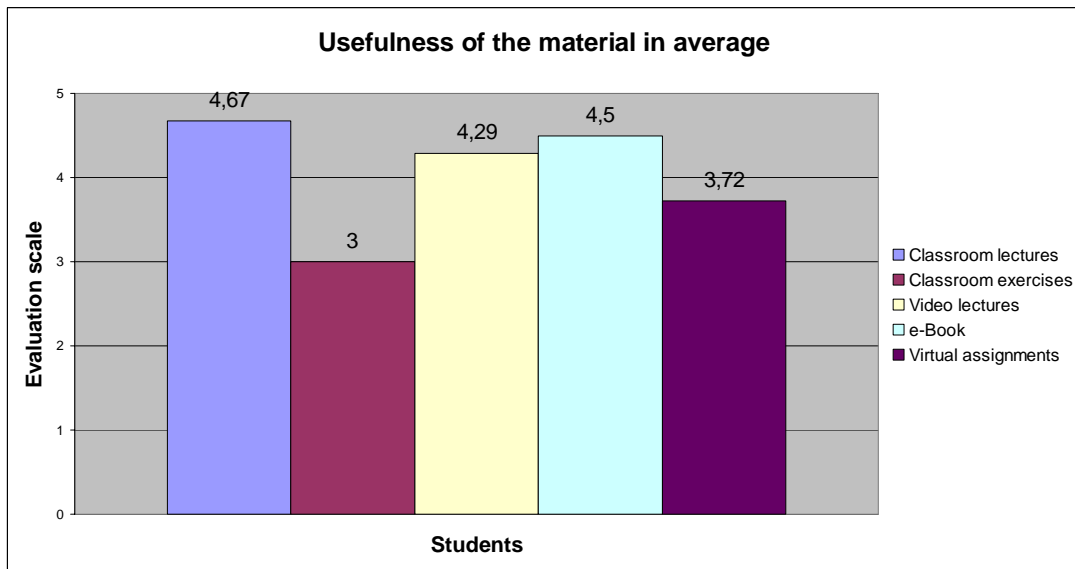


Fig.5. Usefulness of material in average

A3. The amount of students (in %) who preferred traditional, virtual or other learning method (e.g., blended) as the only learning method is in Fig.6.

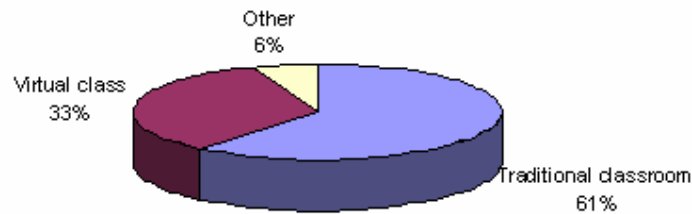


Fig.6. Preference of learning method

Comments by students:

- Traditional class - better interaction
- Teacher was very good
- Traditional class is easier to understand
- Based on my experience traditional class is the best learning method
- Virtual class offers the possibility to revise concept
- Virtual class can be attended at any time. This is especially important for graduate students
- Virtual class – we can use it any place any time
- I would be interested to hear feedback from the assignment in person. This way it is possible to clarify all the details that I missed in the exercise.
- The lecturer explained things so well (in traditional class). It was also possible to ask if something is not clear.
- Traditional class with the support of video lectures.
- If the lecturer is good it is easier and more interesting to learn in the lectures.

