

OPPORTUNITIES AND CHALLENGES OF THE INCORPORATION OF INFORMATION TECHNOLOGIES AND COMMUNICATION (ICT) IN ACCOUNTING EDUCATION

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Abstract

Technology advances and encompasses greater spaces in society, aimed at generating facilities for daily life activities, that is, occupying spaces such as education, transportation, food ordering, communication, health care, among others. In particular, the initiatives that integrate technology into education are manifold and aim to achieve an optimal educational process regarding variables such as time, economic resources, and academic results, graduates professional performance, among other objectives that generate transformations and address needs and problems of today's society. Based on the foregoing, it is important to recognize that technology can be applied in education under different approaches and lead to different outcomes; therefore, this paper analyzes the issues, opportunities and challenges of incorporating information and communication technologies (ICT) into Education in Accounting.

Keywords: *ITC, accounting, education, virtual education.*

1. INTRODUCTION

The act of educating is focused on the development and improvement of the intellectual abilities and behavior of an individual, in the words of the Ministry of Education of Colombia; it seeks “to promote the development of competencies as a chain and an articulated process that trains integral and productive citizens” (MEN, 2009). But such a process in the “society of knowledge” is not done in an abstract way, it is mediated by Information and Communication Technologies (ICT), which for Manuel Castells cited by López-Navas (2014) is given in a “networked society”.

Hence, the teacher-student relationship is redefined as an interaction where meetings promote the exchange of information on the basis of content; meeting sessions that aim to raise awareness on certain topics and promote reflection on them. In face-to-face education, these interactions occur when physical spaces and time coincide, incorporating to a greater or lesser extent “communicative infrastructures” to meet learning objectives. As an alternative to such a model in the 20th century, there have been experiences of long-distance education, involving the use of postal mail, telephone and even face-to-face tutoring. These educational experiences reinforced with ICT led to e-learning or also known with d-learning (long-distance learning) (López-Navas, 2014).

Then b-learning (blended learning) came along as a conjunction with the best models of the face-to-face and virtual education models. According to Osorio (2010), “*hybrid learning environments combine face-to-face instruction with instruction mediated by information and communication technologies. Behind this definition, there is an intention to combine and approximate two teaching-learning models: the traditional face-to-face learning system and the e-learning system, in order not to give up the possibilities offered by both.*” It is in this scenario that face-to-face education mediated by virtual learning environments (AVA) emerges, that is, the incorporation of ICT.

Pursuant to the foregoing, it is important to recognize that technology is being applied to education, as well as to different daily life activities such as transport, communications, health, to name a few. Hence, this paper analyses the problems, opportunities and challenges of incorporating ICT into education, specifically in the accounting field. To this end, a qualitative analysis was applied to thirty-three scientific documents published between 2001 and 2018, using the NVIVO 12 Plus software.

2. MATERIALS AND METHODS

The methodology used to analyze published research about teaching and learning processes mediated by didactics and virtual strategies is qualitative, because this approach allows analyzing it from the ways in which the phenomenon of virtual education in literature has been approached and problematized (López, 2009), highlighting the contributions and issues of this form of education.

The method of documentary analysis was used, which allowed to identify the ways in which the incorporation of ICT in teaching and learning processes is being addressed, which are evidenced in different reference documents such as papers, dissertation papers and research books, which constitute the sample of analysis and the fundamental input to this paper (López, 2009). The NVIVO 12 Plus Qualitative Analysis Software was used for the analysis of studies related to didactics and the concept of virtual education.

The sample consisted of thirty-three research papers collected from Google Scholar, ProQuest, EBSCO (Education Source) and ScienceDirect, which were published from 2001 to 2018 (Table 1), taking into account topics directly related to didactics in virtual education.

