

HYBRID STUDY MODEL ON HIGHER EDUCATION INSTITUTIONS

HIBRIDNI MODEL STUDIRANJA NA VISOKIM UČILIŠTIMA

Kristijan Matas, Boris Marjanović, Barbara Marušnik

Polytechnics Pula, Pula, Croatia

Politehnika Pula, Pula, Hrvatska

Abstract

Progress in general, particularly in technics and technology in particular, require continuous learning and acquiring new knowledge and skills. Therefore the principle of lifelong learning is adopted along with defined learning outcomes and output competences. Thereby new learning challenges after each level of education are to be revealed. This paper presents a model of study tailored to the needs of adult students on higher education institutions. There are presented advantages and disadvantages of the classical model, and a new hybrid model is developed, aimed to improve the efficiency of the studying process at a higher level. Such a hybrid model meets the needs of adult students while maintaining the learning process quality.

Introduction

The awareness of the requirements imposed by the labor market, imposes the modeling of a study model which will allow taking lessons on different locations, using new technologies and modern teaching approaches.

The paper has not elaborated the content of the study programs, starting from the assumption that they substantially correspond to the demands of the labor market. However, it is considered the possibility of those who wish to study, but for some reasons is not available to them.

For example, there is a need for a dislocated study because in smaller communities there is a sufficient number of interested people. So this method tries to respond to this request. However, dislocated study has a number of disadvantages, e.g. lack of adequate place for teaching, higher teaching costs, parallel lessons (on

Sažetak

Razvoj općenito, a tehnike i tehnologije posebno, zahtijevaju stalno učenje i stjecanje novih znanja i sposobnosti. Stoga je usvojen princip cijeloživotnog učenja sa utvrđenim ishodom učenja i izlaznim kompetencijama. Time je ujedno otvorena problematika učenja nakon završetka svakog pojedinog stupnja obrazovanja. U radu je prikazan jedan model studiranja prilagođen potrebama zaposlenih studenata na visokoškolskim ustanovama. Prikazane su prednosti i nedostaci klasičnog modela, te je razrađen jedan hibridni model s ciljem poboljšanja efikasnosti procesa studiranja na višoj razini. Kreirani hibridni model zadovoljava potrebe studenata uz rad zadržavajući pri tome kvalitetu studiranja.

the institution and the second - dislocated location), etc. How to solve this problem? Of course, as an answer to this question are offered the possibilities of introducing and applying new technologies in teaching. However, it is required a combination of the classical model of teaching with the use of new technologies. It is a known fact that despite the opportunities offered by ICT nothing can replace personal communication.

The paper set the key parameters as the basis for creating a custom, hybrid model for studying at higher education institutions. In addition, the application of new technologies and market demands dictate the need for changing the teaching approaches. Through a modern teaching approach students more closely meet the criteria of competitiveness in the labor market. This competitiveness is reflected through

their knowledge, skills and competencies acquired during the study, their mobility, knowledge of new technologies, implementation of team practice and multidisciplinary approach in solving problems and tasks.

Market and education

Market is the starting point of any market-oriented business-production organization. Educational institutions are no exception. The basic principle of market orientation is to satisfy the needs imposed by the market. Today's economic conditions are characterized by rapid and frequent changes caused by the market needs. Such changes have a tendency to disrupt the harmonious and steady functioning of the organizations, so these organizations are facing the challenge to survive in such unstable conditions. Because if they are not able to adapt, very easily can collapse on the market, in other words, in business terms, go bankrupt. Educational institutions are the main source of experts for the labor market, and they are largely responsible for the outcomes of learning, competences and expertise of people who are entering the labor market.

