MOOCS AS TOOL FOR DEVELOPMENT OF 21ST CENTURY SKILLS

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Abstract

If the key competencies for the lifelong learning that were provided by the European Parliament were the leading trend in 2006, then today they are substituted by the transversal skills and the skills for 21st century. The labour market defines guidelines for the most important skills for the 21st century skills, which are problem solving, creativity, analytic thinking, team work and communication. The skills are also described in the framework for 21st century learning. On the other hand, the importance of MOOCs (massive open online courses) as a tool for spreading the knowledge across the globe is increasing. Because they are often free of charge, majorities are using them for gaining new knowledge, expanding horizons, refreshing knowledge, introducing trends or even to make a selection among candidates for employment. Is it possible for MOOCs not only to develop professional but also to promote the transversal skills? The main aim of the research was to analyse MOOCs in the field of business and management (N = 829) regarding the ability to provide the transversal skills.

Abstract in Slovene

Evropski parlament je leta 2006 definiral ključne kompetence, ki so jih v današnjem času kot vodilne nadomestile strokovne in prenosljive kompetence oziroma kompetence 21. stoletja. Tako referenčni okvir za učenje 21. stoletja kot trg dela sta med najpomembnejšimi kompetencami izpostavila problemsko učenje, kreativnost, analitično razmišljanje, timsko delo in komunikacije. Po drugi strani pa so med trendi na globalni ravni na popularnosti pridobili množični spletni tečaji (MOOC). Ker je vključitev vanje pogosto brezplačna, jih uporabniki izkoristijo za spoznavanje novega ali ponovitev obstoječega znanja, lahko pa predstavljajo celo izbirno metodo za testiranje kandidatov pred zaposlitvijo. Pa so MOOC-i resnično uporabni zgolj za usvajanje strokovnih ali hkrati razvijajo tudi prenosljive kompetence? Namen prispevka je analiza MOOC-ov (N = 829) iz področja poslovanja in upravljanja na področju razvoja prenosljivih kompetenc.

Keywords: MOOCs, transversal skills, 21st century skills.

Introduction

Partnership for 21st Century Skills (P21, 2015) in their framework defined crucial themes and skills to help educators, policy makers and community to expand their horizons by unifying important content knowledge, specific skills, expertise and literacy. Their effort was among other to point out the essential skills for success in today's world, where the most important they found critical thinking, problem solving, communication and collaboration. While skills proficiency is highly associated with success on the labour market and the other aspects of wellbeing (OECD, 2013), organizations are regularly updating the requirements. The European Reference Framework (European Parliament, 2006) defined among key competencies communication in the mother tongue and in foreign languages, mathematical competence and basic competences in science and technology, digital competence, learning to learn, social and civic competences, sense of initiative and entrepreneurship, and cultural awareness and expression, which can be highly correlated with other definitions of skills for 21st century (OECD, 2000; OECD, 2013; P21, 2015). Similarities to the definitions of the important skills could also be drawn with the demand of the labour market, where employers expect work force that is strong especially in transversal skills (OECD, 2000; Deaconu, Osoian, Zaharie, & Achim, 2014). However, if it is general knowledge that professional skills are usually easy to achieve

and measure, it is the opposite regarding the transversal skills (Gilbert, Balatti, Turner, & Whitehouse, 2004). Finally, based on OECD (2013) the usage of internet and the mobile phones has increased threefold in the last decade, what enabled other solutions to spread the knowledge beyond the formal education.

MOOCs (Massive Open Online Courses) were introduced already in 2008, but gain on importance in 2012 (Siemens, 2012) as a new educational revolution that also put business models in reconsideration, because of the question of openness (Daniel, 2012; Kennedy, 2014). Despite that their name suggests the main goal is to be free or at least cheap knowledge, providers use them for various aims. Studies showed that universities mainly use them in marketing purposes for spreading programmes abroad (Daniel, 2012; Haggard et al., 2013) or as a kind of differential exam (especially in the US), while in Europe they are mostly used as the possibility for spreading the knowledge in the way of lifelong learning or supplementing the part of regular online study programmes (Kaplan & Haenlein, 2016). However, commercial interest is not neglected in either way. In general, two strategies were developed, where cMOOCs represent collaborative connectivist pedagogy and xMOOCs stand for the more traditional form (Haggard et al., 2013; Baturay, 2015). If cMOOCs deal more with collaboration and knowledge creation, then xMOOCs are often connected with knowledge duplication through video materials and other contents (Siemens, 2012; Kennedy, 2014).

It was estimated that the total number of students who signed up for at least one course until 2015 has crossed 35 million (Shah, 2015), therefore there is great competition on the market (Liyanagunawardena, Lundqvist, & Williams, 2015). Because of that it is not surprising that providers have different reputation, from elite universities joined together (edX by MIT and Harvard; Coursera by Stanford University, Princeton University, the University of Michigan, and the University of Pennsylvania; FutureLearn by The Open University etc.) to self-based examples of particular institutions or products of financed projects (Siemens, 2012; Haggard et al., 2013; Baturay, 2015). Finally, another signature feature of MOOCs is that there is a huge drop-out rate (Hone & El Said, 2016), because many users join the classes only for refreshing the already obtained knowledge or to ease the curiosity (Wang & Baker, 2015). The majority of MOOCs are in English, but other languages are slowly gaining on importance (Kennedy, 2014; Shah, 2015).

