E-learning in Teaching of Microeconomics

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Abstract: - Distance learning is a very powerful and a cheap mean, but poorly used. Microeconomics, with its graphical representations and a strong need for the use of the advanced software is a fertile field for its implementation, in a several ways. Several authors offer a variety of the ways to use and implement the eLearning systems. We analyzed several cases in which distance learning offers even greater possibilities than the traditional ones, through the use of the illustrative graphical representations, thoroughly explained steps in modelling deductions and connecting the theory and practice through the use of the statistical and econometrical programmes and methods. There are many fields in which the lectures could be improved, while decreasing the teaching costs, and increasing the comprehension of the students.

Key-Words: - Microeconomics, 3d graphs, e-learning, education, distant learning, multimedia materials, interactive teaching

1 Introduction

In the contemporary way of life, which is determined by a large number of dynamic technological changes, education is taking one of the most important positions in everyone's life. Human intellectual capital is becoming the dominant factor for any job. This is why there is an intention to invest more and more time and money in education. The main goal of that is to increase the welfare of every individual, but also of the society in general.[3]

The process of globalization emphasizes the need of setting common goals of the economic and social development in the world. Education assimilates new dimensions. The logical question "Is education quality enough to follow the progress of technological development?" can not be solved with a simple answer.

Education today is not any more a process in which only young people are involved. It is not something that has its clear beginning and the end. The contemporary problem of education must be seen from the view of the so called life-long education, or life-long learning process. The needs for a permanent education are not arguable. They are explained by matching the human capabilities acquired through education and the demands on the labour market.

One of the most important conditions in every business is to minimize the costs. Education as a traditional process is very expensive. On the other hand, it is not achievable to everyone. Because of these two reasons, last few years completely new concept of education is becoming extremely popular: e-learning.

E-learning is a completely different way of education.

With the help of information technology, the communication between the lecturer and the student can be virtual. The lecturer can teach, and at the same time the student can learn, but they do not necessarily have to see each other. This saves money – everyone is doing his job from his computer, and there is no need to invest in a learning room. The time is saved as well– there is a possibility to choose what to do and when to do this.

In this paper we seek way how to use e-learning for successful teaching of the microeconomics. We will try to show how e-learning leads a student to the understanding of the terms which seemed difficult when presented in the classroom, but become quite straightforward when taught using advanced technology.

Even though it might be expensive to conduct a teaching via Internet, the students of the economics and business in Croatia have at least a basic information skills after passing the informatics exams, and possess some sort of the personal computer, if not directly, then in the nearby library or at a friends house. At the same time, they use their space, which does have to be provided by the higher education institution.

Furthermore, the investment in the computer equipment and computer knowledge would increase students' computer skills, which could then be used in the other fields, and finally increase the chances of the fresh graduate to find a desired job.

E-learning decreases the living costs of the students too, since they can remain at their home, not paying the rent [1]. It also helps them to continue their education after the graduation, after they get a job and do not have spare time to attend the lectures. Therefore E-learning is not only crossing the space limits, but it crosses the time spaces as well.

2 Literature Overview

Sadler-Smith in his holistic research described learning methods. He said that learning methods can be grouped into at least three categories: (1) autonomous: guided reading; programmed instruction (distance learning, computer based learning), (2) collaborative: games/simulations; projects; case studies; experiential; role playing and (3) dependent: lecture; seminar. [4]

Fry tried to demonstrate how digital technologies are affecting the organisational learning process, drawing on material presented to an industry forum held by the University of Technology in Sydney (UTS) with the specific aim of bringing together users and providers of e-learning to explore a range of issues around e-learning markets and provision. [5]

Crucial issues in shaping organisational e-learning future will be the quality of technological delivery and developing effective learning pedagogies for a variety of educational and strategic objectives. [5]

Organisations now seek metrics for evaluating e-learning and quality benchmarks are recommended. [5]

Organisations aim is to be a "Learning Organisation", where every employee constantly engages in learning in order to continually adapt to the company's changing environment. [6]

Littig identifies the main focus of eLearning projects supported by the European Leonardo da Vinci programme and gives recommendations for the future. The need for innovation in e-learning is not in the area of technological innovation, rather pedagogical innovation and increased value, for the learners need to play a more important role in e-learning projects. What is needed, however, is a stronger focus on the learners and their needs. [7]

The success of e-learning implementation depends to a great extent, according to human resources professionals and potential learners, primarily on the attitude of the learner himself towards the learning situation. All other considerations are secondary: learning processes in which the learner himself does not constitute the primary focus are doomed to failure from the beginning. The value of media-supported learning scenarios does not depend so much on the technical perfection with which such scenarios are implemented, but rather are dependent upon the essential relationships that are established between learner and learning facilitator. [7]

Unneberg discuss the key issues of deployment for large enterprises keen to adopt new web-based learning techniques. The final aspect of traditional rapid elearning involves the software tools used to create the content. Selecting the right piece of software will go a long way to ensuring a successful rapid e-learning program. [8]