Thus they play a key role in the formation of such experts and are largely responsible for the success or failure of organizations on the market. Rapid changes on the market, new demands and needs, unstable conditions of market trends, demand from the employee's the

ability of rapid adoption and application of new knowledge, and the ability to adapt to changes that occur in the environment. The needs of the market do not stagnate and not always are the same. Educational institutions therefore need to adapt to market conditions, to educate people to be able to fit in the market reality through the application of knowledge and skills acquired during their study. These institutions operate on the market and offer a "service" to its customers. If the "service" they offer is not adequate, meaningful and attractive, customers will turn to another educational institution. If they are not able to create such experts, it means that they are not suitable, and may fail in business terms. Competition today exists in the educational field as well. A detailed analysis of this issue will be shown through the description of the eras of economic development.

Eras of economic development

Development of society, as well as the development of education, can be shown through the eras of economic development. Each of the economic periods is specific, and differ from each other. Table 1 shows the characteristics of each period in the context of need for education.

Table 1: Characteristics of economic development eras

Description	Industrial era	Informatization era	Knowledge-based economy era
Period	1780 -	1975 -	1990 -
Basic resource	Natural resources, oil, raw materials /1/	Information /2/	Knowledge /3/
Primary focus	Mass production	Rationalization, efficiency	New value creation
Capital	Financial	Financial	Intellectual
Type of worker	Production worker	Information handler /4/	Knowledge worker

The degree of professional qualification of workers	Unskilled and semiskilled workers	Qualified and highly skilled worker	Highly educated workers
Applied technics and technology	Machinery, steam engine, heavy industry	Robotics, information technology, telecommunications, computerization	Knowledge bases, virtual learning, virtual workplaces
The ability of organizations to react to changes	Slow and static, rigid	Quick and dynamic	Flexible
Market conditions	Static	Dynamic	Stochastic

Source: Authors from multiple sources

Through the changing circumstances on the market, technology development and the understanding of the basic resources for the creation of corporate value, it is evident the market demands toward higher education institutions changes as well. Thus P. Drucker in the work "The essential Drucker" says: "University that do not create future leaders and professionals is not a socially responsible university, regardless of how many 'good jobs' are taking place within it." /5/

The parameters observed in Table 1 show that requirements for knowledge, skills and competencies of people, from the industrial era to the knowledge-based economy era significantly changed. Accordingly, there is a need to introduce a new teaching approach that incorporates work with students in small groups and work on project tasks through teamwork with emphasis on current trends in the global economy.

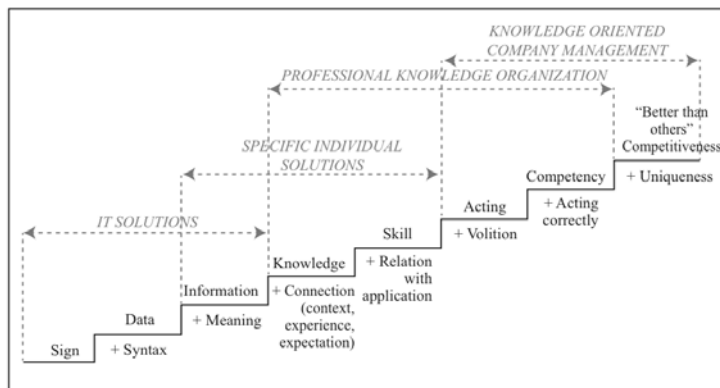
There is a need to provide practice through which students will be introduced to their "tomorrow" work. Study programs and their performance should be conceived in a way to reduce the gap between theory and practice through the study period, because it is the only way for their accumulated knowledge "tomorrow" becomes intellectual capital for their employer.

The intellectual capital theory

Starting from the fact that not all money is "capital", so not all knowledge results as Intellectual capital. A. Pulić defines Intellectual capital as "only that kind of knowledge that is transformed into a recognizable market value, in other words, benefit for the customer" /6/.

Figure 1 shows the emphasis per steps of knowledge levels and the steps that should be taken to achieve competitiveness.

Figure 1 - Emphasis per steps of knowledge levels



Source: North, K.: Wissensorientierte Unternehmensführung – Wertschöpfung durch Wissen, Wiesbaden: Gabler, 1998, p. 41.

