Online IT Courses for Students in Higher Education in Croatia
CARNet Pilot Project

This pilot project of online ICT courses for Croatian higher education students was initiated by the project team of CARNet's educational center Edupoint in cooperation with the Educational Institution Algebra and psychologist Jelena Vojvoda.

The resources used in this paper were reports of the Algebra and the psychologist Jelena Vojvoda, as well as the project documentation put together by Mirta Janeš, member of the project team.

1. Objectives

The objectives of the project were as follows:

- Detect the students' attitudes towards e-learning
- Detect the students' learning motivation, values and needs
- Test the appropriateness of specific courses for students

Based on the results of the project, the project team will draft:

- Recommendations for new e-learning projects as well as promotion activities
- Recommendations for potential adjustment of specific courses in line with the participants' evaluations and results

2. Courses

The participants took the following online courses:

- Basic Internet Services: The Basics of Internet and WWW (Microsoft Internet Explorer), Internet Communications – e-mail (Microsoft Outlook) (hereafter: Internet)
- Development of Web animations using Macromedia Flash (hereafter: Flash)

3. Participants

The participants were chosen primarily from the student population.

Most participants had never taken an online course.

The male-female ratio was equal.

The participants were between 19 and 29 years old, the majority of them between 24-27 (about 60%). About 50% of the participants were higher year students (4^{th}-6^{th} year of studies, finalists or postgraduate students).

The participants were students of diverse subjects, with an equal share of students of natural sciences, engineering and social studies/humanities.

A total of 51 participants were divided into four groups: there were two groups for each course, one of which was provided with a highly involved online tutor (active

tutor), whereas the other received only minimal tutor support (passive tutor). The differences between the groups will be described in detail later on.

Course	Applied Participants
Internet – active tutor	12
Internet – passive tutor	11
Flash – active tutor	14
Flash – passive tutor	14
Total	**51**

Table 1 Distribution of participants into groups

4. Project phases

- Defining the list of course participants and tutors (May 12-21, 2004)
- Introductory lecture (May 25, 2004)
- Course (May 26-July 14, 2004)
- Evaluation (July 15 - August 19, 2004)

5. Defining the list of course participants and tutors

This phase consisted in choosing the course participants and tutors and giving them basic information about the project.

6. Introductory lecture

The introductory lecture provided the participants with basic information on e-learning and introduced them to LMS used in this project. In addition, they were informed about the role of the online tutor and technical support, and given user accounts, LMS usage instructions and a printed manual of the course.

The introductory lecture was organised only for the active tutors' groups. It was given by members of the Algebra team.

7. Course

The course consisted of an introductory test, lessons, exercises for each lesson and a final project (only in the "Flash" course").

The LMS Lotus Learning Space 5 was used in the course. The lessons were accompanied by a voiceover – the entire text was read out loud by a speaker and it was not possible to fast forward or turn off the recording. During the exercises, every action done by the students was strictly guided by LMS.

The participants were expected to score average of at least 50% of the points in all exercises of the course. "Flash" course participants also had to submit a successful project at the end of the course.

The active tutors also supported their groups through the chat and forum.

All groups had access to technical support by telephone, as well as handbooks on LMS and handbook of their respective course.

The active tutors sent regular e-mails to their groups, whereas the passive tutors only sent an introductory e-mail with their contact information in case the participants needed assistance, and a closing e-mail at the end of the course.

Course	Active tutor	Passive tutor	Total
Internet	10	6	16
Flash	14	7	21
Total	**24**	**13**	**37**

Table 2 Number of group e-mails sent to participants by their tutors

The active tutors sent an e-mail to their groups on the very first day of the course. At the very beginning they sent e-mails to the participants every two or three days on average, expanding the interval to a whole week as the course progressed, and increasing the frequency of e-mails to one every two or three days again as the course drew to its close. The tutors addressed the participants more frequently earlier in the courses in order to motivate them and inform them about the courses: introduce them to e-learning and the online course in question, present the role of the tutor, provide the forum and chat time-slots as well as encourage the participants to use them, etc. The communication between the tutors and participants was particularly lively near the end of the courses, especially the “Flash” due to the final project that the participants had to submit to their tutors.

Course	Number of e-mails	Number of participants
Internet	30	7
Flash	42	12
Total	**72**	**19**

Table 3 Number of e-mails sent by participants to their tutors

The table 3 shows that the number of e-mails sent by participants to their tutors was fairly small, all groups included.

The actively tutored participants sent more e-mails to their tutors than the passively tutored ones in the “Flash” course, whereas the "Internet" course exhibited the same number of e-mails from both groups.

Most e-mails were inquiries concerning technical problems, despite the fact that Algebra provided a special technical support telephone line for such cases. A large

number of e-mails referred to problems with user accounts, along with many inquiries about extending the deadlines of particular phases of the course.

Course	Number of topics	Number of answers	Number of visits
Internet	3	15	191
Flash	5	21	212
Total	**8**	**36**	**403**

Table 4 Forum statistics

The forum was slightly more popular than the chat, although the number of mere visitors at the forum discussions greatly exceeded the number of participants that actually participated in the discussions, providing either questions or answers.