A4. Expectations of the virtual course

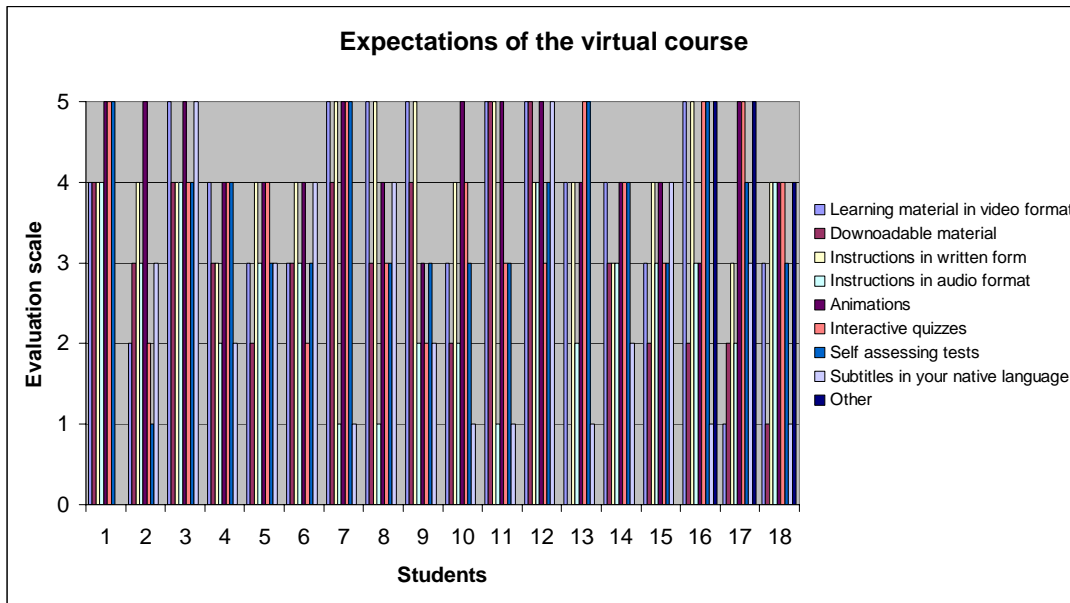


Fig.7. Expectations of the virtual course by each student

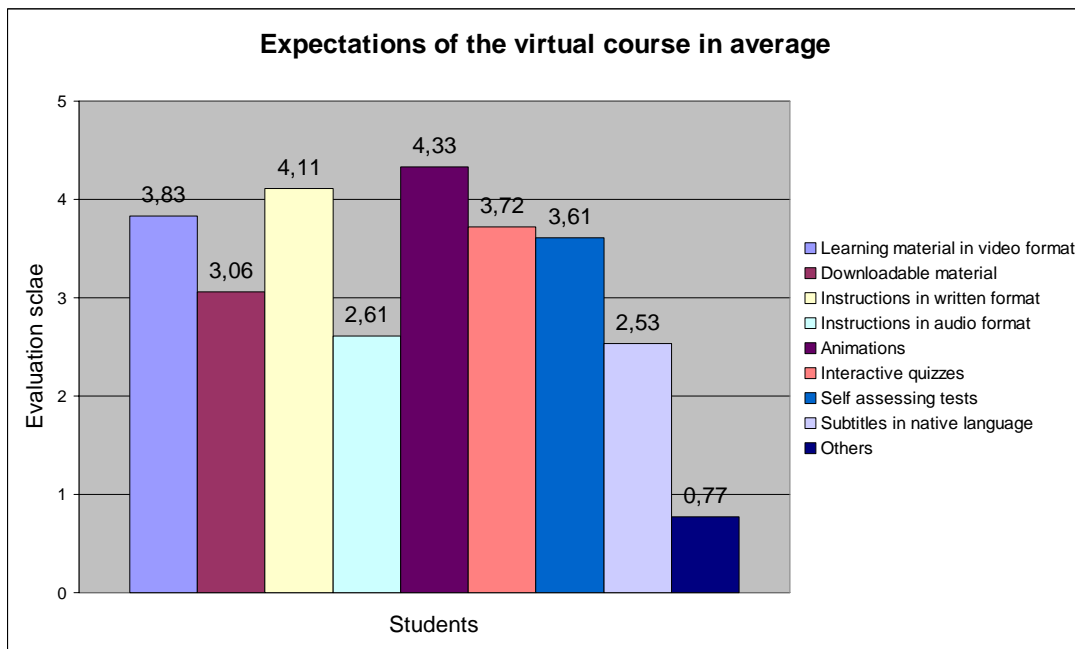


Fig.8. Expectations of the virtual course in average

A5. Evaluation of the technical quality of the video lectures