"As is evident from Figure 1, knowledge is the fourth step in the ladder of knowledge and between it and competency there are skill and acting. There is an opinion that it is sufficient that the employee possesses specific knowledge of an area to make him capable of carry out the job with quality and responsibly, but it is not so. This employee is only on the fourth step of the ladder of knowledge, which means that it is only halfway to its competency.

This employee position is not enough for a business-production system, because for the system to survive in a competitive environment, it also has to be competitive, and therefore individuals within it must achieve the required level of competence in order to be competitive." /7/ From the above mentioned it is concluded that the prerequisite for enterprise competitiveness is a competitive workforce, and it requires that employees possess applicable knowledge, skills and competencies that will enable the new value creation.

K. Tominović in this regard states: "Intellectual capital is applicable knowledge that creates new value that is confirmed on the market."

The role of higher education institutions in the education of experts

Higher education institutions are the bridge that connects the labor market and future skilled professionals. They must be able to create such experts, through the system and process of education, who will be able to meet the needs imposed by today's market. The purpose of higher education is the transfer of knowledge

through which the new generations will fit into the economic system, operate in it and upgrade it through their work. Through each following cycle of knowledge transfer, the circle is complete. The duration of each cycle is not linear, but becomes increasingly shorter due to technological development of society and the accumulation of knowledge. In order to effectively prepare students for work in an economic environment, the cycle of knowledge transfer needs to be adjusted. The role of higher education institutions do not change, but it is necessary to change the approach to their work and their relationship with students.

Comparison of conventional and hybrid model of study

Development of new technologies, knowledge and its application requires a different approach in the work of experts than in the past decades. An expert is not the same today as it was yesterday (Table 1).

Accordingly, also changes the need for education. Table 2 shows a postulate comparison between the classical and modern teaching approach, based on market preferences and market needs. The new hybrid model of studying consists in a combination of classical teaching approaches, new learning methods and modern technology applications.

Table 2: Postulates of the classical and hybrid model

Postulates	Classical model	Hybrid model
Teaching approach	Large groups	Small Groups
The quality of teaching	Low	High
Communication	Primarily monologue	Primarily dialogue
Teaching methods	Classic /8/	Classic with application of modern technologies /9/
Technology	Computer, communication and multimedia technologies	Computer, communication and multimedia technologies

Sources of information	Printed materials and materials in digital form	Printed materials and materials in digital form
Availability of information	High	High
Tasks	Individual	Teamwork
The learning effectiveness	Low	High
Knowledge adoption rate	Prolonged	Fast (Synergy /10/)

Source: Authors from multiple sources

Table 2 shows the postulates on which a hybrid model of higher education institutions should be based. These postulates directly point to the needs that today's market environment imposes. Accordingly, study programs should be conceived in order to prepare students for the following: independent research organization and conduction, project organization and management, teamwork and team organization, creative and systematic thinking, critical thinking development, increased initiative and research culture, interpersonal communication development, etc. /11/ These settings directly indicate the competencies that such expert should achieve through the studying process. Therefore, the goal of educational programs is to raise students' competences. Competences represent a dynamic combination of characteristics, abilities and attitudes of students. They are formulated through the various courses and set at different levels. There are three types of competencies that today's professionals need to meet and build during the study indicating the most important ones as follows /12/:

Instrumental competencies include cognitive abilities, methodological abilities, technological skills and language abilities, which specifically include: problem solving ability, organizing, planning and decision-making ability and knowledge of foreign languages. Interpersonal competencies that represent individual abilities, such as social skills (social interactivity and cooperation with coworkers), which specifically include: interpersonal skills, teamwork and ability to work in interdisciplinary teams. Systemic competences which include skills and abilities that relate to the whole system (combination of understanding, sensitivity and knowledge, which requires the prior acquisition

