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Investigación e innovación educativa: Reto escolar por COVID-19 en el Ecuador

Educational research and innovation: School challenge for COVID-19 in Ecuador

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ABSTRACT

The objective of the reflection article is to analyze educational research and innovation as school challenges for COVID-19 in Ecuador, using a descriptive documentary methodology and content analysis for information processing. It is evident that Latin America with an emphasis on Ecuador, requires the generation of educational and investment policies that promote research and innovation as a source of scientific production for the benefit of the population. This implies that they are not perceived as academic requirements for getting degrees or professional promotions, but it is pertinent to generate a vision based on the investing premise for integral growth through active project-based methodologies to solve problems, thus the natural spaces where students operate tend to constitute a global classroom.

Descriptors: Mission oriented research; scientific innovations; educational innovations; active learning. (Words taken from the UNESCO Thesaurus).

INTRODUCTION

Investigation and innovation are fundamental processes for the generation of knowledge, both are essential indicators to measure educational quality, that is, learning is built from research operations in accordance with innovation parameters that allow us to have favorable results for the achievement of a citizen focused on the culture and the construction of a better society with an ethical - moral spirit. In this sense, (García-Colina, Juárez-Hernández & Salgado-García, 2018) highlight that:

Quality education seeks to prepare citizens capable of understanding the complex interrelationships between science, technology and the social, economic, political and cultural spheres, so that, in the future, they may have essential tools to participate in decision-making that contributes to building a fairer, healthier and more humane society (p. 215).

In pursuit of such a view, educational research must be conceived as a process for learning by doing in order to face the multiple complexities of the global world (Ianni-Gómez., 2017). Thus, the School system must provide the students all the strategies, tools, budget, and training to conceive the opportunity to invent from a methodological conception, characterized by reflective and philosophical inquiry as mechanisms of

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educational dissertation.

(Aldana-Zavala, 2019) states that the philosophical inquiry "gives the researchers the ability to be critical, reflective and investigative respect to the actions carried out from their own being and the scientific context where they operate" (p. 111). In this way, empowerment should be generated as a means for apprehending knowledge, thus a researcher builds knowledge in correspondence with the different social needs, requiring the knowledge transfer among the various means of production. In this way, the teacher transcends the perspective of dictating an exclusive master class to a researcher perceived as the center of learning.

Based on what is proposed, the school is a center for social organization projects and for the training of researchers who can access more complex educational levels such as the university, a natural place where social investigations should be promoted. From this perspective, the educational system is conceived as an interrelation of knowledge for the building of society as a whole that starts from the initial steps to the university level.

Ecuador has suffered serious problems because of COVID-19; therefore, "by means of Ministerial Agreement No. 00126-2020 issued on March 11, 2020, the State of Sanitary Emergency in the National Health System is declared" (Ministry of Public Health, 2020). It plans that the institutional forces of the country, in the near future, must assume leading roles that contribute to the comprehensive recovery of Ecuadorian society, providing scientific solutions to achieve socioeconomic improvements.

From the aforementioned, a bibliographic documentary investigation was developed, so it allowed structuring knowledge from the review and analysis of investigations published in peer-reviewed journals, books, and ministerial documents. As a methodology, the researchers use the deductive method, as well as the content analysis technique to scrutinize the manuscripts, (Hernández, Fernández & Baptista, 2014). Based on this, the current research has the following objective: "Analyze educational research and innovation as school challenges for COVID-19 in Ecuador".

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Educational research and innovation. School challenge in times of COVID-19

Because of COVID-19, the virtual modality has been assumed in response to maintaining the preventive measures issued by international and national health organizations, in this way, teachers, students, and families have passed from in person classes to remote ones mediated by the ICT. In spite of this model has been promoted for some time, everyday life and the status quo had not allowed adopting it in the pedagogical area, which implies to rethink the educational practice, since the application of ICT with effectiveness requires to be trained both in the philosophical and in the procedural component. Therefore, the pedagogical approach constitutes a challenge for the educational team, due to the planning must be reoriented, even more, when teaching-learning was not usually generated from such conception.

In this sense, the students' mental structures as teachers must turn towards a constructivist conception of planning (Vallejo-Valdivieso, et. Al, 2019); so, it is necessary to design a curriculum adapted to the current needs of virtual education in times of COVID-19. As a consequence, it is pertinent to propose cooperative learning as an alternative for the construction of knowledge through work teams (Estrada, Monferrer & Moliner, 2016).

This suggests that the use of ICT must be promoted by teachers considering innovative strategies, which will allow students to develop school activities. From this approach, Luna (2018), indicates that if the educational team is in consistent with ICT-based learning, it must operate from seven dimensions: institutional policy, institutional organization, institutional regulations, institutional plans and programs, online educational model, teaching work conditions, and infrastructure and equipment. (p. 2).