Timely access to learning helps the organization to achieve its business goals and maintain competitiveness. The company could also benefiting from significant cost savings. For example, the use of e-learning in one company is helping to achieve a 67 percent cost reduction per training intervention in comparison to traditional instructor-led training due to reduced travel, accommodation, room and tutor costs. [9]

Roffe explores the practical and theoretical issues involved in the evaluation, quality assurance and engagement of operating an e-learning programme as a distance learning service on an international basis for people in employment. He suggests that the prefix "e" in learning applications needs to shift from electronic to the more supportive descriptions of engagement, enhancement and execution of the student learning programme.[10]

Bose described one of the e-learning pilot projects that resulted in a flexi-time, student-centred, e-learning package that retained the learning qualities of traditional teaching and personal guidance and mentoring and enabled enhancement of research skills and certain computing skills in students. [11]

But still, content is a king. All rapid e-learning implementations promise reduced content creation time, there still needs to be content produced. It is critical to ensure that an enterprise rapid e-learning project has a committed team to ensure its completion will be driven forward, not dragged along. [8]

E-learning requires planning, a planning which is especially important for courses that are dependent on a particular technology. [11]

Panian says that eLearning is a system which consists of many technological means. It offers a possibility to watch an entire lecture, to receive all the necessary materials, to discuss about the matter with the costudents and teachers [1], to solve online-puzzles, tests, multiple-choice questions and problems, to use interactive 3D graphical representations of the models, which are frequent in microeconomics. These options render the learning process easier and much more interesting than it used to be in the traditional tutoring. The administrative purposes can be easily substituted by distance tools, such as the application for the exams, overview of the personal student record and other. The office hours are not even to be discussed here, since email and telephone has already been used widely [1].

It also makes it possible to listen to the best lecturers, which would be impossible in the traditional way of education, because of the size of the lecture rooms, and the distance. It would enable the faculty, for example, to hire a lecturer from some other faculty and not make him/her to leave their domestic institution [1].

An increase access to computers and Internet necessary get the total advantage of e-learning courses. [11]

3 E-approach to Microeconomics

In the everyday lecturing of microeconomics, a lecturer or a tutor faces two main difficulties: a lack of the mathematical knowledge, or a lack of the interest for a basic theoretical subject such as microeconomics, nor being able to see how it could be used in business. The first one can be solved by either a change in the economics curriculum, or in the approach of the tutor. The second one is up to the lecturer, who is supposed to investigate and give applicable examples.

E-learning can easily substitute for the first one, through the wise application of the contemporary mathematical software, such as Mathematica, and by well written step-by-step presentations with narrative boxes, explaining every advancement of the profoundly built models. The second one can be crossed using the real data, regressing them and putting them into relation with the theoretical background.

Several software could be used here, E-views being the most frequent one, or the Stata being the simplest to use, and hence used by several famous economics schools, such as LSE.

Now we can analyze the possibilities of the each one of them, given the examples:

1. How to explain a Cournot model [12]to the distant student, using a plain Power point presentation?

The presentation should be blank, without any useless pictures and details. The letters should be big and monochrome. Every line of the deduction should appear separately, with discursive box appearing and disappearing after the new line is displayed. Each line should be enumerated to make it easier for the student to refer to the teacher in the case of a necessary clarification. Afterwards, a graph should be drawn, line by line, to lead a student through the messy and complex drawings.

2. How to make it easier for a student to understand a 3d model, like deduction of the indifference curve maps from the utility function? [13]

Mathematica is a powerful tool for a graphical representation, but poorly used among the students of the economics in Croatia. Learning the basics of the programme, a lecturer can now draw 2 dimensional graphs, without spending lots of time to draw it nicely, with lesser impact. The light and shadow options, as well as the vector graphic shows a student perfectly clear how indifference curves are actually a layer curves, and they cannot intercept. Look at the following figure:



Figure 1- Layer curves and Utility function

Since these pictures are interactive (there is a possibility of the change of the view, as well as the stepby-step drawing), a student manages to understand something that was fully comprehended by only a small portion of students.

3. The final example will show how can a lecturer justify the theory brought in the lecture room, using a real set of data. It is necessary because of the numerous presumptions when deducting e.g. the demand function.

The teacher takes the set of data, puts it in the programme (it was a plain Excell in this case) and displays a scatter diagram and a fitted curve:



Figure 2- A Data set and a Fitted curve

It is now obvious to a student that a company is able to deduct their own demand function only if they do a proper market research, and thus simplifying the decision process.

