

Educational psychology and educational practices mediated by ICT: State of the art

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Abstract

A documentary review was carried out on publications in high impact journals indexed in the Scopus database related to Psychology in Education and Educational Practices mediated by ICT during the period 2010-2020. As a result of the first search, a total of 715 documents were classified according to their year of publication, country of origin, area of knowledge, authors and type of publication. In this way, the essential characteristics of the publications on the above-mentioned topic were identified. Similarly, the position of different authors was analyzed from a qualitative perspective through their research on educational practices mediated by ICT and psychology in education. The main findings of this paper are: The United States is the country with the highest number of publications registering a total of 260 research papers published during the period between the years 2010 and 2020, of which, the year with the highest number of records was 2020 with 130 publications. Of the total number of identified documents, 225 are made under theories that frame the social sciences and the most frequent type of publication for the authors was the journal paper, 75% of the total scientific production being published by this means. Thanks to the above, the final document is constructed through conclusions that could constitute support material for future research related to the topic proposed in this document.

Key words: Educational psychology, Educational practices, ICT, Virtual education.

1. Introduction

Education mediated by Information and Communication Technologies (ICT) was born thanks to the need for training students whose access to face-to-face classrooms is not possible due to various factors. Its first appearances came in the decade of the 90's in the United States, Australia, New Zealand and United Kingdom, and since then, a continuous career of updates started, allowing making use of platforms designed exclusively for the teaching-learning process created by educational software developers that have served as support in the implementation of strategies proposed by the educational management (Nagles, Mejía, Chaparro, 2017). The above benefited the young population interested in continuing their education and allowed institutions to expand their field of action thanks to technological advances which through their pedagogical processes initiated training to their teaching staff for the virtualization of their academic content and feedback through programs and platforms used to teach their classes at a distance which sought from the first moment the continuous improvement in the teaching process and better learning by the students who showed adherence and commitment to their professional training by identifying that the education received is relevant and consistent with their needs (Education, 2016) . This is achieved thanks to a great extent to the motivation and commitment on the part of the teachers, since through this it is possible to ensure that the guidelines are followed correctly and that all the necessary mechanisms are applied for a successful teaching-learning process (García Aretio, 2020).

The above implies changes that involve new adaptation processes in human beings, from psychology, explaining the responses that stakeholders related to training processes generate in the face of external stimuli. In this case, the adaptation to the virtual system and all that involves the advances in information and communication technologies, deserves to be taken into account at the time of studying the changes, including the underlying psychological processes, that occur in people as a result of their participation and involvement in educational activities, their nature and characteristics, the factors that facilitate, hinder and hinder them, and the consequences they produce (COLL, 2004) . Therefore, it is important to know the current state of the literature by performing a bibliometric analysis of the same and an analysis with a qualitative approach to know the position of the authors on the proposed topic, which will answer the following question: How was the production of research papers published during the period 2010-2020 regarding psychology in education and educational practices mediated by ICT?

2. General Objective

To analyze, from a bibliometric and bibliographic perspective, the production of high impact research papers on the variable Psychology in Education and Educational Practices mediated by ICT during the period 2010-2020.

3.Methodology

Quantitative analysis of the information provided by Scopus is performed under a bibliometric approach on the scientific production regarding the variable Psychology in Education and Educational Practices mediated by ICT during the period 2010-2020 at a global level. Likewise, it is analyzed from a qualitative perspective, examples of some research papers published in the area of study mentioned above, from a bibliographic approach to describe the position of different authors on the proposed topic.