In light of the foregoing, it represents not only a challenge for teachers and students, but also for the educational policies of the Ecuadorian State, who must invest in infrastructures that guarantee society the achievement of online learning in line with the quality indicators established for this purpose. From this perspective, it is revealed that

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the effective use of ICT for educational purposes requires training and investment to adjust to both the pedagogical and technical requirements for the appropriate functioning of the virtual model (Maquilón-Sánchez, et. Al, 2013).

Another challenge is related to metacognitive abilities (Muñoz-Morales, et al, 2019) which imply processes such as selection, interpretation, analysis, understanding, and proposition of new knowledge, since these may help to configure a student with critical - reflective thinking in the ability to interconnect learning with global reality. Therefore, significant learning in consonance with the technological validity of the current world is promoted in order to build an investigation according to scientific requirements that society demands for its transformation.

The previous arguments not only falls on the exclusivity of the teachers, but also on the students, who facing new pedagogical approaches, as well as the social problems that promote virtual education, must assume more responsibility for generating their learning, so that they transcend a student-centered model (Peché-Cruz & Giraldo-Supo, 2019), through a pedagogical-investigative role that leads to an organizational change in the educational field. (Eljuri-Blanco & Villasmil-Yáñez, 2018).

This change must count on educational inclusion, for which it is necessary (Louzaó-Suárez, 2019) to configure an intercultural education where mutual respect is promoted as a democratic process of understanding learning, with the dialogue as a method. For this reason, it is pertinent to incorporate students with disabilities by using ICT-based learning and research environments that facilitate communication through an inclusive language, such as sign language (Briceño-de -Osorio, 2019), a situation that contributes to avoiding social exclusion from the educational system. In this respect, the training of teachers and future teachers in intercultural skills is required (Ayala-Asencio, et al, 2019).

For this purpose, virtual learning environments are required as a means of integration for cooperative work (Urquidi, Calabor & Tamarit, 2019), being recurrent the use of

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methodologies such as problem-based learning in projects, which could provide the generation of knowledge through research, inquiry, and promotion of students' metacognitive processes (Travieso-Valdés & Ortiz-Cardenas, 2018), a fact that could facilitate the empowerment of an innovative culture achieved by teachers and students as a result of an education that tries to respond to the multiple social demands (Weiss, 2016).

Based on the previous considerations, it is necessary to generate debates in universities, research centers and companies with the purpose of reaching consensus that contributes to the formulation of a new criterion in favor of promoting scientific production and innovation in Ecuador. As a consequence, it would allow educational researchers to create opportunities to promote projects for the benefit of social transformation.

On the other hand, the United Nations Educational, Scientific and Cultural Organization (UNESCO, 2019), indicates that with the exception of Brazil, "the countries of the region do not generally try to be internationally competitive in the field of high-tech activities "(p. 1), however, it considers that the disposition of human resources focused on research has grown in the last decade. Latin America must bet on the increase in innovation and research as factors that will contribute to the integral growth of the region, generating possibilities of finding solutions to multiple problems that depend on products from other regions for their solution.

It is necessary to highlight that Latin America, with an emphasis on Ecuador, requires the generation of educational and investment policies that promote research and innovation as a source of scientific production for the benefit of the population. This implies not perceiving them as academic requirements for obtaining degrees or fulfilling professional promotions, but it is pertinent to generate a vision based on the referred investment premise for integral growth in education with the purpose of establishing parameters that benefit national productivity in all its dimensions.

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CONCLUSION

Educational research and innovation are presented as school challenges to confront the COVID-19 pandemic in Ecuador, since they are necessary to transcend an educational model towards a virtual-based approach, which goes beyond a mere instrumental procedure. In this respect, it is necessary for society to move forward with a paradigm based on the social construction of knowledge supported in ICT, specifically, on the generation 3.0 for increasing the life quality of the population concerning the access to technological equipment and different online tools.

Policies on intellectual authorship must favor researchers so that they can have the confidence and support for their productions in conjunction with the funding organizations, by establishing a principle of reciprocity where scientific creation and national productivity are guaranteed.

Teachers and students must be permanently trained in ICT, its philosophy and its approach for improving their learning throughout life. In the same way, transcendence of the mechanistic knowledge towards production through research and innovation is required with the goal of overcoming the crisis caused by COVID-19 and generating strengths in these areas.

Educational institutions must generate an organizational culture related to the formation of a productive structure where students may develop and build global classrooms on the basis of research, innovation and student-centered approach in order to facilitate learning and provide natural spaces through active project-based methodologies focused on problem solving.

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