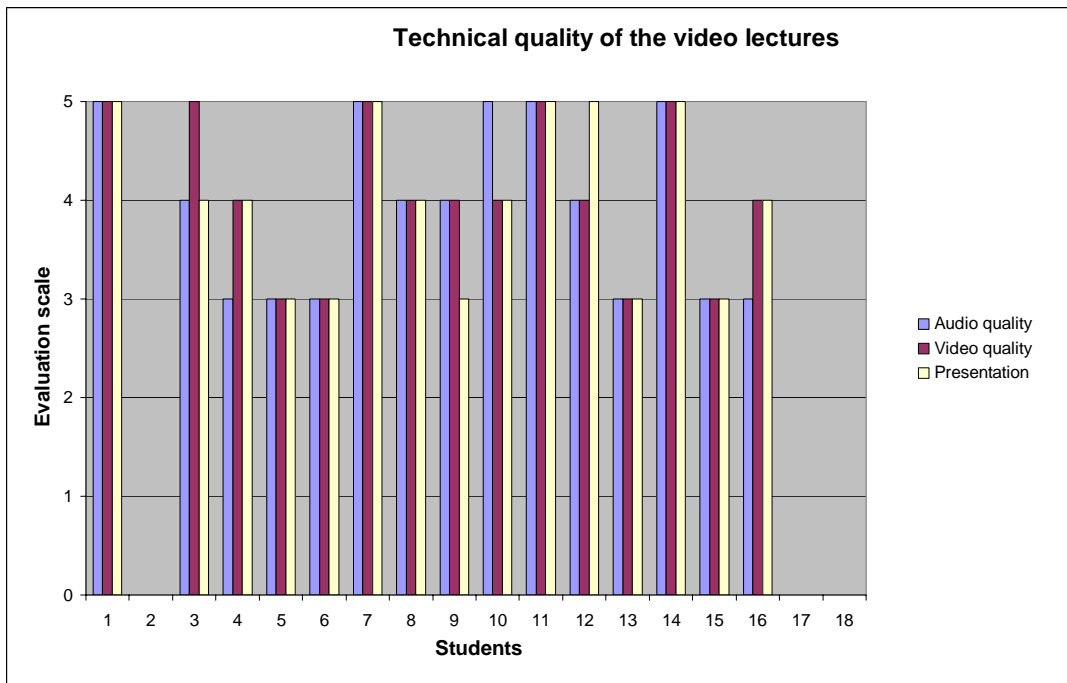


Fig.9. Technical quality of video lectures evaluated by each student

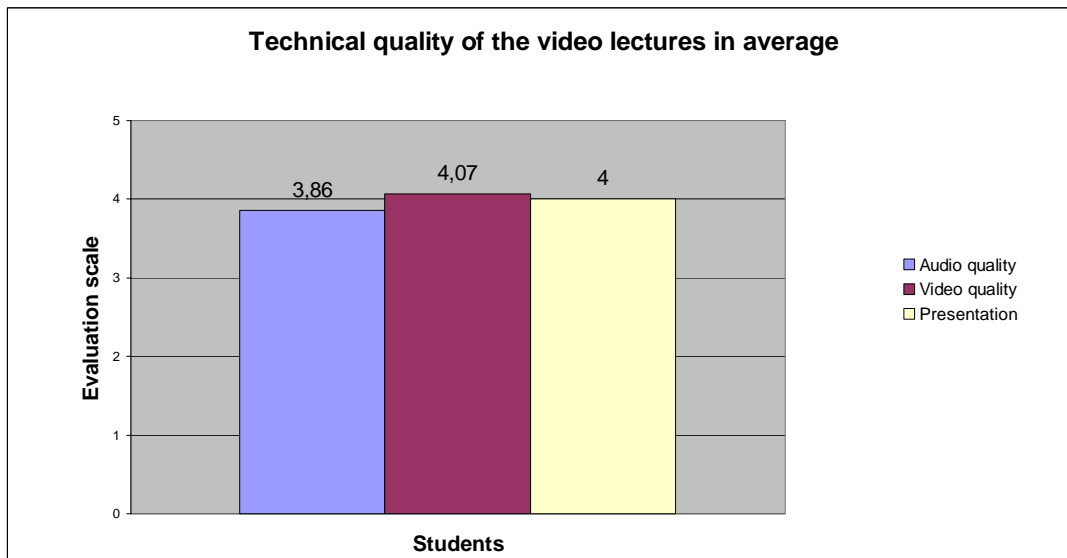


Fig.10. Technical quality of video lectures in average

A6. Pedagogical value of the video lectures

