ORIGINAL

E-Teaching in Higher Education: An Essential Prerequisite for E-Learning

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ABSTRACT

The discourse on the implementation of the digital technologies in higher education settings focuses mainly on students' learning rather than on professors' teaching. The little attention paid to the crucial role of teachers in online settings results in a restricted and moderate adaptation of the technologies in higher education worldwide. In most higher education institutions, the new technologies are used mainly for add-on functions and not for substituting face-to-face encounters or for an intensive web-enhanced teaching. This article starts with briefly explaining why most students, particularly at the undergraduate level, are unable and/or unwilling to study by themselves without expert teachers to guide their knowledge construction, discusses the problematics of digital literacy of teachers, examines the main reasons for the reluctance of many academics to utilize the technologies more fully in their teaching, and concludes by recommending some strategies for incorporating more fully the huge array of the technologies' capabilities in higher education institutions.

KEYWORDS: E-TEACHING, E-LEARNING, ACADEMIC FACULTY, DIGITAL TECHNOLOGIES, HIGHER EDUCATION.

1 INTRODUCTION

The new electronic media were introduced into the academic world as a sudden thunderstorm without having sufficient time to define the exact functions that they are supposed to fulfill or substitute. The impact of the technologies on learning and teaching, in general, and in higher education, in particular, is still unclear and open to much debate and research. The discourse on the implementation of the digital technologies in higher education settings focuses mainly on students' learning rather than on professors' teaching (Alexander et al., 2017; Andrews & Haythornthwaite, 2009; Bates & Sangra, 2011; Guri-Rosenblit, 2009, 2010; Harasim, 2000; Johnson et al., 2016). Many policy papers, academic publications and research studies on the digital era highlight the importance of putting the students in the center of the learning/teaching process, and of designing student-centered programs. There is a noticeable scarcity of discussion on the essential role of teachers in the relevant literature on online learning. The underlying assumption in many publications dealing with the potential advantages of employing the digital technologies in higher education

tion is that the role of teachers should be reduced from a "sage on the stage" to a "guide on the side", and that such a transformation takes place naturally in online settings. This article challenges this assumption. E-teaching is an essential prerequisite for e-learning, particularly for novice students in any educational framework. The roles of teachers in an online environment differ meaningfully from their traditional roles in a classroom setting. Most teachers and professors nowadays do not possess a sufficient digital literacy (Alexander et al., 2017; Wineburg et al., 2016). To equip professors with adequate tools to use efficiently and effectively the wide range of capabilities enabled by the new technologies necessitates a conceptual redefinition of the teachers' roles, a well designed training, and ongoing support systems for both students and teachers in the learning/teaching encounters. The little attention paid to the crucial role of teachers in online settings results in a restricted and moderate adaptation of the technologies in higher education so far. In most higher education institutions, the new technologies are used mainly for add-on functions and not for substituting face-to-face encounters or for an intensive web-enhanced teaching (Bates & Sangra, 2011; Gradinarova, 2015; Guri-Rosenblit, 2010; Guri-Rosenblit & Gros, 2011).

This article aims to highlight the importance of defining clearly the roles of teachers in various online study environments, and design appropriate training and support mechanisms for that purpose. It starts with briefly explaining why most students, particularly at the undergraduate level, are unable and/or unwilling to study by themselves without expert teachers to guide their knowledge construction, discusses the problematics of digital literacy of teachers, examines the main reasons for the reluctance of many academics nowadays to utilize the technologies more fully in their teaching, and concludes by recommending some strategies for incorporating more fully the huge array of the technologies' capabilities in higher education learning/teaching encounters.

2 CAN STUDENTS STUDY BY THEMSELVES?

Many define the young generation of students who were born into the digital age as "digital natives", "millennial students" or "*Homo Zappiens*" (Dede, 2005; Oblinger, 2003; Ubachs et al., 2017). Students interact and connect 24/7 with other people through the use of social networks and text messaging, and express their opinions in a variety of Internet platforms. Young students are often described as possessing a natural inclination towards studying through the web, as taking more responsibility for their personal and educational activities, and as expecting to use relevant digital tools when they study at university (Pappas, 2017; Ubachs et al., 2017).

