

E-learning and Its Application to Microeconomics

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Abstract: - Distance learning is a growingly important component of education. Its low cost and easily accessible education materials are to play an important role in raising overall education level in the world, since Internet access is growing exponentially. At the same time, it allows better flow of labour because it lets students live much further from the University they attend. It also decreases living costs, as well as the costs of the education institution itself. Microeconomics is a discipline easily adaptable to the e-learning process because its graphical representations and complicated deductions can be easily taught using interactive presentations and simple software. Several authors offer a multiple possibilities for implementation of the eLearning systems. We analyzed some cases in which distance learning offers even greater possibilities than the traditional teaching techniques, using illustrative graphs, thorough analytic step-by-step deductions of main microeconomics connecting the theory and practice through the use of statistic and econometric programmes and methods. The final aim of this paper is to introduce more efficient, more comprehensive and cheaper teaching method.

Key-Words: - Microeconomics, 3d graphs, e-learning, education, distant learning, multimedia materials, interactive presentation, teaching techniques, Web 2.0

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 demand on the labour market.

One of the most important conditions in every business is cost minimization. Education as a traditional

process is very expensive. On the other hand, it is not achievable to everyone. E-learning solves for both of these constraints, since it can be used by any number of students without an increase in the teaching staff number teaching rooms and all other necessary materials.

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.

In the beginning it might seem distance learning increases teaching costs because of the technology and software involved (for both the teacher and the student). However, vast majority of the students already possess some sort of computer as well as the software needed (at home, at university, nearby library, at job or at a friends' house). The confirmation of the this thesis lies in the fact

our economics students already correspond with teachers via e-mail. On informatics course students are taught all information skills needed for the E-learning project. 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 stay 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 the e-learning projects. What is needed, however, is a stronger focus on the students and their needs. E-learning methods can awake students' interest, thus motivating students, provide a challenging learning

environment; and provide individual support for learning. [7]

Littig also gave some recommendations such as:

eLearning programmes should be based on the idea of learner orientation. The recommendation of facilitating more projects with a clearer learner orientation also includes the necessity to postulate in a clear way that the needs of the learners have to be determined in more concrete manner before starting the project. This includes awareness of the learning biography, of individual learning styles and of social needs. There is a need to develop a clear and transparent learning philosophy behind the project that has to be clearly documented.

Furthermore, projects in eLearning have to document a clear and transparent learning philosophy which determines the main direction of the project. To develop a learning philosophy implies a clear decision on learning categories, including the general learning objectives or the formal framework and context for learning.

eLearning projects should train the teachers and trainers and support for teachers has to include the use of new technologies as well as the pedagogical aspects of teaching, training, coaching, moderating, etc. Teaching science, technology, economics, medicine etc. needs a teaching and learning approach that is realistic, as close to the "real world" as possible. This can be achieved with appropriately trained teachers competent in their own subject area, trained in the use of modern learning technology and also trained in methodological and didactical processes.

Design and development of projects aiming at eLearning should include a focus on pedagogy and communications. ICT developers need to explore pedagogical innovation and those who not wish to do so should not take part in such projects. That could help in that new project applications will emphasize educational innovation and reward pedagogic practice.

While using innovative pedagogical ideas projects aimed at eLearning should widen target groups and exploit new contents. That requires a growing pedagogical competency within the projects.