Authors	Year of publication	Document Type	Title
Adelsberger et al.	2001	Lecture	Virtual Education in Business Information Systems (VAWI) - facilitating collaborative development processes using the Essen Learning Model
Barajas	2002	Paper	Restructuring Higher Education institutions in Europe: The case of virtual learning environments
Boyce	2012	Paper	Expanding the Horizons of Accounting Education: Incorporating Social and Critical Perspectives
Cacheiro et al.	2006	Lecture	Open and Distance Learning Methodologies in Higher Education
Campion et al.	2012	Paper	Web 2.0 and Higher Education: Its Educational Use in the University Environment
Cano & Garca	2015	Paper	Analysis of risks in a Learning Management System: A case study in the Spanish National University of Distance Education (UNED)
Cartelli et al.	2008	Paper	Towards the Development of a New Model for Best Practice and Knowledge Construction in Virtual Campuses
Cervero	2000	Paper	Trends and Issues in Continuing Professional Education
Crampton et al.	2012	Paper	Cross-Discipline Investigation of the Relationship between Academic Performance and Online Resource Access by Distance Education Students
Du & Taylor	2013	Lecture	Flipped classroom in first year management accounting unit – a case study
Frandsen	2016	Book chapter	Critical Perspectives on Accounting
García et al.	2016	Paper	Development and evaluation of the team work skill in university contexts. Are virtual environments effective?
González	1997	Paper	Evidence of Rote Learning of Science by Spanish University Students
Habibah & Iqbal	2017	Paper	Accounting Students' Motives, Expectations and Preparedness for Higher Education: A Study among University and College Students in Multan
Hernández & Buitrago	2018	Paper	Aplicación de una wiki en el proceso enseñanza aprendizaje en contabilidad
Jans & Awouters	2009	Paper	E-learning Competencies for Teachers in Secondary and Higher Education
Kickmeier-Rust et al.	2009	Working paper	80Days: Melding Adaptive Educational Technology and Adaptive and Interactive Storytelling in Digital Educational Games
Lerro et al.	2012	Lecture	Integration of an e-learning platform and a remote laboratory for the experimental training at distance in engineering education
Márquez Lepe & Jiménez-Rodrigo	2014	Paper	Project-based learning in virtual environments: a case study of a university teaching experience
Martínez-Argüelles et al.	2013	Paper	Dimensions of Perceived Service Quality in Higher Education Virtual Learning Environments
Oradini & Saunders	2008	Lecture	The use of social networking by students and staff in higher education
Pagano	2007	Paper	Tutors within distance learning. A theoretical contribution. RUSC Univ
Rajasingham	2011	Paper	New Challenges Facing Universities in the Internet-Driven Global Environment

Reyes-Maldonado & Chaparro-García	2013	Paper	Active methodologies for teaching International Financial Reporting Standards in a virtual learning environment
Sackey et al.	2017	Paper	Industry 4.0 learning factory didactic design parameters for industrial engineering education in South Africa
Sampaio et al.	2010	Paper	Virtual Reality Technology Used in Civil Engineering Education
Simola	2005	Paper	The Finnish miracle of PISA: historical and sociological remarks on teaching and teacher education
Souza & Amaral	2014	Paper	Educational microcontent for mobile learning virtual environments
Tomei	2006	Paper	The Impact of Online Teaching on Faculty Load: Computing the Ideal Class Size for Online Courses
Turner	2011	Degree Thesis	The Experience of Deep Learning by Accounting Students in a University Accounting Course
Valencia et al.	2017	Paper	Strategies Used by Professors through Virtual Educational Platforms in Face-to-Face Classes: A View from the Chamilo Platform
Van Dorp et al.	2010	Book chapter	Promoting the Learning Mobility of Future Workers: Experiments with Virtual Placements in University-Business Arrangements
Vázquez et al.	2013	Paper	Virtual attendance: Analysis of an audiovisual over IP system for distance learning in the Spanish Open University (UNED)

Table 1. Papers on Teaching in Virtual Education

Source: authors' own elaboration based on the analysis carried out in NVIVO 12 plus



Figure 1. Word Cloud from papers on Teaching in Virtual Education

Source: authors' own elaboration based on the analysis carried out in NVIVO 12 plus

3. RESULTS AND DISCUSSION

The results of the review can be seen in Figure 1, where the word cloud shows marked lines of work in the literature consulted on topics such as *learning, students, accounting, education, university, and experience*.

It is denoted that research in the field of didactics in virtual environments is read as an area still to be explored, although new tools and devices have made possible the construction of autonomous learning, its incontrovertible impact on teaching and learning processes is not clear from an approach that transcends traditional and face-to-face strategies (Turner, 2011).

A deeper analysis is required, which allows the teacher to mobilize these strategies, in order to develop critical thinking in the student, from which he can reflect critically and integrate in a meaningful way what he has learned. For this, teachers and institutions must take into account the learning conditions that enable these strategies, and the key elements such as feedback, motivation, among others, that denote in the word cloud (Figure 1) from an approach of formative evaluation and innovative design, in new didactic forms, from which new ways to energize learning processes can be proposed, which in accounting education is necessary, taking into account that accounting training has been primarily traditional. (Turner, 2011)

For this reason, it is important to incorporate new forms of teaching offered by ICT, for example, interactive video conferencing and support software; online mentoring services, virtual platforms, digital repositories, among others, in the case of accounting training, represent the didactic pillars of new forms of education, which are currently highly valued by students, which means more reflection on their use and effectiveness (Vázquez, et al., 2013).

As for virtual tutorials, these are often wasted despite all the possibilities of ICT as support tools, which depends largely on the platforms created for educational mediation, which, in the words of Martínez Clares et al. (2016), detracts them as a “punctual and reactive action”, since these tutorials are little used and at best they are used to solve specific doubts of students regarding their courses, leaving aside their potential as a space where integral development is encouraged and the student accompanied during their learning process in order to support their professional and vital project.