3.1 Methodological design

	PHASE	DESCRIPTION	CLASSIFICATION
PHASE 1	DATA COLLECTION	The data collection is carried out by means of the Scopus web page search tool.	Published papers whose study variables are related to Psychology in Education and Educational Practices mediated by ICTs. Research papers published during the period 2010-2020. Without distinction of type of research. Without distinction of country of origin. Without distinction of area of knowledge.
PHASE 2	CONSTRUCTION OF ANALYSIS MATERIAL	The information identified in the previous phase is organized. The classification will be made by means of graphs, figures and tables based on data provided by Scopus.	Year of publication Country of origin of the publication. Area of knowledge. Authors Type of publication
PHASE 3	DRAFTING OF CONCLUSIONS AND FINAL DOCUMENT	After the analysis carried out in the previous phase, we proceed to the	

The upper right part of the figure shows related the words Universities, Students, Online learning, Feedback system, which allows inferring that any process taken by the educational institutions for the change to the virtualization of contents, take into account the perception of quality that a student may have through the systems in charge of processing the information that will be analyzed to be evaluated by the organization or educational management and in this way support in decision making thanks to the data that are collected through the same platforms that are used for remote classes.

The left side of Figure 2 gathers words such as Pandemic, Administration and Organization, Nursing Education, Coronavirus, which allows inferring that during the declaration of pandemic by the World Health Organization (WHO) in 2020, the administration in the different educational institutions had to migrate their methodologies abruptly to virtuality. This was not alien to students of health sciences such as nursing, medicine, dentistry, among others, who have suffered perhaps in a more radical way their training since it involves direct contact with the practice in patient care and that through virtuality have seen a real challenge for the fulfillment of academic objectives.

4.2 Distribution of scientific production by year of publication

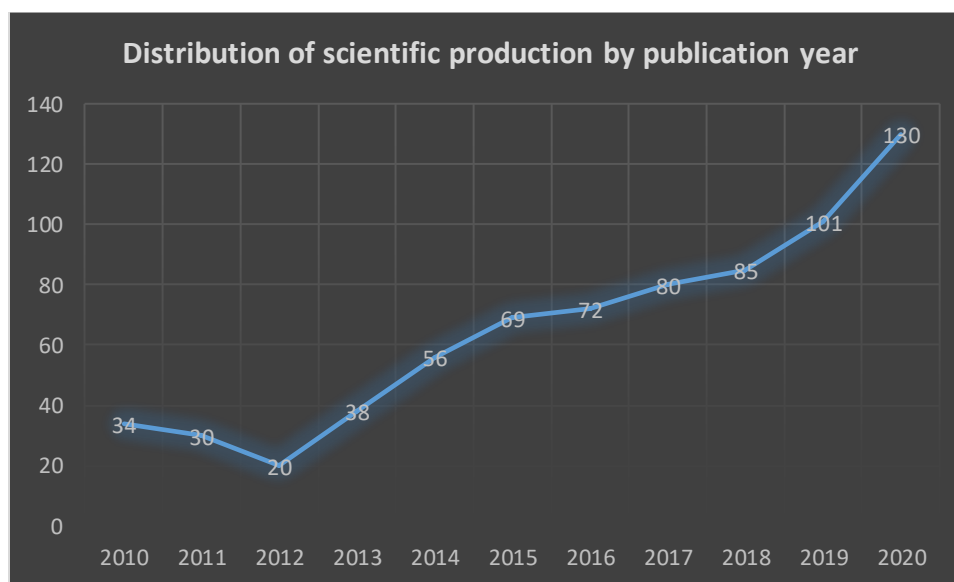


Figure 2.Distribution of scientific production by year of publication.

Source: Own elaboration (2021); based on data provided by Scopus.

Figure2 shows the historical evolution of publications related to the subject of this research, with the analysis of the decade between 2010 and 2020. Being this last year when the largest number of documents were published with a total of 130 research papers registered in Scopus within which is the article entitled "*Best practices to encourage student participation in both face-to-face and virtual environments*" (Rothstein & Haar, 2020) , the

purpose of which is to analyze the significant variables that produce student motivation and sense of belonging in both face-to-face and virtual classroom environments, focusing on the latter modality since the pandemic generated in 2020 by COVID-19 has forced institutions to continue their training processes remotely.

The evolution of publications throughout the decade 2010-2020 has experienced, as shown in Figure 2, a significant growth from 2012 onwards, year in which the lowest number of publications was recorded, 20 in total within which the book chapter entitled "*A new trend in education: social learning enhanced with Technoself*". (Jin, 2012) stands out. This chapter aims to draw attention to technoself-enhanced social learning in education. That is, it makes a reflection on the improvements evidenced in the training processes thanks to the advent of social networks, and the self-management achieved by technological advances.