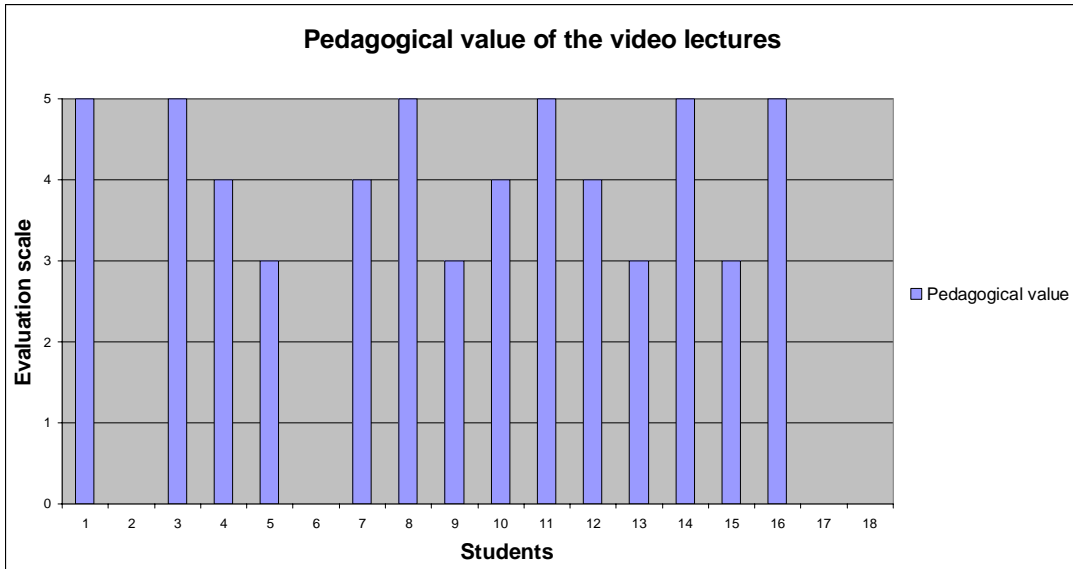


Fig.11. Pedagogical value of the video lectures by each student

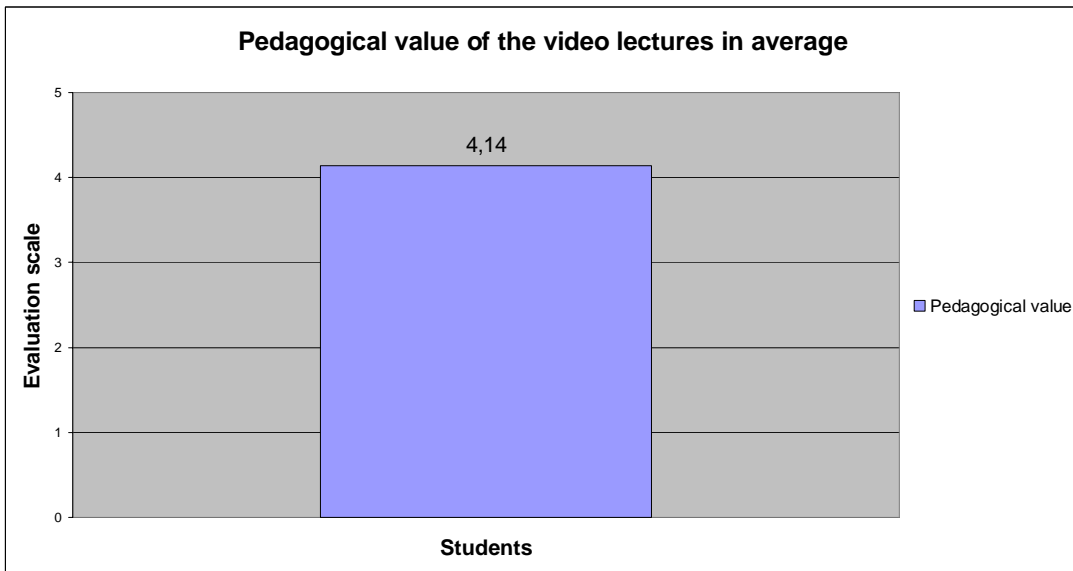


Fig.12. Pedagogical value of the video lectures in average

A7. Improvements to the video lectures as for the learning tool.