The chat time-slot was Mondays, Wednesdays and Thursdays from noon to 1 p.m. throughout the course. However, only 25% of all participants used this communication channel.

8. Evaluation

The evaluation methods used were as follows:

- The results achieved by the participants
- A questionnaire filled out by the participants
- Focus groups with participants
- A semi-structured interview with the tutors of online courses.

8.1. The results achieved by the participants

8.1.1. Course completion

Course	Registrated participants	Participants that completed the course	Percentage of participants that completed the course
Internet – active tutor	12	3	25%
Internet – passive tutor	11	5	46%
Flash – active tutor	14	9	64%
Flash – passive tutor	14	8	57%
Total	**51**	**25**	**49%**

Table 5 Course completion

The participants that successfully solved 50% of the exercises were considered to have completed the course.

As the table 5 shows, as many as 49% of the participants did not complete the course. The percentage of course completion was larger in the "Flash" course, while the tutors role in the course had no impact on course completion whatsoever.

8.1.2. Time spent studying (per course)

	Internet			Flash			Total
	Active tutor	**Passive tutor**	**Total**	**Active tutor**	**Passive tutor**	**Total**	
Time spent - range (in hours)	1:36 - 6:30	0:39 - 6:53	**0:39 - 6:53**	0:04 - 16:59	0:11 - 5:06	**0:04 - 16:59**	**0:06 - 16:59**
Average time spent (in hours)	4:46	3:24	**3:54**	4:11	2:41	**3:28**	**3:37**

Table 6 Time spent studying per course

As the table 6 shows, the actively tutored participants spent more time completing the course.

8.1.3. Achieved results

	Internet			Flash			Total
	Active tutor	**Passive tutor**	**Total**	**Active tutor**	**Passive tutor**	**Total**	
Achieved results - range (%)	95,25 - 98,00	54,37 - 96,50	**54,37 - 98,00**	58,33 - 96,50	54,16 - 95,83	**54,16 - 96,50**	**54,16 - 98,00**
Achieved results - average (%)	97	77	**84**	81	84	**83**	**83**

Table 7 Achieved results

Actively tutored participants achieved better results in the "Internet" course, whereas the "Flash" course-takers exhibited slightly better results with a passive tutor.

8.2. Questionnaire for course participants

At the end of the course, all participants were asked to fill out an online questionnaire. Only 13 participants eventually did, eight of which were actively tutored students, and five came from groups with passive tutors.

Question	Rating	
	Active tutor	Passive tutor
The course content proved satisfactory to my needs?	3,38	3,8
The order of the lessons was logical?	4,25	4,8
The provided examples helped me understand the possibilities of using a tool?	4,25	4
Interactive exercises were helpful in getting through the program?	4,12	3,6
The tests were a good estimate of my knowledge of a particular unit?	2,38	3,4
Unit: Rating the course content	**3,68**	**3,92**
The recorded speech was understandable?	4,62	5
The exercises were clear and precise?	3,62	4,6
The tests were clear and precise?	3,62	4,6
The content navigation was simple?	3,62	4,8
Overall impression of the course:	3,62	4,25
Unit: Satisfaction with the quality of the e-learning course	**3,82**	**4,65**
Rate the amount of knowledge and skills you acquired in the course?	3	3,6
To what extent was this course a lucrative investment for your personal development?	3,62	4
Your estimate of the extent to which you will be able to use the knowledge and skills acquired in the course in your work/personal life?	3,12	3,6
Your estimate of the extent to which this course will improve your working skills?	3,12	3,4
Unit: The impact on working skills and efficiency	**3,22**	**3,65**
Rating of the replacement of classic study methods with e-learning	3,75	3,8
Interest in taking further e-learning seminars	3,75	4,2
Forum usage – active tutors' groups only	62,50%	
Chat usage – active tutors' groups only	25%	
Printed manuals usage – active tutors' groups only	75%	

Pdf manuals usage – passive tutors' groups only		60%
Use of tutor support	62,50%	20%
Use of technical support (phone)	25%	20%
Estimate of necessity of introductory lecture – active tutors' groups only	4,38	
Estimate of forum necessity – active tutors' groups only	4,38	
Estimate of chat necessity – active tutors' groups only	3,5	
Estimate of necessity of printed manuals – active tutors' groups only	3,88	
Estimate of pdf manuals necessity – passive tutors' groups only		4
Estimate of tutor necessity	4,38	3,4
Estimate of necessity of telephone technical support	3,38	3,4

Table 8 Questionnaire for course participants, provided by Algebra

An interesting thing to notice is the fact that passively tutored students almost always rated various aspects of the course higher.

8.3. Semi-structured interview with the tutors

A semi-structured interview was held with the tutors in order to assess their attitudes on various aspects of the courses.

The tutors thought that a course concept such as was implemented reduced the role of the tutor to mere backup for the students. They also thought that the testing model employed at the end of every lesson reduced the students' need to seek help from the tutor due to simplicity, a high level of guidance and the possibility of endless repetition of the same task.

