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The digital scenarios of research in university higher education

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Summary

The objective of the research focused on determining the influence of digital scenarios in research in university higher education; the unit of analysis was postgraduate students from various universities. The methodology used was a quantitative approach in the positivist framework, at an explanatory level, not experimental, with an intentional sample of 272 students. The results show that digital scenarios influence investigative skills by 47.7% according to the Nagelkerkeindex, considering this at a moderate level. Likewise, the descriptive results indicate that the ideal digital scenarios are only presented by 34.9% of the participants and, at the basic level, by 58.1%. With reference to investigative skills, 61.8% managed to develop these skills. Thus, digital skills, such as the ability to use ICTs to carry out research work, have a fundamental meaning for efficient knowledge management, developing teamwork and generating scientific communities beyond local villages, becoming a benchmark that, after the pandemic, will remain rooted in educational environments.

Keywords: Knowledge management, educational technology,information transfer, research, science

Introduction

The quality of university education is an unwavering challenge in today's world, because there are expectations that it will produce competitive graduates capable of responding effectively to social demands and, therefore, contribute to sustainable development. According to this line of thought, it is considered a public good since it is aimed at the realization of various rights and for those who will benefit from the performance of future professionals (Unesco, 2015).

On the other hand, several obstacles prevent this quality future from being realized in the university education system; for example, in Spain, it is observed that the university educational system does not contribute to

the job placement or social integration of its graduates (Fernández et al., 2018) . It should be noted that, in the education of citizens, especially in Europe, there is a strong tendency to guarantee quality through accreditation processes (Martínez et al., 2017).

In Peru, the Ministry of Education has applied policies to guarantee quality so that young people achieve the fulfillment of their personal project through citizen and productive education, observing that the increase in the supply of the sector has not been similar to an increase in quality and that educational quality may have decreased even gradually (Ministerio de Educación, 2015). In addition to infrastructure and organizational issues, pedagogical concerns seem to be the main focus. The disciplinary nature of its topics, which, instead of focusing on the generation of competence, seems to be more concerned with elevating fragmented content or knowledge that is presented through critically constructed academic mechanisms (Mejía, 2017), seems to be the most important issue.

As a result of the exposed reality, higher education must be rethought with special emphasis on its teaching methods to bring graduates closer to the global reality in which they live and condition them to respond effectively to the constant challenges they will face as professionals and citizens; Among the methodologies currently under development is the service learning methodology that prepares professionals for a global and uncertain world.

A social perspective on the subject is related to university responsibility, knowledge that is applied for the greater good of society, although some see it as another way of doing business or a means to increase corporate profit. Recently, it has been considered an economic and ethical imperative.

The existence of legal devices in the country that generate policies that promote quality, using mechanisms such as university social responsibility, concentrated in the University Law - Law No 30220, being welcomed by operating agencies where 2% of the budget is allocated to social responsibility , seeks to form citizenship based on solidarity and ethics. Due to its importance, experiences have been developed in recent years that have gradually introduced projects through teachers, students and social organizations acting as allies in the use of service learning methodologies.

In light of the above, the research problem would be expressed as follows: how will digital scenarios affect research in university higher education in 2021? It is justified from the epistemological point of view because the positivist approach to knowledge construction is assumed. It is theoretically demonstrated by its relevance to the educational quality of universities (Martínez-Usarralde et al., 2019) , where the teaching method is connected to community service and academic research in order to enrich learning, promote responsibility social strengthening the community (Campo, 2014). In a practical way, where the university is not oblivious to the contribution of solutions to major social problems within the framework of University Social Responsibility (RSU), which is a way of being and doing things (Martínez et al., 2017).

The following general objective is presented to adequately guide the research: determine how digital scenarios have an effect on research in university higher education 2021.

Multiple studies have described the application of methodologies in virtual environments in university settings, as well as their benefits, where the promotion of digital skills is essential. This methodology comprised of information, technology, ICT

skills, digital literacy and the combination of digital information skills are also known as digital skills. The wide diversity of definitions is due to the variety of contexts in which they are used, leading to a wide range of definitions that have been proposed by various institutions and experts in the study of digital skills, being the result of how the term has evolved over time and has gained attention in the educational field, which has given rise to a wide range ofdefinitions (Avti and Uriarte, 2017).