There are some projects focused on less traditional or emerging occupational areas lacking traditional training programmes, e.g. medical technicians and the music industry. These projects seem to be very successful. They appear to have undertaken more in-depth needs analyses than those projects geared towards more traditional target groups. Also they have a clearer focus towards developing pedagogic approaches synergistic with the learning styles and cultures of members of the groups. Finally, a number of these projects have focused on capturing and developing informal learning or learning in informal contexts. [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 e-learning 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 co-students 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 e-mail 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]

Ennew and Fernandez-Young explored the development of online learning in UK higher education as a case study to illustrate the difficulties created by an over-reliance on technology push and a failure to understand and respond to market needs. [16]

The failure of the UKeU is unsurprising, presenting a classic case of product orientation, and highlighting the importance of good market research and intelligence in successful innovation. A technology-driven organisation with limited understanding and awareness of what its market really wanted (whether students or collaborating universities) and an overwhelming desire to "build a better mousetrap", the UKeU lacked a clear brand and a clear position in the market. And yet, there must be a concern that in bemoaning the failure of this initiative we risk throwing the baby out with the bath water. Online learning has made considerable strides as a complement to existing face-to-face delivery. While the blended approach seems likely to be the dominant model for future developments (HEFCE, 2005a), the survival and success of a range of public and private sector providers provides an indication that there is a market for online delivery as an alternative to campus-based learning – perhaps not in its pure play form but rather through a careful blend of online materials, tutor support, paper-based material and face-to-face contact. For business schools, the challenge may be how best to exploit this opportunity. There is no point in rushing to develop courses for which there is no proven demand, but it would be a pity to assume that the UKeU's failure to recruit students means that there is no demand. Given the significant investment required to develop online material, even when using a blended approach, a long-term perspective is essential, as is some degree of re-

usability. The ideal of courses built completely from a range of re-usable learning objects may prove difficult to achieve both pedagogically and organisationally. It is perhaps more realistic to aspire to a form of recycling, in which material developed for one context can be used in another with minor adjustments, at most. Recycling learning material spreads the costs of producing online material across multiple uses. However, to be effective, it should be built into the development process rather than a decision that is taken once the material has been developed. Most obviously, material developed for distance students can be recycled to support on campus flexible learning and vice versa. One benefit from the UKeU's decision to focus on "learning objects" was that the concept of re-usability was integrated into the course development process. [17]

Accordingly, material developed by the authors for a UKeU funded online MSc has already been reused to support on campus delivery and for other off campus courses, and it is anticipated that there will continue to be interplay between face-to-face and pure play and the development of on campus hybrid modules that utilise the most effective elements of the online modules. [17]

Lee and Topper described the future of proprietary higher education in the USA based on current industry and student trends. Many colleges and universities are becoming more sensitive to market forces. They have made significant commitments to e-learning technology and run programs all over the world. Some smaller colleges have developed nimble contract training programs for employers. For-profit schools have been in the forefront accelerate the growth of on-line degree programs. [17]

Mutula and Braker point out that there is an acute global shortage of high skilled and hands-on personnel necessary for steering the emerging digital economy in both developed and developing countries. There is a serious skills gap for certified specialists to help develop the sophisticated applications necessary to power the digital economy and more so the applications that depend on it.

The realisation that a shortage of ICT skills is creating a barrier for fully seizing employment potential within the region. European Union member states engaged in various measures to address the negative impact of ICT skills shortage. These measures included but were not limited to advocating for the usage of structural funds in the implementation of widespread internet access and the training of teachers in Internet literacy; re-skilling of the workforce to be able to operate in an increasingly

ICT business environment; and putting in place initiatives such as e-learning and online public services. An e-learning initiative has been put in place to enable

government employees to acquire various ICT skills needed to operate in an e-government environment. [18]

According to Talbot learning has to involve minimal time away from the job. In practical terms this has resulted in minimal face-to-face contact between tutors and learners and programme have to be as relevant to practice as possible. [19]

Chalmers in his literature review concludes that much of the science, humanities and library literature concurs that less content can be taught with active learning, because it takes more time to teach concepts than to transmit facts through lecture

Large-class, active learning pedagogies used outside of the library environment have been forged from the mandate to deliver evidentiary successful educational outcomes in the unfavorable environment of mass classes. Information literacy instructional approaches could benefit greatly from emulating the large-class group pedagogies of the academy: cover less, engage students more, make them take responsibility for their own learning, assess often, and make effective use of work groups that allow them to perfect the inter-personal skills necessary for success in today's professional environments.