Comments by students:

- None , it is perfect the way it is
- I think they are good already
- More additional sound like background music between lectures, more animation

- It is good like that
- Quite perfect as they are. The presentation was exactly the same as in live lectures. Very good.
- More detailed index of videos
- Good quality and control
- I think there must be an option to download video lectures
- Maybe subtitles, not necessary
- Maybe more informative text

A8. Improvements to the e-Book as for the learning tool.

Comments by students:

- Better graphics and animation
- It was just simple and well working. In some points the links are not easy.
- I don't know, I think it is good already.
- Separate theoretical and practical one.
- Some animations.
- It is good like that.
- Page numbering that corresponds with the subject index.
- PDF form should be better possibilities to download and print.
- Format
- Better searching machine which is able to link things together.
- It would be nice to have a possibility to acquire a printed version.
- For me it was more difficult to understand written English then spoken. Text was somehow redundant.
- None, good one.

A9. Evaluation of the open book Internet exam

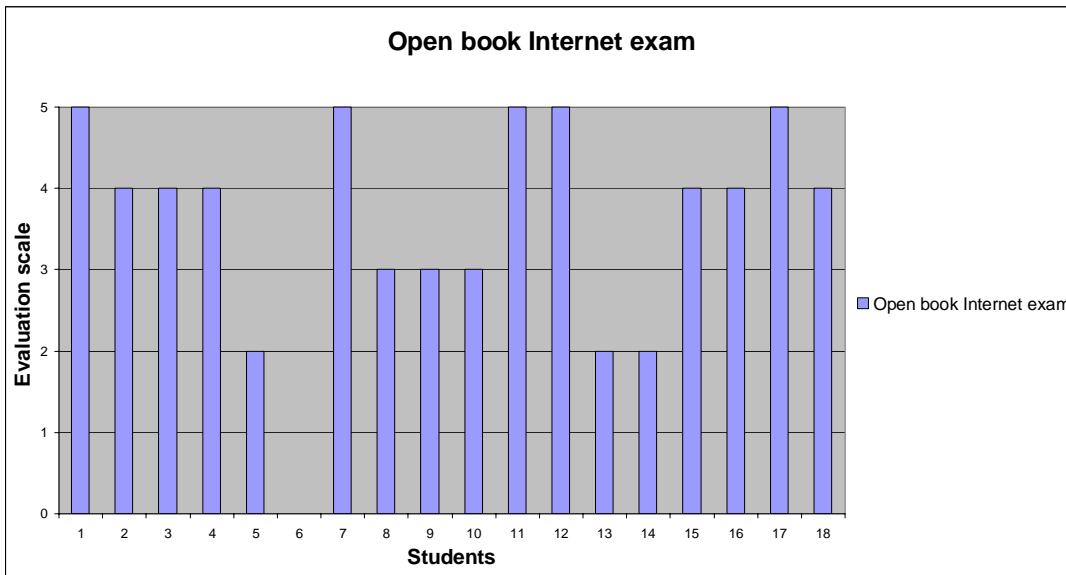


Fig.13. Evaluation of the open book Internet exam by each student

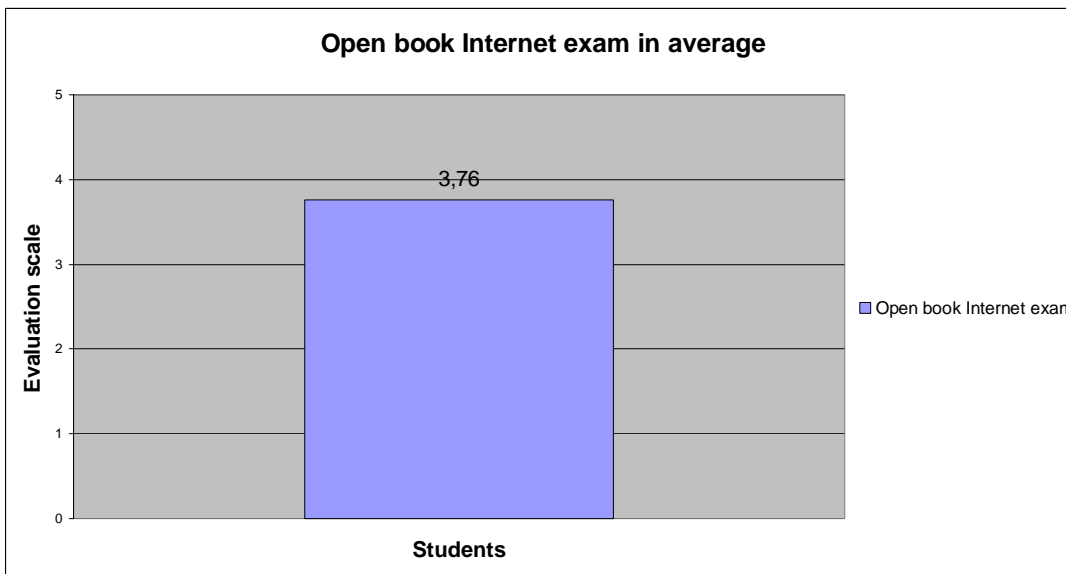


Fig.14. Evaluation of the open book Internet exam in average

Comments by the students:

- I just seem to do better in closed material exam.
- Too general topics.
- Information is there, but easily exam becomes too difficult
- I think I would get better results in traditional exam
- Measures understanding, not how well you memorize things. Bad that always running out of time.

A10. Amount of students (in %) who were willing, sometimes willing or not willing to communicate with their teacher/ instructor and peers via the Internet is shown in Fig. 15.