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Many assume that today's students are willing and able to design their own study programs based on their interests, talents and inclinations, and control their own study process. Some even argue that students should be at the center of university decision making, including curriculum design and pedagogy, and should also be viewed as creators of knowledge (Alexander et al., 2017).

However, there seems to be a disconnection between how students experience and interact with technology in their personal and social lives and how they use technology in their roles as students. Many of the young students use the new technologies for various purposes, such as downloading music files, chatting with friends, playing complex video games and even preparing fancy PowerPoint presentations, but most of them do not know how, or are not willing to study extensively through the electronic media (Guri-Rosenblit & Gros, 2011; Wineburg et al., 2016). It is not sufficient for college students to simply know how to use the range of mobile devices, software, and media-creation tools that exist at a given time throughout their studies in a higher education institution. They must also be able to acclimate to new digital environments and develop habits that cultivate the continuous mastery of new digital skills, given the rapid pace of technological development (Alexander et al., 2017; Johnson et al., 2016; Ubachs et al., 2017).

Part of the misconception related to the ability of students to become autonomous learners and design their own programs in the online era stems from the confusion between access to information and knowledge construction. The Internet enables access to boundless information of any nature, but there is an immense difference between imparting information versus constructing knowledge. The traditional role of educational establishments at all levels, from kindergarten up to university, has been to assist their students to construct knowledge through guidance, tutoring and personal attention, and not merely to impart information. Children could have studied at home from encyclopedias and books, at the pre-digital era, instead of going to school, if the main purpose of education was to acquire pieces of information. For most students, accessible information does not turn automatically into meaningful knowledge without the assistance of a teacher or an expert (Andrade, 2015; Benson & Brack, 2009; Educational Testing Service, 2009).

Novices in any educational framework, be it an elementary school or undergraduates at a university, need the ongoing support and guidance of expert teachers in the process of constructing new information into meaningful knowledge (Guri-Rosenblit, 2009, 2010; Guri-Rosenblit & Gros, 2011). It follows that the discourse and research on e-learning should be complemented by an e-teaching co-equal, focusing on the new roles that teachers should acquire in order to control a digital literacy and be able to manage effectively e-learning practices of their students.

The Educational Testing Service (ETS) in the US, a non-profit group that is responsible for the SAT tests and a number of other standardized tests, have worked since 2001 with educators, information technology experts, and leaders from higher education institutions to develop a special iSkills assessment designed to measure what it means to be literate in the digital age for students and teachers (Educational Testing Service, 2009). In their overview, they approach higher education institutions with the following question: "Your students can text message and download music files, but can they solve problems and think critically in a digital environment?" From their experience they conclude that today's students are part of a technology-savvy generation, but they are often still at loss when it comes to using their critical thinking and problem-solving skills in a digital environment; a skill set identified as Information and Communication Technology Literacy.

A report released recently by Stanford History Education Group shows a dismaying inability by students to reason about information they see on the Internet (Wineburg et al., 2016). The report covered new literacy, as well as students' ability to judge Facebook and Twitter feeds, comments left in readers' forums and news sites, blog posts, photographs and other digital messages that shape public opinion. The assessments were administered to students across 12 states - 7,804 responses were received. Sam Wineburg, the lead author of the report, indicates that although many assume that because young people are fluent in social media they are equally perceptive about what they find there, the findings of this study showed the opposite to be true. Many students were found to be inept and ill-prepared when it came to evaluating information they encountered from the Internet and social media sources. In a series of problem-based tasks, most students were unable to differentiate basic elements of websites. They failed to properly rationalize or explain their decisions concerning information quality, accuracy or credibility. Even at Stanford University, which is a highly selective elite university, 60% of its students who participated in this study, failed to find relevant information and its sources.