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.

These pictures show a complicated matter can gradually be introduced to a distant learner, reading the correspondent discursive boxes:

Cournot equilibrium

$$P = -a(Q_1 + Q_2) + b \quad \text{and} \quad TC_1 = c \times Q_1$$

First we define a demand function as a function of a quantity offered by two players, and a total cost function with constant marginal costs.

Figure 1 - Slide 1, with assumptions of the model

Cournot equilibrium

$$P = -a(Q_1 + Q_2) + b \quad \text{and} \quad TC_1 = c \times Q_1$$

$$\Pi_1 = P \times Q_1 - TC_1$$

Now we express a profit function as a difference of total revenue and total cost

Figure 2 - Slide 2, which introduces a profit function

Cournot equilibrium

$$P = -a(Q_1 + Q_2) + b \quad \text{and} \quad TC_1 = c \times Q_1$$

$$\Pi_1 = P \times Q_1 - TC_1$$

$$\Pi_1 = [-a(Q_1 + Q_2) + b] \times Q_1 - c \times Q_1$$

If we put a demand equation instead of a price, and put a function equation of the total cost, we get expanded equation of profit

Figure 3 - Slide 3, where a connection between the profit function and assumptions is made

Cournot equilibrium

$$P = -a(Q_1 + Q_2) + b \quad \text{and} \quad TC_1 = c \times Q_1$$

$$\Pi_1 = P \times Q_1 - TC_1$$

$$\Pi_1 = [-a(Q_1 + Q_2) + b] \times Q_1 - c \times Q_1$$

$$\Pi_1 = -aQ_1^2 - aQ_1Q_2 + bQ_1 - cQ_1$$

When we do all multiplications we get this expression...

Figure 4 - Slide 4, where the function is expanded and prepared for optimization.

This way of teaching has proven to be very successful in teaching of intermediate microeconomics on Faculty of Economics and Business, Zagreb, by one of the authors.

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:

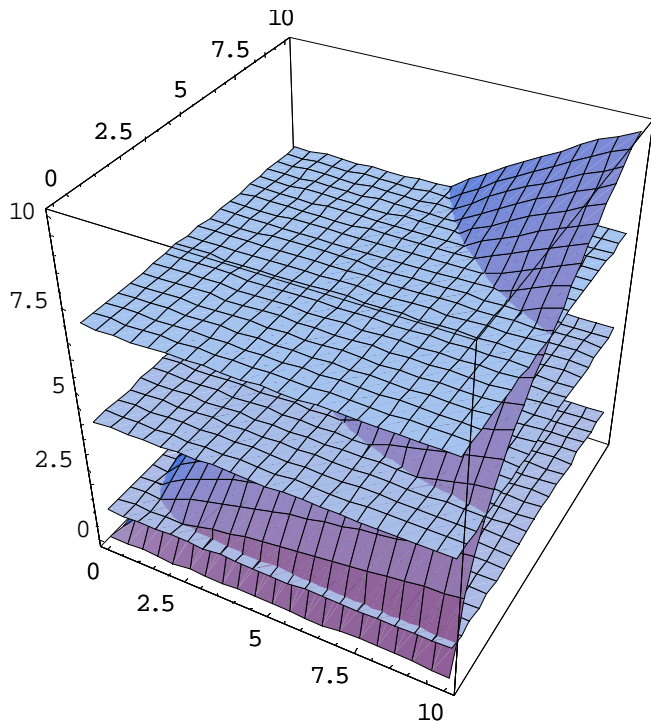


Figure 5 - Layer curves and Utility function

Now a teacher would just turn the graph so as to see it from above, and contours of the plot would be obtained:

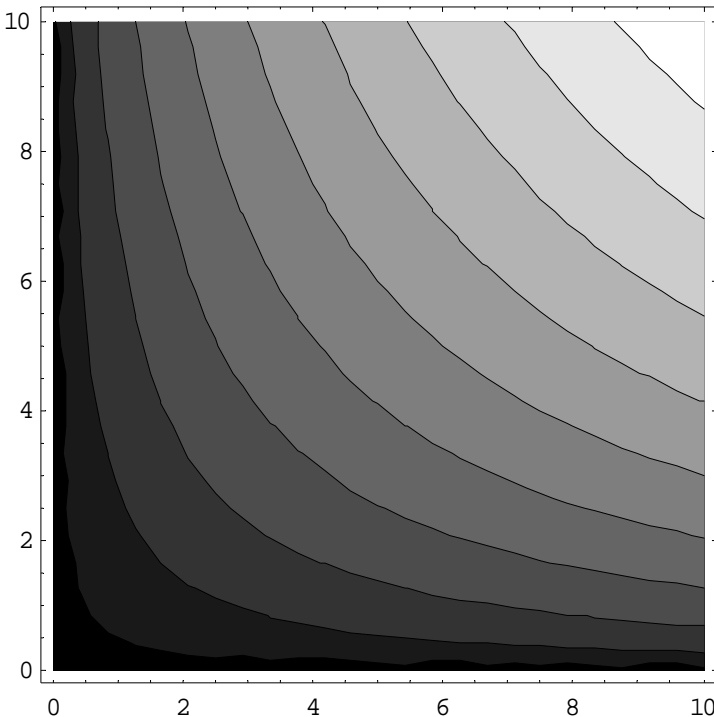


Figure 6 - layer curves

It is now easy to explain indifference curves and isquants curves, because this corresponds to a certain

Cobb-Douglas function, $u(x, y) = \sqrt{xy}$ or $Q(K, L) = \sqrt{KL}$.

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

3. This 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:

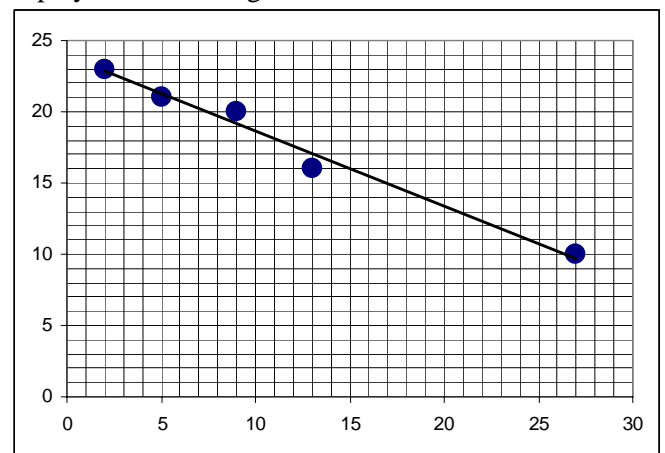


Figure 7 - A Data set and a Fitted curve

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.

As learning of the theory is always pretty boring for students, e-learning gives the possibility to make this a little bit more interesting. The idea is to make on-line quiz with all key elements used in microeconomics. Here can be used one of the worlds' most popular TV shows of all times, „Who wants to be a millionaire?“.

This game can be made in such a way that students must answer 15 questions from different parts of microeconomics. At the beginning they have very easy questions, but on each next question it becomes more difficult. The most difficult is the 15th question, and for the correct answer the player gets one million of his domestic currency. Of course, not in the real world, but this one million can be compared with his excellent knowledge. One million can be equal to the best grade.

Questions in the quiz should be updated continuously, so that new questions are always added. The fields from which the questions should be added are the typical fields that are covered in microeconomics:

preferences, demand, supply, production, costs, market structures, production inputs etc.

Few examples of question are the following.

Market structure in which there is only one producer, who can influence the total supply, is known as:

- A: Monopoly
- B: Oligopoly
- C: Perfect competition
- D: Free market

This is one example of easy questions that should appear at the beginning of the quiz. The screen should look like this:



Figure 8 – The layout of a pop-quiz

On the higher level the questions should not be so easy. Here is one example for questions between 11 and 15.