Although MOOCs have gain on popularity since 2012, they are still unfamiliar to wider audience outside of the higher education profession. There have been few reports of close connection with labour market, nevertheless there is not clear impact of their effectiveness in comparison to the traditional curricula (Haggard et al., 2013). From that point of view especially cMOOCs stand out regarding the ability to achieve transversal skills, while in comparison of “drill” from xMOOCs (Kaplan & Haenlein, 2016), they are more associated to collaboration, problem solving and systematic thinking (Siemens, 2012; Daniel, 2012).

The main aim of the research was to analyse MOOCs in the field of business and management in comparison of their overlap with lifelong learning skills for 21st century with emphasis on transversal skills.

Methods

In this study, the selection of MOOCs (n = 829) was analysed regarding the ability to provide users with the transversal skills. For selection the database of platform MOOC List (2017) was used, where only MOOCs form the category business and management that are thought in English were used. English MOOCs were found out as representative, while previous analyses showed they are prevailing among other languages (Geder & Puhek, 2017). The classification of transversal skills in MOOCs was based on the P21 framework (2015) that defined essential skills for the 21st century. Despite the skills are closely interconnected to key themes and core subjects, only transversal skills were used.

The analyses of detected transversal skills are presented as frequency (n) and percentages (n%), while mean (M) and standard deviation (SD) were used for particular category of skills. The linear regression was performed to define the variables, which had a statistical significant impact on the platform or university that provided MOOCs. The statistical significant were impact factors with $p < 0.05$ (Field, 2009). The analyses were conducted using the statistical package IBM SPSS Statistics 20.0.

Results and Discussion

MOOCs in the analysis were hosted on 39 different platforms (Figure 1), where only 6 platforms together hosted 84.3% (N = 699) of all analysed MOOCs. The platform Coursera took the lead with 356 (43.9%) MOOCs, followed by edX (112; 13.5%), FutureLearn (96, 11.6%), Canvas (51, 6.2%), OpenSAP (48, 5.8%) and NovoEd (36, 4.3%). Coursera is also highly respected provider with the majority of users on the market (Shah, 2015). Also other authors pointed out that providers have different reputation and as that are more or less familiar to users (Siemens, 2012; Baturay, 2015; Liyanagunawardena, Lundqvist, & Williams, 2015). Providers want to reach different users (according to educational status, nationality, employment etc.) (Baturay, 2015) and the platforms are also known for their pedagogical approach – xMOOC or cMOOC in general (Daniel, 2012; Kaplan & Haenlein, 2016). The abilities of platforms (Coursera and edX) regarding their quality of structure for users were also analysed.

Figure 1. Word cloud with (n =39) platforms that hosted analysed MOOCs in business and management sector

A linear regression was performed to predict the impact of platform or university as provider on the amount of particular transversal skills. The results have shown that neither of variables for providers could be identified as statistically significant. The overall model fit R2 was 0.62. Even though if a university has an excellent reputation, there is no guarantee that it will produce better MOOCs, which leads us to the finding that also smaller (one-man band) providers can be competitive and have found their niche on the market (Daniel, 2012). It was noticed that the main factor that plays important role in effectiveness and attraction of MOOCs is the content and the instructor's interaction with students (Hone & El Said, 2016; Jong, 2016).

Based on P21 Framework (2015) transversal skills were categorized in three main categories, which were latter on additional defined through subcategories (Table 1). While previous analyses (Geder & Puhek, 2017) showed weaknesses, because of the classification of categories given by providers, MOOCs were investigated regarding the P21 list of skills for 21st century. Previously the classification varied from platform to platform, but mostly it was classified in marketing manner and not regarding the actual skills (Geder & Puhek, 2017). Among covered skills, the mostly represented (Figure 2) were learning and innovation skills (M = 390.5; SD = 109.9), followed by information, media and technology skills (M = 175.7; SD = 113.9) and life and career skills (M = 138; SD = 110.7).

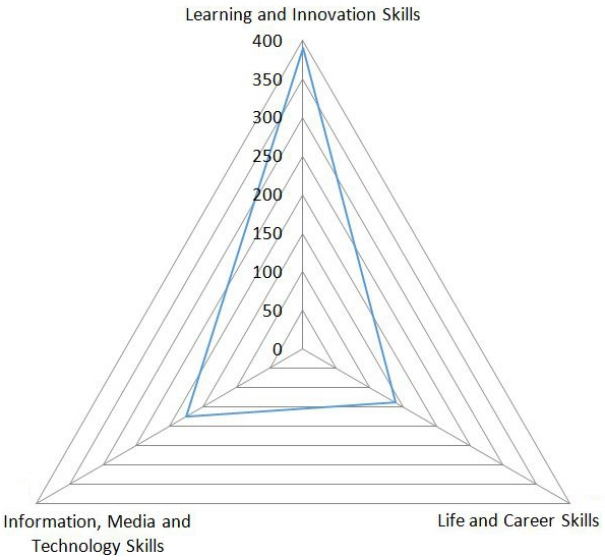

Figure 2. Spider chart with means (M) main categories of analysed transversal skills for 829 MOOCs in business and management sector

