THE POTENTIAL IMPACT OF MASSIVE OPEN ONLINE COURSES ON TECHNOLOGY EDUCATION AND GLOBALIZATION

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Abstract

For decades it has been identified by practitioners, educators and governments that there is a significant digital divide because of a lack of easy and ready access to the internet across countries. Over the years, this disparity has decreased somewhat because of open markets and global competition and the infiltration of telecommunication companies into some of these countries. These telecommunication companies provide the infrastructure and services needed to get access to the internet. This improvement addresses one aspect however, another area of disparity that is often highlighted is the availability and access to technology education and the development of the skill sets needed to succeed in this area. Globally we have seen the use of technology grow exponentially in every area of life from communications to production and supply chain management to the financial sector and the economy. It would therefore seem that it is in the best interest of any country to have its people embrace technology and acquire the skills needed to utilize technology effectively. For some countries however the economic cost of this type of education for all its citizens is a deterrent. Technology education and training can be obtained utilizing a variety of different methodologies both formal and informal, such as degrees, certifications, skill-based courses, self-taught tools and techniques. The internet has also had a significant impact on course availability, delivery and the way individuals learn. One such area that has evolved with over a dozen different platforms is in eLearning using Massive Open Online Courses (MOOC). A MOOC is a course of study in a specific area that is available online to anyone who wishes to utilize it. Most MOOCs are free, although some do have a fee which is charged for value-added services. Several universities and colleges in the United States and other countries globally have created MOOCs which are available for anyone to use. In 2016 it was reported that there were over 6000+ MOOC courses with over 58 million students enrolled. The research question being explored here focuses on the potential impact that this may have on bridging the gap in the area of technology education and the potential for a globalized educational platform. Do MOOCs have the potential of levelling the playing field as it relates to the availability of skills-based training in technology and other fields of study.

Keywords: Computer technology, technology education, MOOC, digitalization, globalization.

1 INTRODUCTION

The term “digital divide” is often used to describe the gaps between those who have physical access to modern computer information and communication technology such as the internet and those who do not or who have limited access. This is often used to show discrepancies between those living in rural versus metropolitan city areas and those living in developed versus developing countries. Within and across the United States this digital divide has narrowed significantly as a result of governments and telecommunications corporations penetrating some of these more remote areas [1][2]. Another aspect that has become as important as physical access is “digital literacy” which is used to describe discrepancies in technology-based skill sets across the population [3][4]. The question being explored in this research paper is whether Massive Open Online Courses (MOOCs) have the potential impact to level the playing field in this component of the digital divide dealing with digital literacy. The research indicates that MOOCs are growing at a very rapid pace, fuelled by globalization and the need for global training [5]. MOOCs are seen to be changing the way that individuals learn and develop skill sets and how they gain access to open educational course modules. MOOC courses fall into the category of distance education and eLearning, so some of the issues and challenges faced by MOOCs are very similar to the issues and challenges that have plagued distance education for years. MOOCs tend to develop based on the participants self-discipline and ability to self-regulate and organize themselves to work towards specific goals and shared areas of interest [5].

Many organizations have also started to embrace the MOOC concept and have implemented MOOC platforms as a means of improving the skill sets and professional development of their employees in a cost-effective manner [5]. Some of these organizations have also entered into partnership agreements...
with MOOC platform market vendors to provide specified training to equip their employees with skills for specific jobs. This therefore poses some challenges for MOOC content providers and stakeholders who are interested in utilizing this platform to bridge the digital divide. Content providers are faced with the task of highlighting the usefulness of the content and academic institutions, governments and other stakeholders in developing regions need to provide the encouragement and support [6]. There is limited research in the area of factors that impact an individual’s success in completing a MOOC, factors such as geographical location, gender and other demographic and related areas [7]. Information Technology and Computer science are areas of study in which the popularity of MOOCs have grown quite a bit [8]. MOOCs enables participants to learn at their own pace, at any time and from anywhere [9][10]. Research indicates that some students view MOOCs as enhancements to the courses they take in their formal education not a replacement of such [8]. So, this begs the question that educators often ask, can most of society learn by this method? The research indicates that a great percentage of individuals that start taking a MOOC course do not complete it [11][12]. MOOCs provide the ability of the participants to interact and to enhance the learning experience [13]. The implementation of MOOCs also has the potential of impacting the way educators deliver course material [14]. Several developing countries have embraced MOOCs and have examined the potential of utilization of these platforms to supplement and improve the access to and the quality of higher education within their regions [15]. The economic and financial implications of these courses for higher education is also examined in the research literature [16]. MOOCs are the “open source” software equivalent in the education environment.

2 METHODOLOGY

As an exploratory analysis of the trends in this area, enrolment data was collected from reports in various journals and news media. The MOOC enrolment population was analyzed utilizing the top course presentation platforms. The enrolment data was then further categorized in percentage enrolment in computer science and technology related courses. The number of courses by platform was also examined in order to see which platform and associated vendors had the majority share of the market.

3 RESULTS

The data seems to indicate that there is a fast-growing trend towards development and implementation of MOOCs in various areas. The digitalization of online education and advances in the development of MOOCs have enabled a potential explosion in the equality of education, facilitating the ability of anyone and everyone to receive the same high-quality education regardless of their socio-economic status or demographic location. MOOCs have provided a method of providing free or minimally priced quality education. Fig. 1 shows the total enrolment in the top 50 MOOC courses by platform [17].

![Total Enrolment in Top 50 MOOC Courses by Platform](image-url)
Figure 2 gives an indication of the number of “free” courses offered across various platforms. Udemy.com was not included in this study because it is an online learning platform that is primarily aimed at professional adults and unlike other academic massive open online course programs, which are for the most part provided free of cost, the research indicates that Udemy packages and sells for profit content from online content creators.

Fig. 2: Number of Courses by Platform

Approximately 30 to 40% of the top 50 courses by enrolment MOOCs are in computer science related courses. Figure 3 shows some of the top technology related courses in the top 50 MOOC courses.
Although the economies of developing regions differ in size, government policies and resources, they seem to share a common set of problems; these include the relatively underdeveloped state of technology, insufficient technically skilled human resources, and deficiencies in economic resources. The potential impact of MOOCs to level the playing field in developing regions is a strong one. The potential of technology to improve labour productivity and increase the competitiveness and economic opportunities of developing countries, which can lead to long-term and sustained economic growth, has also been highlighted over the years in the research literature. The research indicates that there are various factors which affect the success of participants in MOOC courses in developing regions. Figure 4 highlights some of these.

4 CONCLUSIONS

Innovative technologies have rapidly changed the way the world communicates and does business. Participation in this new global economy requires developing nations to have a scalable and flexible network infrastructure that is economical and reliable. Additionally, the necessary hardware and software applications and the skill sets to utilize these must be obtained to facilitate communication both locally and internationally over this network. Comparatively, developing countries like Caribbean nations traditionally have less access to quality skills training than more developed countries. The economic state of any country can also affect the country’s ability to invest in information technology infrastructure and implement technical and managerial programs in public schools and universities. Cross cultural diversity of participants in MOOCs can also have an impact on successful completion. Despite these factors however the potential is there for MOOCs to bring about a revolution in education in developing regions.
REFERENCES