In another recent study conducted by Temple University Libraries, 500 librarians responded to a survey about first year students' digital research skills (Alexander et al., 2017). The findings of the survey indicated that most students were unprepared for college level studies. The lack of digital literacy was manifested by overreliance on Wikipedia and Google, inability to evaluate content, or dysfunctional lack of awareness (or unwillingness to learn) about library research tools. Many librarians commented that digital literacy education often fails because too little time is allotted for it in college curriculum, many non-library faculty and administrators deprioritize it, and students possess an overconfidence about their digital literacy skills upon entering college, a fact that leads them to underestimate its value to their academic success. It follows that learning effectively and efficiently through the electronic technologies requires training and study and cannot be taken for granted as a natural attribute possessed by the young generation. Furthermore, it highlights the important role of teachers and experts in designing meaningful study experiences.

The development of the massive open online courses (MOOCs) in the last decade exemplifies the difficulty of self-study. MOOCs aim at distributing open online courses to hundreds of thousands, and even millions of students (Bonk et al., 2015; Lane, 2017; Swan et al., 2015). Clearly, MOOCs offered by reputable and enthusiastic professors at elite universities might assist greatly academics in higher education institutions worldwide in designing and upgrading their courses and might benefit professionals willing to update their knowledge in specific areas, or individuals eager to gain knowledge on themes of interest to them. They might also assist in providing a taste of introductory courses to potential students who wish to explore possible areas of study or be accredited on a limited basis in some academic programs. But it seems quite unlikely that MOOCs can replace fully undergraduate programs. As aforementioned, many students lack the ability of constructing their programs and managing their studies independently. The dropout rates of students registering for MOOCs are very high. Less than 10% complete MOOCs (Bonk et al., 2015). It is quite evident that most students, particularly at the undergraduate level, need substantive guidance, support and counseling throughout their study process.

3   DIGITAL LITERACY OF TEACHERS

It is quite clear nowadays that for e-learning to become a dominant learning pattern, technology alone will not suffice. Students need digitally confident academics. The new technologies require the academic faculty to assume new responsibilities and to develop a range of new skills. Many studies specify a long list of roles which teachers are expected to undertake when utilizing the new technologies in their teaching (Alexander et al., 2017; Bates & Sangra, 2011; Benson & Brack, 2009; Educational Testing Service, 2009; Ubachs et al., 2017; Wilson et al., 2004). Wilson and his colleagues (Wilson et al., 2004), for instance, specified the following tasks which teachers are expected to perform in online teaching: Provide syllabi, instructional resources, communication tools, and learning strategies; monitor and assess learning and provide feedback, remediation, and grades; identify and resolve instructional, interpersonal, and technical problems; and create a learning community in which learners feel safe and connected and believe their contributions are valid. Definitely a long list of responsibilities which most of the professors have not been prepared for in their socialization processes into the academic world.

Currently, most universities are not employing widespread strategies to address the digital literacy needs of their academic faculty. Most academic faculty are not well-equipped to guide students in developing the digital competencies they need. Interestingly, in the report released by the Stanford History Education Group, aforementioned, not only 60% of Stanford University students failed to identify Internet sources, but also 40% of the academic faculty failed to trace information to its source. These were history scholars who were trained over decades to look closely and critically at texts. Yet, many could not navigate a simple problem of web credibility (Wineburg et al., 2016).

In response to the growing need for digital literate teachers capable of preparing students with applied ICT literacy skills, the Educational Testing Service (ETS) in the USA has developed a new certification program entitled *ICritical Thinking –Certification Powered by ETS* (Educational Testing Service, 2009). The *ICritical Thinking* certification features real-time simulated, scenario-based tasks designed to measure teachers' ability to navigate, critically evaluate, and make sense of the wealth of information available through digital technologies. The *ICritical Thinking* certification exam provides a clear understanding of how teachers incorporate and integrate technologies while performing on an array of tasks, such as: **define** (understand and articulate the scope of an information problem in order to facilitate the electronic search for information); **access** (collect or retrieve information in digital environments); **evaluate** (judge whether information satisfies an information problem by determining authority, bias, timeliness, relevance, and other aspects of materials); **manage** (organize information to help you or others find it later); **integrate** (interpret and represent information using digital tools to synthesize, summarize, compare, and contrast information from multiple sources); **create** (adapt, apply, design and construct information in digital environments); and **communicate** (disseminate information tailored to a particular audience in an effective digital format) (Educational Testing Service, 2009). Based on the results of the exam, appropriate training programs are tailored for teachers.