The second year with the highest number of publications is 2019 when 101 documents were registered in Scopus within which is the conference article entitled "*Learning in the process of technological transition of a MOOC of social interest*" (Egas-Reyes, Grijalva-Vasquez, Ordonez-Camacho, & Man-Ging, 2019). which presents an interdisciplinary experience between Information and Communication Technologies, Psychology and Education resulting in evidence of the importance of quality training based on effective pedagogical techniques both in the face-to-face and virtual as well as continuous accompaniment by teachers to make the model changes less traumatic.

4.3 Distribution of scientific production by country of origin.

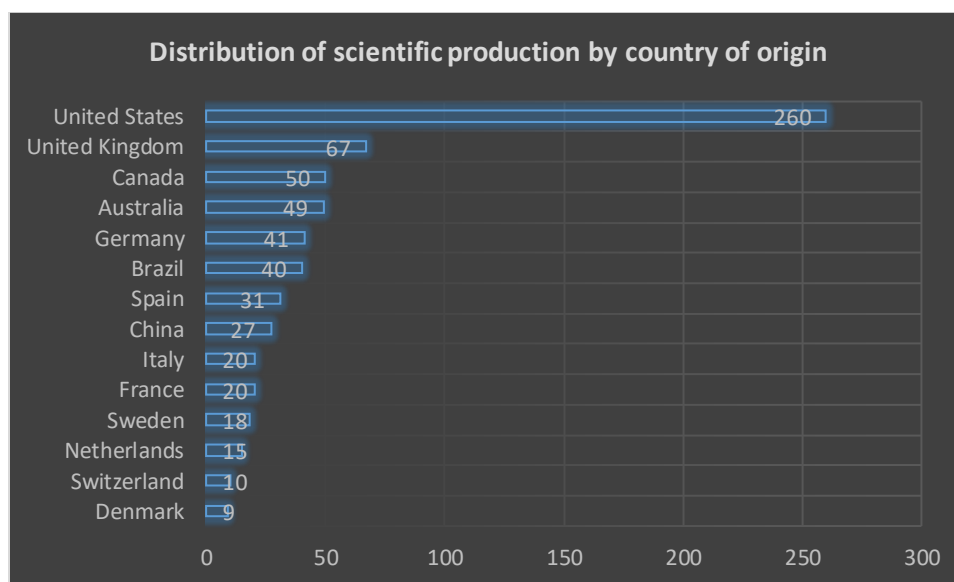


Figure 3. Distribution of scientific production by country of origin.

Source: Own elaboration (2021); based on data provided by Scopus.

Figure 3 shows the distribution of the records identified in Scopus according to the origin of their authors. It can be noted that the United States leads the list with a total of 260 research papers published between 2010 and 2020 within which is the article entitled "*Attention deficit/hyperactivity disorder, behavioral regulation and virtual school support*" (Wallace, Levers-Landis, Scherer, Roizen, & Augustyn, 2017). which conducts a study on psychological disorders and how the support by the school through virtual means helps in the cognitive process of patients with pathologies such as hyperactivity, attention deficit, among others. This research is a review that cites case studies of school-age patients with this type of disorder and the impact on their academic performance by moving from the face-to-face to the virtual.

It is worth noting that in some cases, research papers include the participation of authors affiliated with institutions of different nationalities, but this is not an impediment to registering each country participating in the preparation of a document as a unit. Figure 4 shows the behavior of co-authorship among the different nationalities during the decade between 2010 and 2020.