International agencies such as UNESCO have defined it as a set of skills that facilitate the use of digital devices, as well as communication applications to access and manage information more effectively. Consequently, these skills allow them to organize and exchange digital content, collaborate and communicate, as well as solve problems in a variety of areas of their lives.

"Digital competence" refers to the ability to use ICTs to carry out tasks such as solving problems and communicating effectively; manage knowledge, collaboration, creation, cooperation and construction of knowledge efficiently and effectively. As a result of this, the definition needs to be divided into several parts, such as the domains of knowledge and skills, the tools to solve problems, as well as the ways and purposes for which digital competence is necessary.

Aviti and Uriarte (2017) state that digital competence is changing as a result of the increased use of information and communication technologies (ICTs) in education, work and society in general. In addition, they propose a flexible thesis adapting sufficiently to technological development and associated skills. Consequently, they emphasize the importance of transdisciplinary resources to address and broaden educational perspectives.

Area and Pessoa (2012) state that there are five competencies that are deployed simultaneously during the learning process, whether in basic school, university or adult education, where the teacher must be able to use a variety of tools and resources. to find information: the ability to think clearly, how to use data for knowledge (selection, analysis, comparison/application), as well as how to communicate in multiple languages and media (exilic action). In addition, emotional intelligence and the ethical use of information are essential. The use of ICT to promote socially beneficial behaviors involves managing one's emotions and thoughts.

Among the components indicated by Castañeda and Adell (2011) are information literacy, technological cognitive capacity, the ability to create knowledge from data and the efficiency of communication for the effective transmission of information products, both the medium and the recipients of the information product need to be understood.

ICT skills for learning are defined as the ability to solve problems in digital environments. They are the skills that students must acquire to be successful in the digital age (Ministerio de Educación de Chile, 2013). The factors considered in the digital learning competence are the following:

Information. - The search, evaluation and organization of data in digital environments to create a new product is part of the process. As a source of information, it is necessary to identify the relevant sources, search and select digital information according to the objectives, and then organize it effectively.

Soft skills, how to communicate effectively, cooperate with others and add value to a team are essential for remote workers, who must also be able to negotiate deals and create digital content.

Treat others on the Internet. - The ethical training of students is improved by this dimension that allows conflicts to be resolved in digital environments and protection from potentially dangerous situations (digital security).

Source of information. - The location of relevant data sources, the search and selection of digital data and its efficient storage and organization are part of the data curation and management process. A product is data. To better understand and communicate data, encompassing data organization, integration, enhancement, and representation, personal attention is also important. The sharing of information may be regulated by a variety of legal, ethical, and cultural considerations.

Technology. - New software, hardware and programs are constantly being developed in this dimension. A firm understanding of the principles of information and communication technology (ICT) is essential to be able to use this technology effectively in the classroom. The ability to use information technology. Having a working knowledge of concepts and functions is called literacy. Furthermore, understanding the terminology and components of ICT are crucial in resolving technical issues.

Never have there been so many disruptive innovations in such a short time. Additionally, the percentage of students learning outside of traditional classrooms is increasing. Everyone knows exactly what they are doing and where they are going at any given time. Because of this, digital educational models and digital learning cannot be used in a digital society with the students of this generation.

The Common Digital Competence Framework : There are five areas of digital competence, each with its own usefulness, and the fifth area is the one that most frequently intersects with knowledge and information literacy. In this context, it encompasses everything from the location, retrieval, organization and analysis of digital data to collaboration and communication. Participation in communities and networks, as well as intercultural awareness; digital communication; resource sharing; connection and collaboration with others; intercultural awareness;

university research

Today, new links between educational settings and subjects have been created through blended learning that has become a standard form of instruction. Research results indicate more degree theses completed in the last five years, where public and private universities also share research interests. The institutions in Lima do more research on scientific traits than the universities in the provinces, also highlighting the individual vs. communal total and the disciplinary vs. transversal theme. The theses evaluated show a preference for experimental and correlational approaches for descriptive research on a wide range of topics (Turpo-Gebera et al., 2020) .