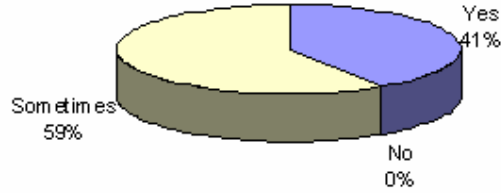


Fig.15 Willingness to communicate with teacher/ instructor and peers via the internet

A11. Amount of students (in %) who thought that the English language was suitable or not for the virtual learning is shown in Fig.16.



Fig.16.Suitability of English for the virtual learning

A12. Any taken or planned to be taken virtual course:

Comments by the students:

- None
- Haven't taken any.
- It would be really useful to have all the course lectures in video format.
- One on the environmental issues in electrical engineering. This one was much better.
- Some math course.
- No other.
- Are there others? Closest thing we had was medical imaging methods with open book test exam and virtual assignments. Would like to take more, if possible.

Other comments on virtual material of the course:

Comments by the students:

- Would like content of the course in my native language
- I found it very useful to read the e-Book and watch the lectures, when I could not take part in some lectures.
- Very useful, a great method
- Good video material
- Video conferencing is good option to talk with lecturer on real time basis. Not always but sometimes this is organized.
- While watching video lectures it would be very helpful to check some where all the special words and basic idea of the phenomena or equation which the professor mentioned in the videos.
- All the material was good I think. If there were no traditional lectures I would have used virtual material more.
- It would be nice to improve the compatibility of video lectures to other players than just certain version. Also it would be nice know answers of interactive quizzes. Most important: don't remove the video lectures -> they are a must!
- Fortunately you had professor Malmivuo's lectures. If it would be only internet course with no live lectures – I would not participate (was not able to see video lectures due to some laptop problems)

