The informational communication technology is a tool of global education

Daniela Hrehová[1,*], *Katarína* Teplická[2]

[1]Technical university in Kosice, Vysokoškolská 4, 040 00 Kosice, Slovakia
[2] Technical university in Kosice, Park Komenského 19, 043 84 Kosice, Slovakia

Abstract. Globalization generates new inputs for education policy-making and defines new problems that universities needs to address. In a global economy, most countries aim at raising their international competitiveness by offering new manpower profiles with new skills. With globalization, the information revolution, and increasing demands for a highly skilled workforce, nations are increasingly prioritizing and foster effective learning. This article looks at global perspectives on higher education and the role of ICT. The authors offer a balanced theoretical and research background of the opportunities and the potential benefits of information and communication technologies (ICT) for improving the quality of education in universities. The advances in Information and Communication Technologies are, at the same time, cause and consequence of globalisation. Authors discuss about using ICT technology, which contribute to the success of education in European universities. This form of learning promotes the development of important skills that students need to be successful both in the global labour market and in other areas of their lives. To meet the increasing demand for a workforce with up-to-date skills and competencies aligned with globally competitive industries and continue driving Slovakia economic growth into the next century, education systems have to embrace information and communication technology.

1 Introduction

Globalization is described as' the flow of technology, economy, knowledge, people, values and ideas, across borders. Globalization affects each country in a different way due to each nation's individual history, traditions, cultures, resources and priorities'. There are two prominent driving forces in today's global operating environment. The first is the trend towards increasing mobility: the flow of goods, money, capital, people, ideas, cultures and values across national boundaries is continuing to expand. The second is the growing interdependence of different parts of the world, their increasing interaction and cooperation in the economy, production, social development, communications, human exchange and education. Authors Mellow and Woolis [13] sensed the transformation of higher education into a dynamic economic power. They described three fundamental and seismic shifts that would profoundly change the field of higher education in the next several decades. These

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* Corresponding author: daniela.hrehova@tuke.sk

shifts include: (1) Globalization of higher education. Impact of technology on changing denotations of students, faculty, and knowledge. (2) Market analysis using a business model of higher education. (3) Information and Communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern global society and education. ICTs have enabled the globalised world and universities become greatly interconnected, interdependent and without borders [16].

2 Globalisation and ICT in education

Education is undergoing constant changes under the effects of globalisation. The effects of globalisation on education bring rapid developments in technology and communications [14] are foreseeing changes within learning systems across the world as ideas, values and knowledge, changing the roles of students and teachers, and producing a shift in society from industrialisation towards an information-based society. Authors Shahidi and Seyedi [18] addressed that globalization has always been an integral part of university life. Globalization, will present universities with a number of challenges and opportunities, which one of the most important of them is educational quality. Zondiros [22] argues that globalisation demands mobility and thus flexibility and has made it imperative to develop more flexible approaches to learning with the form of ICT. The latter implies that there is a challenge to improve skills via flexible and distributed learning through wider access to education. Global society based on new digital technology has affected the process of education and added dynamics to the transfer of information and knowledge creation. The European Commission is promoting the use of ICT in learning processes through its eLearning Action Plan, one of the aims of which is "to improve the quality of learning by facilitating access to resources and services as well as remote exchange and collaboration" [17]. Information and communication technology (ICT) have been touted as potentially powerful enabling tools for educational change and reform [11].

The mission of ICT is to transfer values, knowledge, and skills that students need for long-term success in a globalized business world undergoing constant technological and market transformations. Today's market is mostly based on advanced informatization. So that the students themselves could be more competitive in the market of education ICT is one of the main link in their development. Without well implemented ICT knowledge, students lose the battle with competitiveness in the future. Precisely forthis reason it is extremely important that the ICT is widely integrated in education and that it helps students to use all the advantages of new technology in their education. The current globalisation of higher education creates both challenges and opportunities. Relationship between universities education and globalisation gives special attention. The implications for lifelong learning and teaching are significant. With it, comes [6, 12, 17, 21]:

The movement of people, (students, professors, scholars, or experts). Students can take whole degrees in another country, become involved in exchange programmes, or simply register for a semester abroad; and staff can teach, research or visit academic institutions abroad.

The movement of university programmes themselves. A programme can be delivered by distance, face-to-face or mixed mode; franchised out to another country, or take all delivery responsibilities and reward their own degrees using someone's programme. Resulting in certification and equivalence in programs and degrees, it is an important step towards globalization of academic credentials.

The education providers: when universities deliver higher education outside of their own country. The delivering institution, in question, can either establish a 'branch campus' or they affiliate a local institution so that it can award degrees in their name. They might also use distance-learning modes to connect with their overseas' students. Thanks to ICT

students have the opportunity to hear lectures by world leading experts and educators. School's management has play an important role in the systematic implementation of e-learning as a teaching method. It is mandatory for all the lecturers and all the students to use E-learning. Each class has to exist in an e-learning form and it is the duty of all the professors to continuously improve the quality and the scope of e-learning integration.