With the advent of ICT, educational procedures have changed and improved to meet the needs of users. This perspective establishes this process as a standardized training that goes beyond combining physical and virtual training spaces to include educational methodologies and a comprehensive continuity of training procedures and resources. It goes from a physical presence to an online presence and from a pedagogical convergence to a technical one (Turpo and García, 2019).

With its inclusion and execution, you are boosting the possibilities of learning in deeper and more meaningful ways. The modality improves commitment through deep educational involvement, technological management or agency capacity and other variables. As an institutional approach, these elements represent a significant improvement in the understanding,

interaction and commitment of both the agents and the educational subjects.

Although the scientific method unifies the development of different techniques based on the subject matter at hand, it has led to the relative independence of the many disciplines. The scientific method is, as much as possible, systematic; that is, planned, precise in its search and in how it will be found without excluding randomness that, on the contrary, can be used and even produced deliberately.

Based on stimulus materials, instructional methodologies, learning styles, and other driving characteristics, BL research shows good impacts and effectiveness. Morrison and Ross (2014) state that research on modality is still superficial and does not examine interactions in knowledge formation, the role of instructors and tutors, or learning theories. In essence, the generalizability of the results is constrained by development circumstances and may not always meet requirements. Therefore, evidence that can be applied to different scenarios is ideal; but the value is not always asserted due to external factors.

The profile of this community can be built on two levels: educational and analytical. The educational level considers the initial training and development of an individual while the analytical level considers their career interests and career goals. For more than 40 years, according to (Charry, 2008), the development of educational science has been linked to the training of teachers who are also researchers. The first generation of researchers trained in a single discipline while the next generation of education researchers gathered doctorates in the field. The recent generation of educational researchers is made up of those who were trained in a second profession and then became interested in educational research.

In general, the development of research depends on the interests of students, training and professional development, as well as on the specific aspects of a given situation, such as the need for permanent education, the need for continuous training, the teaching activity and disposition of the teacher. Through this, it is expected to cultivate a pedagogical culture, as well as the skills related to the resolution of field situations through the formulation of personal or professional tasks.

The study by Alvitres et al. (2014), who cited a 1992 decree that established the automatic baccalaureate, arguing that the decline in research activity in Peruvian universities is due to this decree, point to a law that established that the baccalaureate degree could only be obtained with completion of an investigation, which may have been the only opportunity for the students to conduct an investigation.

Please note that the quality of a student's research cannot be guaranteed. Additionally, it is necessary to consider the role of thesis advisors, who frequently lack the necessary research skills, probably because the professors are not dedicated to research or are not involved in research projects, a situation aggravated by the fact that they have very little time to conduct their own research due to the excessive workload placed on them and the administrative burden, leaving them little time for academic work.

In this framework , five fundamental aspects of university research have been considered: information search, technological mastery, methodology, communication of results and teamwork.

METHOD

The research was carried out in a positivist framework, because the investigative capacities are objective, quantifiable and external to the researcher; In addition, the epistemic analysis of this process confirms

the empirical nature of knowledge in relation to the influence of virtual environments that was obtained through the application of the hypothetical-deductive method, reaching conclusions based on the hypotheses raised and that were verified empirically through analysis. of the data collected.

The substantive basic research was developed at an explanatory level because the factors and their impact on the development of research skills were determined, as defined by Zorrilla and Torres (1992). Basic research, also known as pure or fundamental research, aims to advance science by increasing theoretical knowledge without taking into account the possibility of applying them; focuses on generalizations with the goal of developing a theory based on principles and laws.

Similarly, Sanchez et al. (2018) defined that research deals with responding to problems extracted from reality, being a substantive study that is oriented towards description, explanation, forecast or recount that seeks laws and principles to organize a scientific theory as a substantive study. Finally, the research data was collected directly from the students from the evaluation reports.