4 Recommendations for microeconomics e-learning system

Here are some concrete suggestions how to implement e-learning system in microeconomics:

Knowledge base – the most important part of the whole system, the place for information which could be used in education of members like electronic books, tutorials, materials from conferences, professors' presentations etc. Knowledge base would consist of several sources of information:

Professors' presentations – on one place could be found all materials from the lectures of one professor, all materials connected to some subject (.ppt presentations, .pdf documents, synopsis, abstracts, papers...). With updating the materials from the lectures, also the other materials would be updated. As the substance is changing every day, so would change the materials. Because of that, all the materials from the lectures should be updated. On this way all the students who attended the lectures in the past (although they were contemporary at that time, today could be a bit old) could learn all the news from the field of microeconomics.

Students' papers – during the time of study, students write, as a part of their exam, different papers, presentations, seminar works, different analysis etc. Their work is known only to their professors and students who have listened the presentation. There are lots of quality papers which should be accessible to other professors and students. It would also be interesting to see how papers differ form one generation to another. Some papers definitely could help students in the process of learning, as well as give them some new ideas and incentives to write some other paper.

Microeconomics' terms – dictionary of the terms from microeconomics.

Formulas – the possibility of calculating variables of the microeconomic models using given formulas and entering data.

Exercises from microeconomics – solving microeconomic exercises using formulas and theoretical methods.

3D graphs and their explanations – possibility of drawing 3D graphs for microeconomic functions that require space dimension (3 variables included).

Video lectures of professors – the base of all lectures which have been recorded or transferred through videoconference.

Scientific papers and publications – all publications and scientific papers written by the professors from the field of microeconomics. On that way a completely new base of scientific work would be created. Also a good idea is to establish some links with others bases of scientific papers in the field of microeconomics, and to enlarge the sources of information, which would stimulate scientific work.

Search engine - with the progress of the knowledge base, the new need would emerge – the need for a search engine. Searching would perform by the key words, terms, text, date, type of content (lectures of professor, student papers, news, discussions, links etc.), author etc. The results of the searching process would be grouped by the type of content, but also by the importance (lecture of the professor is more important from some discussions or links). It is also important to implement the detection of Croatian letters and that the searching algorithm recognize the word root – for example if the user writes "Mreža" ("Net"), the results should consist the words "Mreža", "Mreže" ("Nets"), "Mreži" ("to the net"), "Mrežni" ("from the Net") etc.

Exams – possibility of testing the knowledge like on the real exam.

Statistics of the student progress – all students' results would be saved in the base, so that there would exist the possibility to compare students over time and with others. Online evaluation provides a facility to collect evaluation data that not only reduced costs but also provides real time data on the progress of a scheme. [10]

News – lecturers would inform their students about different things like new teaching materials or the time when it would be possible to chat with professor. All published news could be commented, what would enlarge the information and give different vision. Important news would be archived and would make a part of the knowledge base.

Forum – for different discussions between the students. Discussions between the members would be led about different topics from the microeconomics, but also about the problems which could appear during studying.

Events calendar – publication of different events like schedules of the lectures from microeconomics, conferences, and chat with professor. Calendar should be connected with the news.

Books – promotions, presentations and selling of the professors' books – the possibility of creating a Webshop.

Chat – if several students are connected in the same time, the synchronised communication in the real time should be provided. The lecturers could also participate in this chat.

Chat with the professor – once a month (or maybe more often) a chat with some professor would be organized. On the chat would appear professors who are experts for different fields of microeconomics. Students could choose and suggest which professors they would like to chat with. Also, chat with the foreign professors could be provided.

Newsletter – the possibility of getting newsletter and the archive of all sent newsletters. When necessary, students would get information about microeconomics.

Useful links – all links of useful Web pages from microeconomics on one place, divided into different categories because of easier orientation.

On-line videoconferences – lectures of the professors on the faculty. By the videoconference, all the students who are not physically on the faculty could attend the lectures. All lectures would be archived in the knowledge base.

Survey – Surveys would analyse the student's opinion about different topics and about microeconomics. The answers would be seen right after filling up, and all the surveys would be archived. The survey would contain one question with multiple answers possibilities. Students would also have the possibility to give their comments on the survey.

Blogs – each lecturer could have his own blog, through which he could come closer to the students.

Banners – because of very important target group of students, many companies would be interested in advertising their goods or services in such a system. On that way some financial assets could be collected.

These are some suggestions for implementing elearning system in microeconomics. With the development of the whole system, new methods could be introduced.

5 Conclusions

The teaching of the microeconomics can be modernized, and made very interesting, while decreasing costs and making the curriculum much simpler and much more interesting.

We suggest the use of interactive on-line conferences and chats with professors and among the students, as well as the blogs which could make teachers even closers to their students.

Graphical representations could be very illustrative, interactive appealing and for a student who is not able to grasp complex spaces and graphs.

Step by step presentations, explaining all the lines, could give a student an impression of the "virtual teacher", having all the answers before a question is asked.

Many other features could ease and speed up the communication, like newsletters for the necessary notices, useful links, and many others.

Finally, all would profit: sellers of computers, students, teachers and universities.

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