Conclusions

1. Most of their course study time students spent for attending classroom lectures.
2. The most useful learning material was classroom lecture, then e-Book, and video lecture.
3. Most of the students (61%) preferred traditional classroom as the only learning method.
4. Mostly what students expected from the virtual course were (1) animations, (2) instructions in written format and, (3) learning materials in video format.
5. Technical quality of the video lectures was evaluated by 4 (out of 5).
6. Pedagogical value of the video lectures was evaluated by 4 (out of 5).
7. Students provided ideas for improving video lectures (see A7). Half of the students thought that video lectures are good enough as they are.
8. Students provided ideas for improving e-Book (see A8).
9. Open book Internet exam was evaluated by 3.76 (out of 5).
10. Most of the students (59 %) were sometimes willing to communicate with their teacher/ instructor and peers via the Internet. Nobody was totally against the communication via the Internet.
11. Most of the students (65%) thought that English was suitable for the virtual learning. Some (35%) still would prefer help in native language (e.g., subtitles in videos).
12. Only 2 students reported that they had taken some other virtual courses before.
13. In general comments students expressed interest in virtual courses.

Comment

It was important to separate and compare the results of the students who spend most of their time for traditional learning (i.e., taking classroom lectures) and for virtual learning.

The separation was done according to the following graph:

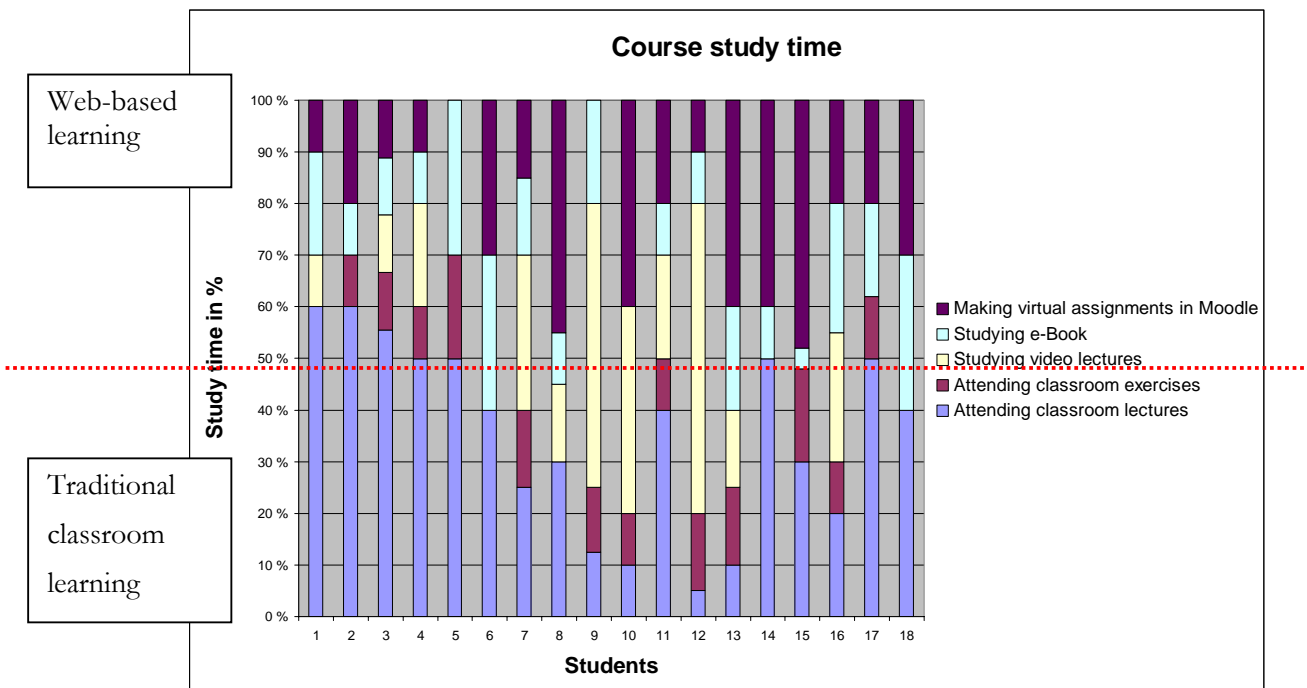


Fig 17. Separating students who spent more than half of their study time for classroom and virtual learning.