The explanatory level responds to how they affect the development of these competencies. The explanatory level is the highest in scientific research that requires the development of theory explicitly, as well as knowledge of research methods and techniques, because it is developed through a process of abstraction to identify the relationships between elements or aspects considered fundamental to understand objects and processes.

The studied variables were not manipulated nor was there any alteration of the conditions where the event occurred, the events were only observed and recorded once during the investigation. Therefore, the study was proposed as a non-experimental and cross-sectional design, according to Hernández and Mendoza (2018), in these designs, the researcher only observes and reports for the first time.

In addition, it was sought how research skills were developed, but not only as a descriptive fact; but seeking to understand the various processes that act (Pozo and Scheuer, 2000) . Therefore, the research design was established as descriptive and explanatory.

The intentional sample is made up of 272 university students from various universities in the country at the postgraduate level. The technique used was the survey and the instrument, the questionnaire, whose statistical treatment used was the ordinal logistic regression.

RESULTS

The descriptive results indicate that, in the variable of digital scenarios as well as in its dimensions, there is a trend at the basic level; that is, suffering conditions for the development of digital skills, highlighting the information dimension, where students have been able to establish sufficient levels of findings to achieve their proposed objectives. However, 7% of the students have not had sufficient resources to adequately face the research processes for the preparation of their respective reports, where in the communication and collaboration dimension they have encountered greater difficulties, many of which due to connectivity or computer hardware.

Table 1

Digital scenarios in university students

	Independent variable	Dimensions			
	digital scenarios	Information	Communication and collaboration	digital coexistence	technology
Ideal	34.9	22.4	39.7	45.6	35.3
Basic	58.1	70.2	50.4	47.8	57.4
Inadequate	7.0	7.4	9.9	6.6	7.4
Total	100.0	100.0	100.0	100.0	100.0

The results of the research skills variable show us that 61.8% of students have managed to develop them, highlighting the technological development dimension that allows us to infer that they have all the conditions to achieve their educational objectives; however, the rest of them present serious difficulties.

Table 2

research skills

	Dependent variable	Dimensions				
	research skills	information search	technological mastery	methodological domain	Results communication domain	Teamwork skill
Developed	61.8	65.1	79.0	64.0	64.0	66.9
underdeveloped	33.8	27.6	18.8	30.9	33.8	25.7
undeveloped	4.4	7.4	2.2	5.1	2.2	7.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

The hypothesis test explains that the goodness of fit demonstrates the incidence of the independent variable (digital scenarios) over the dependent variable (research skills) with a significance of p = 0.000. In relation to the Nagelkerketest ,it is indicated that it explains that 0.477 of the variance of the dependent variable is due to the independent variable, in this sense, there

are reasons to affirm that the independent variable has a moderate incidence of 47.7% . The specific hypothesis tests, according to Nagelkerke , show a higher incidence with the results communication domain with 49.9% and the lowest incidence with the technological domain with 24.1%.

Table 3

Hypothesis tests

Hypothesis System	Log Likelihood -2	S.I.G.	Pseudo R-squaredNagelkerke
Digital scenarios influence investigative skills	22,140	,000	.477
Digital scenarios influence the search for information	30,599	,000	,470
Digital scenarios influence the technological domain	18,883	.020	.241
Digital scenarios influence the methodological domain	25,261	,000	.482
Digital scenarios influence the domain of communication of results	21,871	,000	,499
Digital scenarios influence teamwork skills	25,070	,000	381

DISCUSSION

The descriptive results such as the hypothesis test show how virtual environments have been taking a relevant role in scientific research processes, confirming the findings of the numerous studies that have highlighted the benefits of using virtual environments in education whose emphasis is on digital skills, raised by both Unesco (2015) and Aviti and Uriarte (2017),allowing the resolution of problems in the field of science, as well as in everyday life and, with special emphasis, in the fields of education.

With reference to digital scenarios and their components, competencies are deployed holistically as proposed by Area & Pessoa (2012),in learning processes at any educational level, where teachers must also develop digital skills in order to use the various tools that this scenario offers us in a relevant and effective way for the development of skills, in our case investigative including emotional ones.