of instrumental and interpersonal competencies), which specifically include: practical knowledge application, the ability to adapt to new situations, design and project management and learning ability. It is evident that there are similarities between these two models, but the outcomes are different because of different teaching approaches. For example the quality of teaching is less in the classical and high in the hybrid model because of work in small groups, which greatly facilitates customizing knowledge to the specific needs of individuals and the group. In large groups it is not possible to achieve a quality communication with students, but in most cases, the professor communication is reduced to a monologue (lecture ex cathedra). Skills that are gained through teamwork significantly differ from those gained through individual work. Students through teamwork, acquire skills such as communication, respect, acceptance of responsibility through the division of tasks, tolerance and commitment, which is all necessary for the functioning of the team. The availability of information and technology is equal in both models but the effect is different because of a different approach. An individual cannot gain so much knowledge as a group that work as a team, where individuals share their own knowledge and understanding within the team (synergic effect). It also points to greater learning effectiveness through teamwork. It is important to emphasize that in modern business world problems are solved through teamwork and in the same manner are found solutions. So, in this way students are qualified, through the study process, for team functioning and work. After graduating students apply the approaches adopted through the process of education. If

they were educated through the classical study model, where they primarily learned to work individually, it will be much harder for them to adapt to situations in the organization where are used team problem solving methods, quick learning, adoption and application of knowledge.

From the above it is evident that higher education institutions must make a new qualitative step forward by switching from the classical study model to a new model that will be based on new postulates and application of modern communication technologies in learning processes.

The application of modern communication technologies does not exclude in this model the direct communication "face to face".

Conclusion

Educational institutions play an important role in economic development, and therefore the welfare of society. They are the ones that create the experts that will make the economy to move towards higher levels of its development.

But market conditions are not always fixed. They are changing through time as seen in this paper. The new market conditions impose the need for new experts who will be able to cope with economic challenges.

The challenge of any modern educational institution is to identify current and predict future needs imposed by the market and accordingly, to create a good foundation for the formation and training of future professionals.

The displayed postulates of this hybrid model for higher education institutions represent only a model on which should be based the concept of modern education. Each institution of higher education can and must create a study model in accordance to the peculiarity of their own study, the needs of society and customers, based on the postulates of this hybrid model.

In practice, the hybrid model was applied in cooperation between the institutions of higher education, Polytechnic of Pula and Blue Mountain Community College, Pendleton, Oregon, USA /13/.

References

/1/ Kolaković, M.: „Teorija intelektualnog kapitala“, Ekonomski pregled, vol. 54, no. 11-12, december

- 2003, p. 926, (hrcak.srce.hr/file/40500, 14. April 2009)
- /2/ Pulić, A.: „Informacijsko društvo i ekonomija“, Privredni vjesnik, Zagreb, 1990, p. 120.
- /3/ Jelčić, K.: „Priručnik za upravljanje intelektualnim kapitalom u tvrtkama“, 3. dopunjeno izd., Hrvatska gospodarska komora, Zajednica za unapređivanje intelektualnog kapitala, Zagreb, 2004, p. 11.
- /4/ Pulić, A.: „Informacijsko društvo i ekonomija“, Privredni vjesnik, Zagreb, 1990, p. 142.
- /5/ Drucker, P.: „Najvažnije o menadžmentu“, M.E.P. Consult, Zagreb, 2005, p. 57.
- /6/ Pulić, A.: Public lecture
- /7/ Tominović, K., Mulaček, B.: „Upravljanje ljudskim resursima u kontekstu ekonomije znanja“, Zbornik radova, Upravljanje financijskim, fizičkim i ljudskim resursima, Hrvatski inženjerski savez –2. savjetovanje, Opatija, 12. – 14. september 2005, p. 59-66.
- /8/ Buratović, V.: „Jesu li državna sveučilišta glupa?“, Naklada Jesenski i Turk, Zagreb, 2009, p. 209.
- /9/ Buratović, V.: „Jesu li državna sveučilišta glupa?“, Naklada Jesenski i Turk, Zagreb, 2009, p. 214.
- /10/ Knowledge of the team is greater than the sum of individual knowledge of team members
- /11/ Delbianco, L.: „Razvoj Visoke tehničke škole u Puli – Politehnički studij“, Techne – List udruženja inženjera i Politehnik Pula, Techne udruženje inženjera, br. 11, Pula, 2009, p. 9
- /12/ Lučin, P.: „Fleksibilni putovi učenja i cjeloživotno obrazovanje“, Upravljanje i rukovođenje u novoj hrvatskoj školi, Dubrovnik, 01-03 February 2007 ([ISSN 1330-0067](http://www.google.it/url?sa=t&source=web&cd=7&ved=0CE8QFjAG&url=http%3A%2F%2Fav-natelj.skole.hr%2Fupload%2Fav-natelj%2Fimages%2Fnewsimg%2F70%2FFile%2FDubrovnik_radi-onica_%2520Lucin.ppt&rct=j&q=lu%C4%8Din%20Fleksibilni%20putovi%20u%C4%8Denja%20i%20cjelo%C5%BEivotno%20obrazovanje%20&ei=IuXLTYTALYmPswbCgf2cDg&usq=AFQjCNFzSAhZ7kPAX43nKkhpDqOhgyeibQ&cad=rja, 12 May 2011)</p>
<p>/13/ Matas, K. at all: “Implementacija ‘distance learning’ studiranja na Visokoj tehničkoj školi u Puli – Politehnički studij – zahtjevi suvremenog obrazovanja”, development project, Visoka tehnička škola u Puli – Politehnički studij, Pula, 2006, used as basis to achieve cooperation with Blue Mountain Community College, Pendleton, Oregon, USA</p>
</div>
<div data-bbox=)