There is an urgent imperative for universities to invest in the digital literacy of their academic faculty. Individual academic faculty operating in a digital environment without any training or support and without adequate resources are likely to become disenchanted with both the product and the process, and this re-action might naturally extend to their students. Such an outcome only reinforces the innate skepticism regarding the beneficial applications of the digital technologies in academe.

Diverse digital environments should be created in the universities where academics can experiment with technology enhanced learning tools and discuss the pedagogy underpinning their uses, in order to be able to facilitate student engagement (Alexander et al., 2017; Johnson et al., 2016, Wineburg et al., 2016). Obviously, as technologies develop and new uses proliferate, the meaning of digital literacy will continue to evolve. New tools and practices will confront both teachers and students with the possible needs for new skills.

4   RELUCTANCE OF ACADEMICS TO ADOPT INTENSIVELY ONLINE TEACHING

Many studies point to the fact that the applications of the advanced technologies in higher education settings worldwide are currently quite limited in higher education, and most online applications are used mainly as add-on functions to classroom teaching (Andrews & Haythornthwaite, 2009; Bates & Sangra, 2011; Guri-Rosenblit, 2010; Power & Gould-Morven, 2011). There are several major reasons for the reluctance of academic faculty to utilize the wide spectrum of possibilities embedded in online teaching: (1) Unbundling of the professional responsibility; (2) Work overload and burnout; (3) Lack of ongoing support systems; and (4) Intellectual property concerns.

4.1   Unbundling of the professional responsibility

One of the challenging demands of online teaching is associated with the unbundling of the professional responsibility of teaching in any given course into discrete tasks undertaken by an array of academic, technical and administrative staff (Bates & Sangra, 2011; Guri-Rosenblit, 2010; Guri-Rosenblit & Gros, 2011). Within conventional classroom teaching, academics are responsible for the entire development and delivery process of their courses - they plan the content of their course and its relevant literature, they teach the course, decide on the nature of the relevant assignments and exams, and are usually also responsible for checking and grading the students' work. In large classes they are often supported by teaching assistants, who work under their close supervision and guidance.

When the large distance teaching universities were established in Europe in the early 1970s, Peters, the founding president of FernUniversität in Germany, argued that academics in the new distance teaching universities form a new species of professors, and that the traditional roles of professors have been challenged drastically: "It is a difficult task to switching from oral teaching to teaching by means of the written word and by merging traditional teaching techniques and modern technological ways of communication…The result is revolutionary in the sense that an academic teaching tradition of several hundred years had to be changed radically at once" (Peters, 1997, 71).

The distributed teaching responsibility characterizes nowadays also comprehensive online teaching both in distance and in campus-based universities. Academics who teach online are frequently required to collaborate in a team framework with tutors, editors, instructional designers, computer experts, graphic production personnel in developing and delivering their courses. Such working conditions differ immensely from the sole and overall responsibility of professors of their courses which has characterized the academic teaching for over 900 years. Clearly, in a team framework, the professors' academic freedom in

teaching is reduced in comparison to their being responsible for designing the overall learning/teaching process.

4.2 Work overload and burnout

An additional important reason explaining the reluctance of many academics to engage in online teaching relates to the fact that to design study programs for online teaching constitutes a complicated and demanding task. Teaching online, or even preparing some materials for online teaching, requires faculty to devote much more time to the preparation of study materials than they would for a face-to-face classroom presentation, both if they are required to operate within a team framework or undertake (Bates & Sangra, 2011; Larremendy-Joems & Leinhardt, 2006; Power & Gould-Morven, 2011).

Many studies highlight the fact that academic faculty find that teaching online is time consuming, is more isolated and requires specialized skills (Bates & Sangra, 2011; Guri-Rosenblit & Gros, 2011). Stanford professors who have offered Coursera courses in 2012 claimed that it took a lot of time and effort to get them up and running. As Prof. Chris Turning, offering one of his courses as a MOOC, put it: "This is clearly being propelled through a lot of extra faculty sweat" (Johnston, 2012, 52).