The increased interconnectedness of the students: Communication technology is offering new challenges for students of all abilities as they can discuss issues of concern with their fellow students from around the world, developing communication and interpersonal skills, fostering a mutual understanding across countries thus and cultures.

2 Global trends in ICT and higher education

With the recent developments in information and communication technologies (ICTs), there is a significant change in daily life of universities. Eventually, integrating ICTs into teaching and learning offers significant potentials for higher education institutions and new challenges for educators, through their capacity to facilitate new kind of education in the digital environments. As a result, there have been significant changes in several professions' curricula and education such as design, business, medicine, and engineering, to accommodate new demands, opportunities, processes, and potentials provided by digital media and computational tools. The regular growth of global access, ease of use, resilience and functionality of ICT tools have turned them to become attractive and interesting as flexible educational tools to be used in educational institutions. Researches on ICT, always has optimistic outcomes. ICT majorly concentrates on enhancing the effectiveness and efficiency of conventional practice of teaching and learning process and this leads to educational change. Modern ICT tools are adopted by thousands of universities, and they are handy and most for free, attractive and exciting to adopt, which makes them necessarily important to be incorporated into education and most especially to enhance teaching/learning process. Most researchers (for example [1, 8]) proposed that ICT tools advocates for constructivist perspectives in education and that it has the possibility of ubiquitous learning compared to what is previously witnessed in the conventional educational environments. Most literature works have exposed usefulness of ICT tools for educational purposes [2]. These also combined its use in enhancing learners" discussions for improving learning stimuli and experience; and taking individualized subject materials [10]. Moreover, some researchers stated that ICT educational tools and activities are very useful for improving learners" collaborative and cooperative skills [7, 15, 20]. Previous studies show that the success of innovative practices of technology use in schools is strongly related to the particular characteristics of each school. The trends are expected to continue and to challenge many of the delivery models fundamental to formal education as it is practiced in most countries [19]. Special section on "emerging trends and challenges in digital learning [4, 5, 9]:

   a) Teacher managers/mentors: The role of the teacher in the classroom is being transformed from that of the font of knowledge to an instructional manager helping to guide students through individualized learning pathways, identifying relevant learning resources, creating collaborative learning opportunities, and providing insight and support both during formal class time and outside of the designated 45 minute instruction period.
   b) Gaming: The phenomenal success of games with a focus on active participation, built in incentives and interaction suggests that current educational methods are not falling short and that educational games could more effectively attract the interest and attention of learners.

c) Teacher-generated open content: Many online texts allow teachers to edit, add to, or otherwise customize material for their own purposes, so that their students receive a tailored copy that exactly suits the style and pace of the course. These resources in many cases complement the official textbook. Learners can reach and distribute electronic information, for example, e-journals, e-resources and can develop their learning ability through various newer ICT patterns of wireless connections, web, search sites, databases and web technologies.

d) Redefinition of learning spaces: Concepts such as greater use of light, colors, circular tables, individual spaces for students and teachers, and smaller open learning spaces for project-based learning are increasingly emphasized.

e) Smart portfolio assessment: The collection, management, sorting, and retrieving of data related to learning will help teachers to better understand learning gaps and customize content and pedagogical approaches.

f) Ubiquitous learning: With the emergence of increasingly robust connectivity infrastructure and cheaper computers, school systems around the world are developing the ability to provide learning opportunities to students "anytime, anywhere".

g) One-to-One computing: The trend in classrooms around the world is to provide an information appliance to every learner and create learning environments that assume universal access to the technology.

h) Cloud computing: Applications are increasingly moving off of the stand alone desk top computer and increasingly onto server farms accessible through the Internet. The challenge will be providing the ubiquitous connectivity to access information sitting in the "cloud".

i) Mobile Learning: New advances in hardware and software are making mobile "smart phones" indispensable tools. The computing capabilities will soon overtake personal computers as the information appliance of choice in the classroom. ICT covers not just computer but any technology involved in communication (table 1).

Table 1. Types of Information and Communication Technology (ICT) [3]

Micro-Films: The life of book is limited while microfilms can be preserved for more than fifty years and we can easily makes their multiple copies.
Instructional Technology: This is modern printing technique used for distance learners. The book designed through this technology is neither textbook nor work-book. These are self-learning books motivating for learning and comprehension.
Audio Tapes: Audio tapes are useful for giving theoretical information on any topic or subject.
Teleconferences: such conferences can be held for busy persons who cannot leave their work place. It is time saving and economical.
Floppy Discs: These discs have made the work of librarian very easy. Britannica Encyclopedia can be protected from dust. We can make their copies.
Telephonic Tutorials: Such types of telephonic tutorials are common where telephone facility is easily available. Orthopedically challenged, blinds whose mobility is restricted conveniently learn through telephones.
Satellite Communication: We can easily reach the people through satellite residing in any geographical area of the world. It has made us possible to open a channel exclusively for education. We have introduced such type of system in India by imparting lessons on T.V. and Radio by different agencies and educational institutions like UGC, NIOS etc.
Video Tapes: These are more useful for imparting and developing social, motor or language skills. We can acquire technical skills, communication skills or laboratory skills very effectively through video tapes.

j) Personalized learning: Education systems are increasingly investigating the use of technology to better understand a student's knowledge base from prior learning and to tailor teaching to both address learning gaps as well as learning styles.