Literature

1. Buratović, V.: „Jesu li državna sveučilišta glupa?“, Naklada Jesenski i Turk, Zagreb, 2009.
2. Delbianco, L.: „Razvoj Visoke tehničke škole u Puli – Politehnički studij“, *Techne – List udruženja inženjera i Politehnike Pula, Techne udruženje inženjera*, br. 11, Pula, 2009.
3. Drucker, P.: „Najvažnije o menadžmentu“, M.E.P. Consult, Zagreb, 2005.
4. Jelčić, K.: „Priručnik za upravljanje intelektualnim kapitalom u tvrtkama“, 3. dopunjeno izd., Hrvatska gospodarska komora, Zajednica za unapređivanje intelektualnog kapitala, Zagreb, 2004.
5. Kolaković, M.: „Teorija intelektualnog kapitala“, *Ekonomski pregled*, vol. 54, no. 11-12, december 2003, (hrcak.srce.hr/file/40500, 14. April 2009)
6. Lučin, P.: „Fleksibilni putovi učenja i cjeloživotno obrazovanje“, *Upravljanje i rukovođenje u novoj hrvatskoj školi*, Dubrovnik, 01-03 February 2007 (http://www.google.it/url?sa=t&source=web&cd=7&ved=0CE8QFjAG&url=http%3A%2F%2Ffravnatelj.skole.hr%2Fupload%2Ffravnatelj%2Fimages%2Fnewsimg%2F70%2FFile%2FDubrovnik_radionica_%2520Lucin.ppt&rc=j&q=lu%20u%20C4%8Denja%20i%20cjelo%20Eivotno%20obrazovanje%20&ei=IuXLTyTALYmPswbCgf2cDg&usg=AFQjCNFzSAhZ7kPAX43nKkhpDqOhgyeibQ&cad=rja, 12 May 2011)
7. Matas, K. at all: “Implementacija ‘distance learning’ studiranja na Visokoj tehničkoj školi u Puli – Politehnički studij – zahtjevi suvremenog obrazovanja”, development project, Visoka tehnička škola u Puli – Politehnički studij, Pula, 2006, used as basis to achieve cooperation with Blue Mountain Community College, Pendleton, Oregon, USA.
8. North, K.: *Wissensorientierte Unternehmensführung – Wertschöpfung durch Wissen*, Wiesbaden: Gabler, 1998.
9. Pulić, A.: „Informacijsko društvo i ekonomija“, *Privredni vjesnik*, Zagreb, 1990.