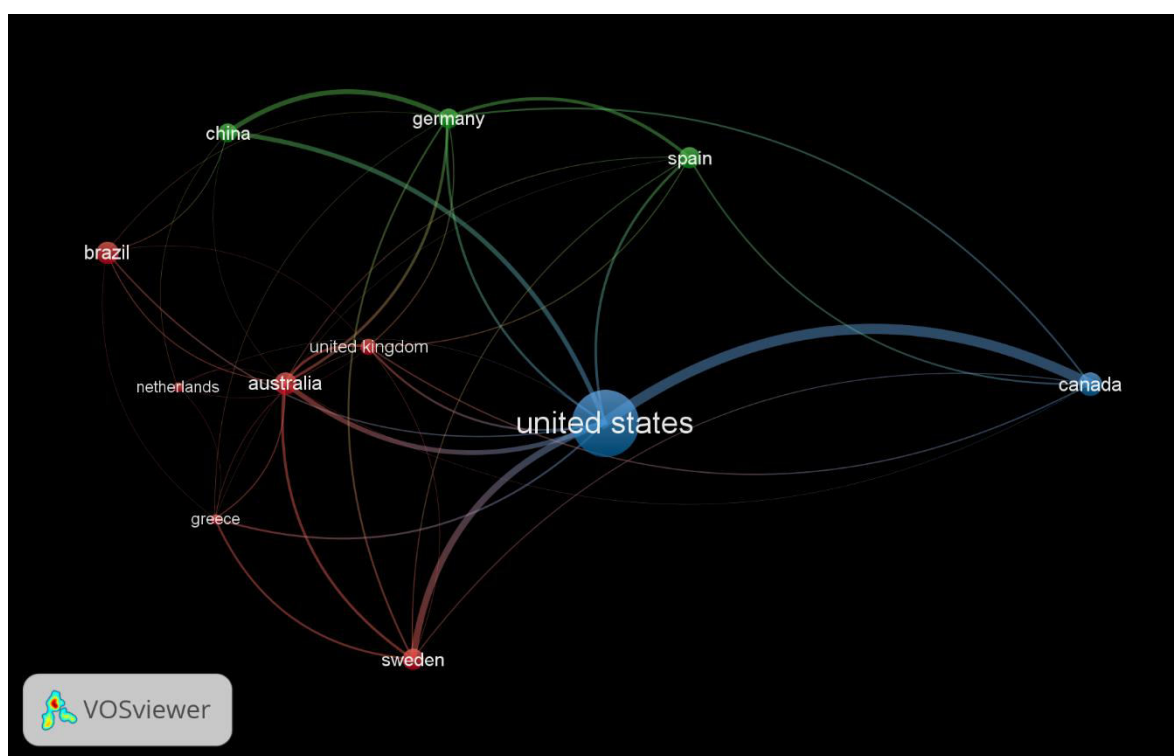


Figure 4. Co-authorship between countries.

Source: Own elaboration (2021); based on data provided by Scopus.

A higher frequency of co-authored publications is observed between the United States and Canada. Spain, Germany and China also participate in research projects published in co-authorship with U.S. scientists. Brazil, Australia and the United Kingdom

also participate in joint research projects with Greece and Switzerland. An example of the above is the paper entitled "*Students' perception of the animal or virtual laboratory in physiology practical classes in the hybrid medical curriculum PBL*" (Durand, et al., 2019) which has the participation of authors from the United States and Brazil and its purpose is to analyze the students' perceptions of laboratory classes with animals and virtual classes through video transmission in Physiology training, which were subjected to a survey-type tool to measure their favorability to the design of hybrid classes, that is, to implement not only face-to-face evaluations but also through virtual applications and simulators. As a result, it is found that this strategy enhances the fulfillment of pedagogical objectives and the acquisition of new knowledge by motivating them through tutorials and the development of new skills.