3 Conclusion

In recent years, several studies and reports have highlighted the opportunities and the potential benefits of information and communication technologies (ICT) for improving the quality of education. ICT is viewed as a "major tool for building knowledge societies and, particularly, as a mechanism at the school education level that could provide a way to rethink and redesign the educational systems and processes, thus leading to quality education for all.

Universities have to develop a better base,for implication of ICT in educational affairs. In the 21st century, education systems face the dual challenge of equipping students with the new knowledge, skills and values needed to be competitive in a global market while at the same time producing graduates who are responsible adults, good citizens both oftheir country and of the world. ICT is a major trend with the globalisation of higher education. In today's environment, education – global and ICT skills - provides individuals with a better chance of employment, which in turn leads to a better lifestyle, power and status.

To get the highest level implies that a school not only has to modernise the technological tools, but also has to change the teaching models: the teacher's role, issues regarding classroom organisation, the teaching and learning processes, the interaction mechanisms, and so forth.

References

1. S. Brown, *From VLEs to learning webs: the implications of Web 2.0 for learning and teaching*. Interac. Learn. Environ. J. **18**, 1, 1-10 (2010)

2. C. Crook, T. Fisher, R. Graber, C. Harrison, C. Lewin, Implementing Web 2.0 in secondary schools: impacts, barriers and issues (2008)

3. K. Dev, *Globalization, Teacher Education and ICT (Information and Communication Technology).* International Journal of Academic Research and Development **2**, 4, 393-395 (2017)

4. R. Dale, *Globalisation, Knowledge, Economy and Comparative Education.* Compar Educ., **41**, 2, 117-149 (2005)

5. M.D. Dickey, *Teaching in 3D: pedagogical affordances and constraints of 3D virtual worlds for synchronous distance education.* Dist. Educ. **24,** 105-121 (2007)

6. L.G. Gül, *The Changing Trends in Education Frontiers in ICT.* Digit. Educ. **2** (2015)

7. R. Hall, M. Hall, Scoping the pedagogic relationship between self-efficacy and Web 2.0 technologies. Learn., media and technology, **35**, 3, 255-273 (2010)

8. S. Hamid, J. Waycott, S. Kurnia, S. Chang, Austral. *An empirical study of lecturers' appropriation of social technologies for higher education.* J. of Educational Technology **30**, 3, 295-311 (2014)

9. Hernández, H,B, et al., *Research Trends in the Study of ICT Based Learning Communities: A Bibliometric Analysis.* Eurasia J. Math., Sci Tech. Ed. **13**, 5, 1539–1562 (2017)

10. R. Chen, P. Hwang, T. Wu, M. Huang, T. Hsueh, *Assessment of implementing a digital game-based learning system over Facebook.* Proc. 11th IEEE International Conference on Advanced Learning Technologies, 620-621 (2011)

11. A. Kingsley, *Information Communication Technology (ICT) in the Educational System of the Third World Countries as a Pivotal to Meet Global Best Practice in Teaching and Development.* American J. of Computer Science and Information Technology **5**, 2, 1-5 (2017)

12. M. Magzan, K. Aleksic_Maslac, *ICT as an effective tool for internationalization of higher education.* ICT as an effective tool for internationalization of higher education (2009)

13. G.O. Mellow, D.D. Woolis, *Teetering between eras: higher education in a global, knowledge networked world***.** On the horizon **18**, 4, 308-319 (2010)

14. D.E. Mitchell, Y.S. Nielsen, Internationalization and Globalization in Higher Education (2012)

15. K. Pursel, H. Xie, *Patterns and pedagogy: exploring student blog use in higher education.* Contemp. Educ. Technology **5**, 2, 96-109 (2014)

16. B.A. Salawu, *CTs for Sustainable Development: The Nigerian Experience.* Inform., Society and Justice **1**, 2, 115-135 (2008)

17. A. Sangrà, M.González-Sanmamed, J. *The role of information and communication technologies in improving teaching and learning processes in primary and secondary schools.* ALT-J Research in Learning Technology **18**, 3, 207-220 (2010)

18. N. Shahidi, N. S.M. Seyedi, *The Impact of Globalization in Higher Education on the Universities' Educational Quality: A Regional Project on Shiraz Universities.* World Applied Sciences Journal **20**, 9, 1300-1306 (2012)

19. M.J. Sousa, Á. Rocha, *Special section on "emerging trends and challenges in digital learning.* Universal Access in the Information Society **17**, 4 (2018)

20. E. Tay, M. Allen, Education. Media International **48**, 3, 675-677 (2011)

21. M. Varira, *Globalisation and Higher Education Organization change: A Framework for analysis.* Higher Education **48**, 483-510 (2004)

22. D. Zondiros, Online, distance education and globalisation: Its impact on educational access, inequality and exclusion (2008)