However, the results indicate that only 58.1% are at the basic level and 7% are inadequate, which leads to the question of whether the search, evaluation, creation of new products leads to the question of whether it will be feasible in the scientific investigation. In addition, only 47.8% basic level and 6.6% inadequate will allow the development of social skills such as effective communication and teamwork.

Likewise, 70.2% of the basic level and 7.4% of the inadequate level found great difficulties in searching for sources and selecting digital data, thus organizing them efficiently.

According to Lion and Maggio (2019), "technologies are the curtain and the stage where these exchanges are enhanced, as well

as the organization of new ties, prominence and collaborations". That is, in the field of education and scientific research, it has become the transversal axis and, in addition to being development mechanisms, including the generation of broad learning communities.

Thus, digital literacy is a vital learning ability for life, currently requiring people to learn technologically and perform in digital contexts. Educators must be responsible for reacting to this scenario and require instructors who are better equipped to deal with digital environments (Rodríguez and Martínez, 2018).

In relation to the descriptive results of investigative skills, only 61.8% have managed to develop them; but 38.2% require a reinforcement stage so that they have the possibility of achieving their proposed goals.

This is explained by the contribution of Charry (2008), where the development of educational sciences has been linked to their training, and by the study by Alvitres et al (2014), who explain that with the establishment of the automatic baccalaureate, the of research activity in Peruvian universities.

For example, in South America, scientific productivity is low, probably due to a lack of financial and human resources for research, a lack of editorial culture, and insufficient research training. For example, university attempts to encourage students to publish are limited in Peru (Pereyra et al., 2014) .

Research is an academic subject that is learned by doing from the concept to the publication of the findings in a scientific journal. Professors of research courses must have conducted research and published original articles in indexed journals to advise students on their progress. Students can use research to gather information from a variety of sources to develop their own worldview, guided by a process of intellectual formation that allows them to build criteria and arguments on their own knowledge and thus critically understand the world. and logic. As a result, students and educators are encouraged to develop a culture of inquiry through the use of ICT.

Thus, according to both Núñez-Rojas et al. (2021) as with González and Achiong 2018), teacher training must increase the base of knowledge and investigative skills that allow the scientific method to contribute to addressing pedagogical difficulties in general and teaching-learning problems in particular. So, how to develop teaching skills in digital scenarios? What situations arise in these scenarios in scientific research? What methodologies and tools should be used?

According to the OECD (2006), scientific competencies "include scientific knowledge and the use that an individual makes of that knowledge to identify questions, acquire new knowledge, explain scientific phenomena and draw conclusions based on evidence" (p.17) .

Similarly, it is important to point out that educational policy has focused on improving the quality of university education; Hence, redesigning implies creating or strengthening the circumstances that support investigative activity in digital scenarios. These are expressions in educational institutions, particularly when normal practices of conventional bias are challenged. Hence some criteria that must be adjusted, these associated with curricular approaches. Likewise, the time conditions are adjusted in a frame that dialogues with the previous condition. The curriculum is reinterpreted in its central and important components. The environment is redesigned and the practice goes beyond the classroom and the school. Time, place, and curriculum can be altered and challenged to encourage creativity and the creation of new practices.

The development of a research culture where the teacher-student relationship is organized around the search for knowledge from scientific methodologies at various levels is crucial for universities. In addition, the scientific research centers that promote the development of scientific knowledge have objectives, strategies, and lines of research established within their faculties, where a substantial proportion of Peruvian scientific productivity is found in the health sciences (Castro, 2018).

The weaknesses of the university system are due to low scientific productivity and generation of knowledge by students. UNESCO states that universities encourage scientific research and the exchange of knowledge (Unesco, 2015). This paradigm of the student as a researcher and creator of information driven by the scientific method has not organically entered the curricular design of the various university programs, in addition to inadequate training in writing and publishing articles, perfectly explains the lack of research.

Several methodological components emerge from the examination of the methodological principles of research in digital settings. The domains that have been most influenced are oriented to the communication of results. It is noteworthy that these findings contrast with Gaviria-Velásquez and Mejía-Correa (2021)who affirm that communication makes explicit reference to the constant connection between science and society with its numerous actors for the benefit of all.

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