Which of the following elements is not characteristic for long run?

- A: Fixed costs
- B: Variable costs
- C: Marginal costs
- D: Average costs

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 from 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 Web-shop.

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 – Blog is a Web site on which the texts are written chronologically. On blogs one can find interesting comments and views, they combine picture and graphic, as well as sometimes multimedia datas (music, video) with text. As it is possible to post comments and questions, blogs allow the interactivity between users and they can be used as a medium for getting the student opinions to the teachers, covered topics or exercises and seminars. 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.

Very important is the process of continuous stay in touch with all new trends in Internet. In last years one of the main topics there is Web 2.0 and its services. Web 2.0 includes new models of social computing, which influence the diminishing of cultural barriers and development of new Internet services. Such services have big number of users, and they are being developed every day. Some of these services are Wikipedia, Blogs, Flickr, YouTube, Podcasti etc. Wiki is a Web site where everyone can add, change or interconnect texts. Today the most popular such site is Wikipedia – the online

encyclopaedia. In this encyclopaedia should be included the information about microeconomics. One can use it also for cooperation and exchange of knowledge between teachers who work in the field of microeconomics, but also between students. Flickr is a Web site for exchanging the photos. Very often authors of blogs use it for uploading their photos, and it is very simple to copy and exchange them. Good idea is to upload different graphs that are used in teaching of microeconomics. YouTube is one of the most popular Web sites for exchanging videos. The videos can be copied and exchanged, and users give their comments. Every registered user, after viewing the video, can give a comment. On this service could be uploaded the lectures from microeconomics. It is pretty expensive idea, because first one has to film the lectures, then to edit them and upload on this service. Podcast is a term for distribution of audio and video, like radio programmes or music clips on Internet. Today there are many machines for recording of speech, like dictaphones, and other gadgets for sound recording. Lectures could be recorded and all sound files could be uploaded on one such service.

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

5 Conclusions and Recommendations

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 closer to their students. It would make the teacher closer to his students and eliminate students' stress, making the learning process easier and more successful.

Graphical representations could be very appealing when a student sees how previously very complicated concepts could be understood intuitively and directly from the graph, even in the case of poor mathematical knowledge of the student. Interactivity boosts the will for investigating the observed phenomenon and attracts more students for the course that used to be tedious and hard.

Step by step presentations enable student to adapt the speed of the teaching to her/his needs. With the help of discursive boxes, which explain newly introduced lines, a student can revise even when the lecture is over. A student could get 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.

Strong connections between microeconomics and econometrics could be explained using a real set of data and showing what happens in real life. It eliminates all doubts of the usefulness of the microeconomics, which is generally being considered as useless for the real life, when a student graduates and gets a job. In this way student has the impression that microeconomics really solves concrete problems, which were previously considered as purely theoretical.

Not only helps it to attract students for studying microeconomics, but it also awakes the interest for a study of econometrics because ambitious student wants to get the function out of the data by himself and try to confirm/reject the theory taught in the microeconomics course.

A teaching can become a game. Jeopardies, quizzes, puzzles and all sorts of other games wakes an interest for the material, which is a hardest to get in this class, since economists are not as mathematically oriented as some other, e.g. natural sciences students.

Finally, all would profit: sellers of computers, students, teachers, universities, state and the economy; more accessible education would increase the number of the experts and all sort of highly educated people which are crucial for the stable growth, since human capital remains to be the only input with increasing returns to factor. Teachers and students would be introduced to new technologies that make many things easier, and could apply it in many other areas as well. Informatics technologies sellers would have larger profits, universities wouldn't have to spend money on new teaching rooms, teaching would be more flexible, teachers wouldn't have to teach many students at the same time and place, and students would choose when and how to learn.

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