In this sense, looking for alternatives and investigating the new multimedia environments, allows us to account for success factors didactic-wise, as well as the problems that arise from the infrastructure and innovation of these strategies, putting universities in a competitive environment where they face new needs from their students in changing learning environments. Similarly, educators must put into play different strategies that allow them to address teaching processes, taking into account the changing nature of e-learning and students' expectations in terms of research, innovation and academic rigor, which in most cases are not taken into account, because they entail a paradigm shift for modern university, as well as its didactic processes (Rajasingham, 2011).

The use of software and other types of ICT in education rather than overcoming the role of the teacher in the training process shows that online education does not turn out to be effective if not tied to didactic strategies and teacher accompaniment, since there is no feedback, no coupling strategies of the learning, as indispensable conditions for the teaching-learning process, because it has been shown that when the student receives this accompaniment during the resolution of his tasks or exercises, the student develops the ability to identify more effectively how to solve them. This is enhanced by the dynamic use of strategies, programs, guided lectures, among others, that provide a dynamic support and orientation process that brings about the possibility to develop better, more challenging and enriching learning processes for students and teachers.

This indicates that, while there is a great potential in didactics and new forms of virtual and digital teaching and learning by enabling more autonomous processes that do not depend on the infrastructure of the classrooms, teachers and university educational institutions or any level thereof, should think about how to innovate and improve their methods, rethinking the strategies whereby they effectuate the learning from the understanding of the potentialities of ICT, and that as tools strengthen the processes from which the subjects are taught in the university, which inevitably distances academia from the

traditional conception of the university, thus requiring a mindset change, and pedagogical and didactic approach (Margulieux, 2015).

As for teacher-student relationship, Martínez Clares et al. (2016) sets off by stating that the 21st-century university considers ICT and university mentoring as quality factors, classifying the latter as complementary to the teaching function in its different modalities (individual or group and virtual). Hence, it has an anticipatory, integral and comprehensive nature.

In the field of accounting, what Yang & Liu (2007) proposed is challenging because to build a web-based virtual learning environment, ICT is required while supported by learning methods and theories in accordance with the discipline taught. These AVAs consist of two parts: Communication Instruction Environments (ICE) and Collaborative Learning Means (CLE). ICE provides students with learning materials, videos and interactive environments. On the other hand, CLEs support active learning, providing the learning environment with tools and materials that facilitate it. Strategies must be synchronous based on events and e-learning technologies.

Although teachers are accustomed to communication and face-to-face teaching and are hopeful that they might be able to control the learner's teaching-learning process and observe behaviors in the traditional classroom, virtual environments break that scheme. Therefore, it is advisable to encourage students to use tools such as chat rooms, BBS, etc., to regulate their learning pace (Yang & Liu, 2007).

For Park et al. (2015), the role of the teacher in the online discussion activities that students engage in and that are synchronous, show that their presence influences the dynamics of online exchange and debates; however, their influence tends to be more subtle than has been traditionally thought.

Thusly is recognized the need to articulate pedagogical strategies with ICT tools in the training of accountants, and to motivate and train teachers for a constant renewal of their skills and technology handling, as well as experimentation with ICT tools oriented under pedagogical purposes that describe scenarios close to reality where students can experiment and bring their knowledge closer to the decisions of their work environment.

4. CONCLUSIONS

Regarding the literature review, the words of López-Navas (2014, p. 237) are telling, the “(...) impact that ICT is having on (higher) education, in scientific and technical literature is not necessarily negative or positive”. It was found that there are authors who announce the problems arising from the technological pressure to which the education system is subjected, and others who optimistically see the transformations that occur with ICT as positive.

The optimistic outlook concluded that technological tools have enhanced the teacher-student relationship, wherefrom improvements in educational quality and positive experiences in the development of skills and communication skills are inferred. This results in improvements, as evidenced in the case presented by Martínez Clares et al. (2016) regarding virtual tutorials.

In this sense, the roles of teachers in online learning environments, that is, ICT-mediated, are denoted to have a changing nature, which enables a more symmetrical relationship between students and teachers, which is a challenge for accounting education, even more so considering that the relationships between society and education have focused on the teacher-student bond, where the latter appropriates knowledge for social purposes and intellectual and material progress of knowledge provided by a teacher.

However, López-Navas (2014) says that, although ICTs enhance group work, at the level of the teaching-learning and research process, these produce risks of isolation due to their individual use. Furthermore, he talks about the “digital divide” that is due to lack of literacy, a factor to consider in teachers who are not “digital-native” and who because of their age are classified as “digital migrants”.

Finally, to reaffirm that education is a service serves to recognize that it is the result of the interactive co-production of teachers and students. Stakeholders whose motivations are important for learning (in

the case of students) and for the task of intermediation between knowledge and student (in the case of teachers). Hence, the value of ICT in the process to bring them closer.

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