The overload put on professors who teach extensively online has been found in several studies to result in a higher burnout rate as compared to professors that do not teach online. Hislop & Ellis (2004) as well as Lacritz (2004) found that teaching online becomes a major workplace stressor leading to burnout symptoms.

4.3 Lack of ongoing support systems

There is plenty of accumulated evidence that indicate that many professors most commonly use the new technologies for administrative tasks, such as record keeping, lesson plan development, information presentation, basic information searches on the Internet, but overall are less competent in using the technologies compared to their students. Many academics report that they do not feel confident in utilizing the advanced technologies, and this lack of confidence affects to a great extent the way in which the learning/teaching processes are conducted. Ongoing and just-in-time support systems have been recognized as crucial for the use of technology in instructional delivery (Bates & Sangra, 2011; Benson & Brack, 2009; Guri-Rosenblit, 2010; Johnson et al., 2016; Ubachs et al., 2017).

4.4 Intellectual Property Concerns

Concerns about intellectual property rights may also be seen as a barrier for the implementation of online teaching in academic environments. 'Copyright' is a legal concept, enacted by governments, giving the creator of an original work exclusive rights to it, usually for a limited time (of fifty to hundred years) after which the work enters the public domain.

The development of the Internet, the digital media and the computer networked technologies, have introduced numerous difficulties in enforcing copyright and prompted reinterpretation of the meaning of 'fair use' in online teaching (Guri-Rosenblit, 2010; Alexander et al., 2017). Academics confront several dilemmas in relation to copyright laws in the digital millennium. On the one hand, they are concerned as to losing intellectual property over their course materials, some of which include innovative ideas and original constructs. And on the other hand, the stringent copyright laws which have been initiated and formulated in the last decade as to the use of others' works in their ongoing teaching, as they do regularly in classroom teaching, deters some professors from utilizing the new technologies in their teaching.

5 CONCLUDING REMARKS

The discourse on the implementation of the digital technologies in higher education settings focuses mainly on students' learning rather than on professors' teaching (Alexander et al., 2017; Andrews & Haythornthwaite, 2009; Bates & Sangra, 2011; Guri-Rosenblit, 2009, 2010; Harasim, 2000; Johnson et al., 2016; Pappas, 2017). The little attention paid to the crucial role of teachers in online settings results in a restricted and moderate adaptation of the technologies in higher education so far. In most higher education institutions, the new technologies are used mainly for add-on functions and not for substituting face-to-face encounters or for an intensive web-enhanced teaching (Bates & Sangra, 2011; Gradinarova, 2015; Guri-Rosenblit, 2010; Guri-Rosenblit & Gros, 2011). This article purported to highlight the most essential role of teachers in e-learning environments. E-teaching is an essential prerequisite for e-learning, particularly for undergraduates.

The lack of digital literacy is manifested today by both students and teachers (Alexander et al., 2017; Wineburg et al., 2016). The roles of teachers in an online environment differ meaningfully from their traditional roles in a classroom setting. Most teachers and professors do not possess nowadays a sufficient digital literacy and do not utilize the wide range of capabilities which the technology enables (Andrade, 2015; Benson & Brack, 2009; Educational Testing Service, 2009; Guri-Rosenblit & Gros, 2011).

To equip professors with tools to use the wide range of capabilities enabled by the new technologies necessitates a conceptual redefinition of the teachers' roles, a well-designed training, and ongoing support systems for both students and teachers. The implementation of new modes of teaching and learning requires institutional strategies and frameworks (Alexander et al., 2017; Bates & Sangra, 2011; Ubachs et al., 2017). It is of great importance to empower universities to operate efficiently in the digital age. Professors should get appropriate training that enhances their digital literacy and provides them with useful tools to design courses that reflect access to a rich spectrum of knowledge sources and resources on the internet and in digital libraries. It is of tremendous importance to allocate funds for teacher and staff support services, and highlight good practices of blended learning and teaching, open and flexible education, and the effective use of MOOCs and Open Educational Resources (Alexander et al., 2017; Johnson et al., 2016).