As for the lack of use of the forum and chat for student-tutor and student-student communication, the tutors identified the main reasons in the very concept of the courses, in the organisational and technical difficulties that the participants encountered, but also in the lack of the "Internet" participants' familiarity with the concept and use of these services.

In terms of the communication between the tutors and the students, the "Internet" course tutor pointed out the key issue of the abilities and knowledge of students necessary for e-mail communication.

The task of producing the final project boosted the communication between the students and their tutor in the "Flash" course, which is why the tutors reckon the final paper a key element in the development of communication between tutors and students, as well as among students themselves.

The tutors' estimate is that all groups were sufficiently informed about the role of the tutor, but they think that the introductory lecture ought to play a bigger part in presenting the tutors and familiarising the students with their role, as well as familiarising students with each other.

The tutors pointed out that they had expected a much more interactive cooperation between the tutors and the participants, as well as among the participants themselves. Their opinion is that informing the students about e-learning and its potential is tremendously important in creating the preconditions for the formation of highly motivated groups of online course participants.

8.4. Focus groups (group discussions)

Three group discussions were held with a total of twenty participants, in which the moderator asked the participants open-ended questions and encouraged them to engage in interactive discussion.

All focus groups met in Zagreb, although one of them was a videoconference with participants from Zagreb, Osijek and Rijeka. The discussions lasted for 90 minutes on average. All course participants were asked to take part in the group discussions, which was how the focus groups participants were assembled. All discussions took place in July 2004.

8.4.1. The terms "learning" and "e-learning"

As opposed to the term "learning", which caused divided opinions and associations among the participants in group discussions, the term "e-learning" was as a rule associated only with positive concepts of something new, fun and dynamic. Negative associations were rare and mostly concerned technology (bugs, viruses) and the lack of interpersonal communication.

The views that the participants expressed on different modes of learning were also confirmed by employing a personification technique through which the participants expressed primarily their emotional, but also cognitive and conative attitudes. The participants were asked to imagine the two modes of learning as real persons and describe them.

The classic mode of learning (ex cathedra lecture) was described as follows:

"a boring, run-of-the-mill person"

"a frustrated person"

"an uncreative, monotonous and slow person"

Internet learning was described as follows:

"independent, knows what he/she wants"

"resourceful"

"innovative, modern, young"

8.4.2. The term "online tutor"

Some participants were curious about the way their online tutor looked, some thought that such a relationship was highly impersonal, while others associated the term with positive concepts of a better communication with an online tutor than a classic tutor.

The most important elements of a tutor's job are helping the students learn and an adequate form of addressing the students, whereas the frequency of address and encouragement to a more active participation carry less weight.

The participants reckoned that the role of the tutor in courses such as these was not too important because there was not enough creative work or problem solving. The role of the tutor would increase if exercises were to be introduced after each lesson.

All participants thought that the tutor was necessary to the course and did not want to see his or her presence cancelled. The reasons ranged from rational (the benefits of having someone to turn to in case of technical issues, etc.) to emotional (a feeling of security). The lack of participants' self-discipline was also broached because the presence of a tutor reduced a great deal of it.

8.4.3. Advantages of online courses

The participants recognised the following advantages of online courses:

- Freedom in terms of time and space
- Unlimited opportunity for revision of any part of the course
- Interesting
- The forum and chat as means of communication
- Do not require a minimum number of participants in order to take place (as in classic courses), which is a problem with specific programs
- Free of charge

8.4.4. Drawbacks of online courses

- No human contact
- Not enough communication
- No difference of opinion
- No external control or discipline to study
- No possibility to skip any section of the course (it was possible to skip sections in the online course, but some students failed to recognise it)
- Strict guidance of students throughout the course
- Only one way of performing an activity allowed
- Slowness of the recording with no fast forward option
- Monotonous voice
- Slow mouse cursor
- Technical problems
- Expensive Internet access.

Only a small number of students contacted their tutors when faced with a difficulty because they did not see it as a big problem, while bugs were mostly accepted as growing pains of the new online course.

8.4.5. The introductory lecture, chat and forum

Most participants of the focus groups thought the introductory lecture practically unnecessary, since all the information could easily be sent by e-mail.

Some participants thought that an introductory lecture would be a good opportunity for the students and tutors to meet, which would facilitate further communication.

Among the reasons for not using chat, the participants mostly stated that they had no need to communicate with the other participants. Other reasons included the

unsuitable time-slot of the chat (Mondays, Wednesdays and Thursdays from noon to 1 p.m.) and technical problems with logging in.

The opinion of most participants was that the chat and forum were necessary for an online course, but only as an optional feature. They also preferred the forum because it had no time-limit.

8.4.6. Suggestions for improvement

The participants suggested the following improvements to the online courses:

- More communication
- More tests and exercises
- A more detailed printed handbook
- A faster speaking voice on the recording, also with the fast forward option

Some participants said that an ideal way of learning would involve getting through the theory the old-fashioned way (through lectures), followed by an online practice section of the course.