4.4 Distribution of scientific production by area of knowledge.

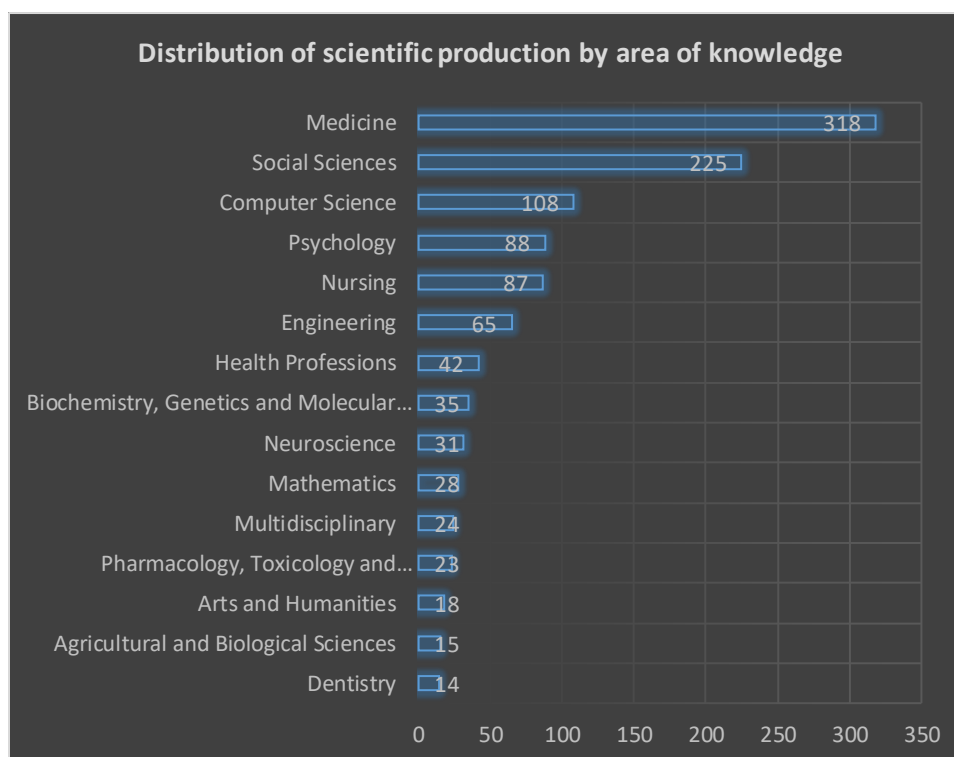


Figure 5. Distribution of scientific production by area of knowledge.

Source: Own elaboration (2021); based on data provided by Scopus.

Medicine is the area of knowledge with the highest number of contributions to the production and publication of research papers according to the data provided by Scopus, identified through the execution of phase 1 of the methodological design. Under the medical disciplines, a total of 318 documents referring to psychology in education and educational practices mediated by ICTs are registered. Among the documents identified, the paper entitled "*Students' perspective on online medical education in the midst of the COVID-19 pandemic in Nepal*" (Nepal, Atreya, Menezes, & Joshi, 2020). stands out. The

purpose of this research is to apply a survey to medical students in higher education institutions in Nepal in order to know the students' perspective on the online medical education system recently introduced thanks to the blocking and restriction policies proposed by governments worldwide to curb the rapid growth in the number of infections caused by the COVID-19 infection. As a result, there was a negative response to the implementation of digital strategies in the classes of the medical program. A total of 226 students were surveyed, 76.5% of whom admitted that they did not attend online classes, 65.5% qualified this strategy as deficient in comparison with face-to-face classes and 77.8% expressed preferences for postponing their training process once the restrictive measures are lifted and the return to the classroom is authorized. The respondents stated that the low commitment to this type of methodology is caused by the deficiency in the coverage of internet service in some areas of their region, and also associated their professional training as insufficient at the time of putting the acquired knowledge into practice with real patients. Thus, the study concludes by qualifying as inefficient the teaching processes through the digital tools offered by the institution of higher education. On the other hand, Social Sciences, Computer Science and Psychology occupy the second, third and fourth place with 225, 108 and 88 registered papers respectively. From Social Sciences, the paper entitled *"Let's set some subgoals: understanding pedagogical-human agent collaborations and their implications for learning and prompt and feedback compliance"* stands out" (Harley, Taub, Azevedo, & Bouchet, 2018) and *"Can videoconferencing affect older people's engagement and perceptions of their social support in managing long-term conditions: a social network analysis of the Telehealth Literacy Project?"* (Banbury, Nancarrow, Dart, & Gray, 2017) .