In addition to the lack of digital literacy, there are additional reasons for the restricted use of technologies in the academic world: The unbundling of the professors academic responsibility for the overall teaching process; work overload in preparing curricula suited for online learning, which leads also to some extent to feelings of burnout; lack of ongoing support systems; and intellectual property concerns (Lacritz, 2004; Guri-Rosenblit, 2010).

Teachers worldwide are used to operating as "soloists", having the overall responsibility for their courses from the initial stage of planning the structure and pedagogics of the content they purport to teach, through the actual teaching to the evaluation phase. Online courses usually necessitate the collaboration with other professionals and/or colleagues, and the mastery of different course design skills (Andrade, 2015; Bates & Sangra, 2011; Benson & Brack, 2009; Educational Testing Service, 2009; Gradinarova, 2015; Guri-Rosenblit, 2010; Hislop & Ellis, 2004; Power & Gould-Morven, 2011; Wilson et al., 2004). Academics will have to become in the future reconciled with collaborating with other colleagues and professionals in designing materials and in the teaching process. They will need to learn how to collaborate in a team framework with editors, instructional designers, television producers, computer experts, graphic production

personnel, as well as with other colleagues in developing and delivering their courses (Andrade, 2015; Wilson et al., 2004). At the same time, teachers will have greater flexibility to choose the teaching styles better suited for their personal strengths and individual preferences.

In order to ease the work overload in preparing curricula suited for online learning, many initiatives emerged in the last decade of joining forces between higher education institutions and expert technology companies to prepare richly designed courses for the use of many academic institutions. MOOCs and Open Educational Resources are an example of such endeavors (Kolowich, 2012; Lane, 2017; Swan et al., 2015). Policy makers in higher education at different national jurisdictions allocate special and generous funds to enhance collaboration between higher education institutions to develop rich designed curricula for the benefit of a large audience of teachers (Alexander et al., 2017; Ubachs et al., 2017). Well-articulated courses prepared by a range of professionals might greatly ease the burden put on professors to design by themselves materials suited for online teaching.

In order to overcome the reluctance of many professors to use extensively the digital technologies, there exists a burning need to develop appropriate incentives and ongoing support systems available both to students and professors in the learning/teaching process (Andrade, 2015; Bates & Sangra, 2011; Guri-Rosenblit, 2010; Johnston, 2012). Already, some universities acknowledge the fact that online teaching and preparing materials for online teaching involves a great investment of time as compared to conventional teaching in classrooms. Lowering the amount of teaching hours required by professors in different higher education systems, as well as compensating them by additional bonuses is of great importance for encouraging professors to devote time for upgrading their digital skills and participating in the preparation of MOOCs and other digital course formats.

In addition to extra time allocation or monetary incentives, it is of particular importance to provide an ongoing and just-in-time pedagogical and technical support for e-learning and e-teaching at the institutional level. Many unexpected problems pop up in the real time teaching/learning process. Already, many institutions acknowledge the need to recruit in the future a broader range of personnel to complement academic staff in order to implement the technologies more effectively in their academic teaching (Alexander et al., 2017; Bates & Sangra, 2011; Benson & Brack, 2009; Gradinarova, 2015; Johnson et al., 2016).

Copyright issues in preparing rich study materials constitute a problem both at the institutional and individual levels. Preparing online courses, Open Educational Resources or MOOCs involves frequently great investments, which deters many academics from participating in the design and development of such courses (Bonk et al., 2015; Guri-Rosenblit, 2010; Lane, 2017; Swan et al., 2015). Within the academic community there are currently many initiatives of widening the open source usage. Open source frameworks enable to access instructional resources and academic courses in a plethora of areas. Side by side with widening the open source movement, higher education institutions should assist their academic faculty in handling copyright issues relevant to the preparation of their courses.

In sum, e-teaching constitutes an essential prerequisite for achieving efficient and fruitful e-learning in higher education, particularly at the undergraduate level, and it provides multiple domains of investigation that have not been explored yet.

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