Table 1: Transversal skills for MOOCs in business and management sector (n = 829)

Transversal skills	Frequency (n)	Percent (n%)
Learning and Innovation Skills	1562	56.17
Communication	520	18.70
Critical Thinking and Problem Solving	434	15.61
Collaboration	340	12.23
Creativity and Innovation	268	9.64
Life and Career Skills	692	24.88
Leadership and Responsibility	312	11.22
Initiative and Self-Direction	164	5.90
Productivity and Accountability	128	4.60
Social and Cross-Cultural Skills	56	2.01
Flexibility and Adaptability	32	1.15
Information, Media and Technology Skills	527	18.95
Information Literacy	267	9.60
ICT Literacy	212	7.62
Media Literacy	48	1.73

Learning and innovation skills were found as the mostly covered, where communication was the most representative. While MOOCs are provided online, it is essentially that users master the communication, using oral, written and nonverbal communication. A lot of importance was also given to critical thinking and problem solving, which enabled users to reasoning successful and to effectively analyse and evaluate problems until they can be solved. As was presented in different cases (Mullen et al., 2017), MOOCs are suitable for hands-on activities and learning by doing on real life cases. Moreover, creative thinking and problem solving is one of the most desired skills in labour market (OECD, 2000; OECD, 2013; European Parliament, 2006). Finally, the collaboration enabled users to be able to work effectively in different teams and to collaborate with others colleagues (Jong, 2016). While not only assignments are prepared as teamwork, it is quite representative for MOOCs that the users also evaluate work of their peers (especially cMOOCs).

Secondary, among the life and career skills MOOCs in business and management field supplied users with leadership and responsibility, initiative and self-direction and productivity and accountability. While, leadership and responsibility are by definition one of the most important themes in business subjects, many authors (Wang & Baker, 2015) showed that the dropout rate in MOOCs is also influenced by ability of users' self-direction, managing of their goals and time. However, social and cross-cultural skills were not underestimated, despite the

fact that not all MOOCs were massive, but for sure they were multicultural. As it was found in different studies (Pong, 2016) the important role of success in MOOCs is the ability to connect users in community.

Finally, in information, media and technology skills, the analysis pointed out the importance of information and ICT literacy skills. While the first were connected with understanding and evaluating various formats of information, the second dealt with the usage of technology. However, ICT has been found among the few key competences that provide essential foundation for learning and supports all learning activities (European Parliament, 2006).

Despite the fact that this analysis only roughly describes the offer of MOOCs in business and management section, it clearly presents the capability of MOOCs to step aside the formal education by providing users with the skills for 21st century. Apart from anything else, MOOCs could be used as a perfect support of the educational system, but cannot be used as its substitution, as it was shown for autonomous intelligent systems (Dolenc, Aberšek, & Kordigel Aberšek, 2015). However, a detailed analyse of MOOC regarding their content, pedagogical approach, users' completion rate and their feedback would be needed to obtain reliable results.

Conclusion and Further Research

Despite the fact that only rough analyse of MOOC insights was made it clearly present the potential of their possibility to supply users with 21st century skills and transversal skills. Especially learning and innovation skills with communication, critical thinking and problem solving, collaboration and creativity and innovation were highly represented. These skills separate students who are prepared to take the extra mile from those who are not, and prepare them for the future. The skills that followed were life and career skills with leadership and responsibility and information, media and technology skills with information and ICT literacy. For the business sector the skill of leadership and responsibility extremely important and on the other hand the ICT is one of the key competences for mastering technology and information. Findings sufficiently cover the needs of labour market that were found in the literature.

It was also found that regardless the provider (platform or university) the amount of transversal skills remained unchanged, what could be important information for prospective users. When searching for new knowledge they can focus more on other information, such as content or pedagogy of the MOOC. As stated in other findings and given experiences of MOOC users, few of them preferred more cMOOCs, where the networking and collaboration with others plays the important role. On the other hand, other users preferred the more traditional approach of xMOOCs that in majority do not require communication with peers. Similarities could also be lined regarding the personal opinion about the amount of elements for visualisation, which could attract users and present learning in less formal way or distract their learning focus. Also the structure of courses (with type of exercises, number of badges, timeline of progress etc.) could differ from provider/platform. The users then have to decide, which one they find most appropriate for themselves.

Finally, the users' intentions of joining the MOOCs in the first place, either to refresh knowledge, observe new topics, get skills for new job etc., could play an important role of the overall opinion of the MOOC. However, for the accurate insight into each particular MOOC a detailed analysis has to be performed, where other descriptions of MOOC (its dropout rate, users' feedback) have to be taken into consideration.

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