Of note from Psychology is the paper entitled *"Training during a pandemic: successes, challenges, and practical guidance from a virtual facilitated learning collaborative training program for written exposure therapy"* (Worley, et al., 2020) which is intended to describe a multi-site pilot implementation and training program that allowed for ongoing training despite the restrictive measures caused by the COVID-19 pandemic.

4.5 Type of publication

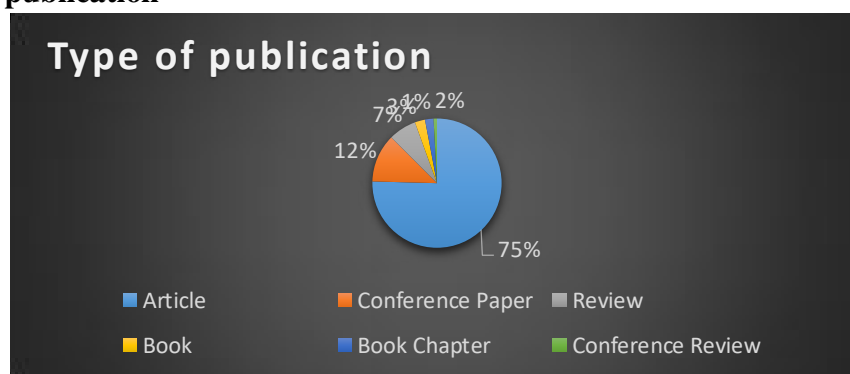


Figure 6.Type of publication.

Source: Own elaboration (2021); based on data provided by Scopus.

Figure 4 shows the different types of publication by means of which the authors made their scientific findings known. Seventy-five percent of the publications correspond to journal papers, 12% to conference articles, 7% to reviews, 3% to books and 1% to book chapters. Within the conference articles the one that stands out is entitled "*Opportunities and challenges of educational psychology under the influence of information technologies*" (Li, 2020) which makes a deep analysis on the psychological implications that the change of modality, from face-to-face to virtual, may have on students. The study identified pathologies such as depression, confusion, autism and even disorders related to illegal behavior. The paper shows the opportunities and challenges that education faces thanks to social distancing measures and how educational psychology plays a fundamental role in the construction of well-being in both students and teachers.

5.Conclusions

The United States is the country with the highest number of publications registered in the Scopus database during the period 2010-2020, related to psychology in education and educational practices mediated by ICT, reaching a total of 260 documents. The year 2012 was the year in which the lowest production of publications was registered, with a total of 20, contrasting with the year 2020 which, on the contrary, was the year in which the highest production of research papers was registered, reaching 130 research papers. This allows inferring that, due to the subject of this paper, the studies carried out on education based on strategies that allow advances in information and communication technologies, increased thanks to the imposition by the authorities worldwide, of social isolation and mobility restrictions, thus increasing the research on the design of strategies that would allow giving continuity to the training processes remotely in order not to alter the academic course of the students. The above also explains why Medicine is the area of knowledge with the highest number of records with a total of 318 publications, since the academy, in the training of health professionals, was more interested in putting knowledge into practice with real patients through platforms and programs created by the designers to meet two vital commitments. The first one to ensure the training of health professionals that the whole world demands due to the high number of people infected by the COVID-19 virus, which committed medical institutions around the world to provide care to patients not only in person but virtually, which the academy promoted thanks to the digital strategies implemented from the undergraduate level to these students. The social and psychological implications play a fundamental role in the study of the variable proposed by the present research, since as it could be observed throughout the same, different authors dedicate special care to the diagnosis of mental imbalances caused by the abrupt change in the teaching methodology, which went from face-to-face to remote access in real time, in some cases, in others to assigned tasks with defined response times and the use of tools such as e-mail. This leads to the conclusion that, from the point of view of educational psychology, different implications are detected, such as exposure to stressful situations, depression, autism, low self-esteem, and even physical implications such as obesity due to a sedentary

lifestyle, blood pressure problems, migraine, visual problems, among others. The importance of studies such as the one proposed in this document lies in the possibility of grouping diverse opinions for the construction of a general theory that allows researchers to solidify learning strategies through digital media, trying to improve of the mental health of teachers and students.

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