The students were divided into 2 groups: 8 students spent half of their time (~50%) for traditional classroom activities (T – group for traditional classroom) and 10 students spent half of their time (~50%) for virtual learning (E –group for e-learning).

The students were able voluntarily to present their names in this questionnaire. Most of them wrote their names (14 student = 78%). This allowed comparing final exam results of those 2 groups.

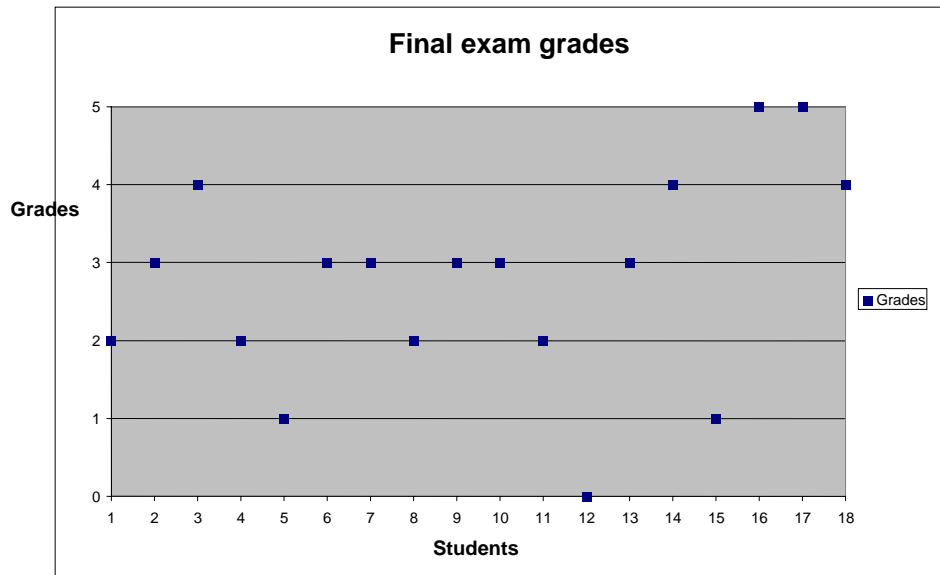


Fig 18. Final exam grades of all students

Average grade for the exam was 2.78, for T group was 2.87, and for E group was 2.7.

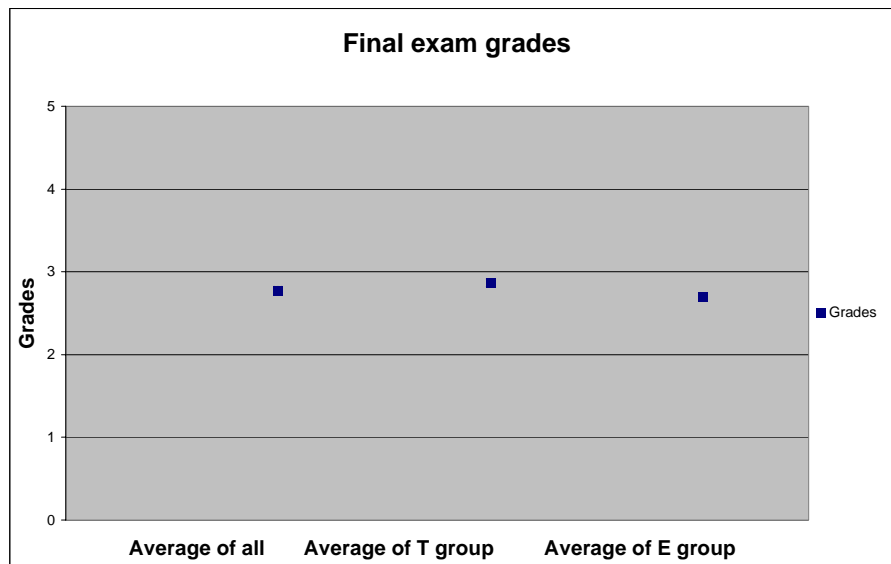


Fig.19. Average final exam results

The results showed that independent if the student participated in the traditional class or used virtual environment, learning results were quite similar.

It can be considered that virtual environment can be equally good to traditional classroom environment.