

## PSYCHOLOGICAL FOUNDATIONS OF THE UNIVERSITY EDUCATIONAL PROCESS BASED ON ICTS

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### Summary

A documentary review was carried out on the production and publication of research papers related to the study of the variables Psychological Foundations of the University Educational Process based on ICTs. The purpose of the bibliometric analysis proposed in this document was to know the main characteristics of the volume of publications registered in the Scopus database during the period 2018-2022 at the Latin American level, achieving the identification of 30 publications in all. The information provided by this platform was organized through graphs and figures categorizing the information by the Year of Publication, Country of Origin, Area of Knowledge and Type of Publication. Once these characteristics have been described, the position of different authors on the proposed theme is referenced through a qualitative analysis. Among the main findings made through this research, it is found that Chile and Colombia, with 7 publications each, were the countries with the highest scientific production registered on behalf of authors affiliated with institutions in that country. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the Psychological Foundations of the University Educational Process based on ICTs was the social sciences with 22 published documents, and the Type of Publication that was most used during the period indicated above was the Journal Article with 22 documents of total scientific production.

**Keywords:** Psychological Foundations, Educational Process, University Education, Higher Education, Information and Communication Technologies ICT.

## 1. Production

The Information and Communication Technologies ICTs along with other advances have caused the adaptation, almost mandatory, of everything that is part of our society and our environment with the sole purpose of continuing at the pace imposed by globalization. Although ICTs, in the past were only related to the collection and processing of large amounts of information for subsequent dissemination over time, these technologies have become more important in our daily lives, to the point of being considered tools or instruments for the execution of various activities.

In the specific case of Education, one of the most important areas to be responsible for the training of people at different stages, like all the others, had to make modifications and adaptations that facilitate the transmission of knowledge from new mechanisms that would allow obtaining better results in students based on highly qualified professionals who together are part of what we know as the Educational Process and that according to the book "A conception of Pedagogy as a science from the cultural historical approach"(Arnaiz Barrios, et al., 2010) we can define as follows:

The system of interactions of the learner with reality, mainly with other people - organized in interdependent stages and phases constituting a strategy of the school or other educational institution that includes the collaboration of the family and the community and that is structured, on the basis of pedagogical theory, according to the social and contextual needs derived from these in precise objectives and contents, concretized in a dynamic of scientific base, flexible and creative, directed by pedagogues to achieve as a result education, which leads to the development of personality. (Arnaiz Barrios, et al., 2010)

Social and community issues seem to be immersed in each of us, so any student should be prepared in an integral way always looking for that during their life cycle they contribute only positive things to the environment that surrounds them, which is why Higher

Education Institutions have emphasized especially about the realization of certain types of work that help the individual to develop critically and Empathic your personality, way of perceiving things and above all allow you to make good decisions in any situation to which you are exposed. Taking into account the above and in order to meet our general objective, this research article seeks to describe the main characteristics of the set of publications assigned to the Scopus database and that are directly related to the variables Psychological Foundations of the University Educational Process Based on ICTs as well as the description of the position of certain authors affiliated with institutions at the Latin American, during the period between 2018 and 2022.

## 2. General objective

Analyze from a bibliometric and bibliographic perspective, the elaboration of works on the variable s Psychological Foundations of the University Educational Process based on ICT during the period 2018-2022 at the Latin American level.

## 3. Methodology

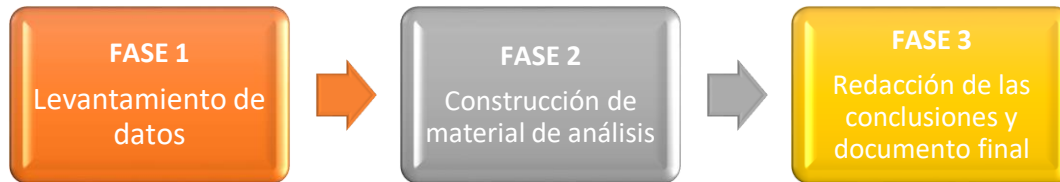
This article is carried out through a research with mixed orientation that combines the quantitative and qualitative method.

On the one hand, a quantitative analysis of the information selected in Scopus is carried out under a bibliometric approach of the scientific production corresponding to the study of the possibilities of the Psychological Foundations of the University Educational Process based on ICTs.

On the other hand, it is analyzed from a qualitative perspective, examples of some research works published in the area of study indicated above, starting from a bibliographic approach that allows describing the position of different authors against the proposed topic.

It is important to note that all this research was carried out through Scopus, managing to establish the parameters referenced in *Figure 1*.

### 3.1 Methodological design



**Figure 1.** Methodological design

**Source:** Authors.

#### 3.1.1 Phase 1: Data collection

The data collection was executed from the Search tool on the Scopus website, where 30 publications were obtained from the choice of the following filters:

psychological AND fundamentals AND university AND educational AND process AND ict AND ( LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) ) AND ( LIMIT-TO ( AFFILCOUNTRY , "Chile" ) OR LIMIT-TO ( AFFILCOUNTRY , "Colombia" ) OR LIMIT-TO ( AFFILCOUNTRY , "Brazil" ) OR LIMIT-TO ( AFFILCOUNTRY , "Mexico" ) OR LIMIT-TO ( AFFILCOUNTRY , "Ecuador" ) OR LIMIT-TO ( AFFILCOUNTRY , "Peru" ) OR LIMIT-TO ( AFFILCOUNTRY , "Cuba" ) OR LIMIT-TO ( AFFILCOUNTRY , "Uruguay" ) OR LIMIT-TO ( AFFILCOUNTRY , "Venezuela" ) )

➤ Published documents whose study variables are related to the study of the Possibilities of the Psychological Foundations of the University Educational Process based on ICTs.

➤ Limited to the years 2018-2022.

- Limited to Latin America.
- No limit in areas of knowledge.
- Without distinction of type of publication.

#### 3.1.2 Phase 2: Construction of analytical material

The information collected in Scopus during the previous phase is organized to later be classified by graphs, figures and tables as follows:

- Co-occurrence of Words.
- Year of publication.
- Country of origin of the publication.
- Area of knowledge.
- Type of Publication.

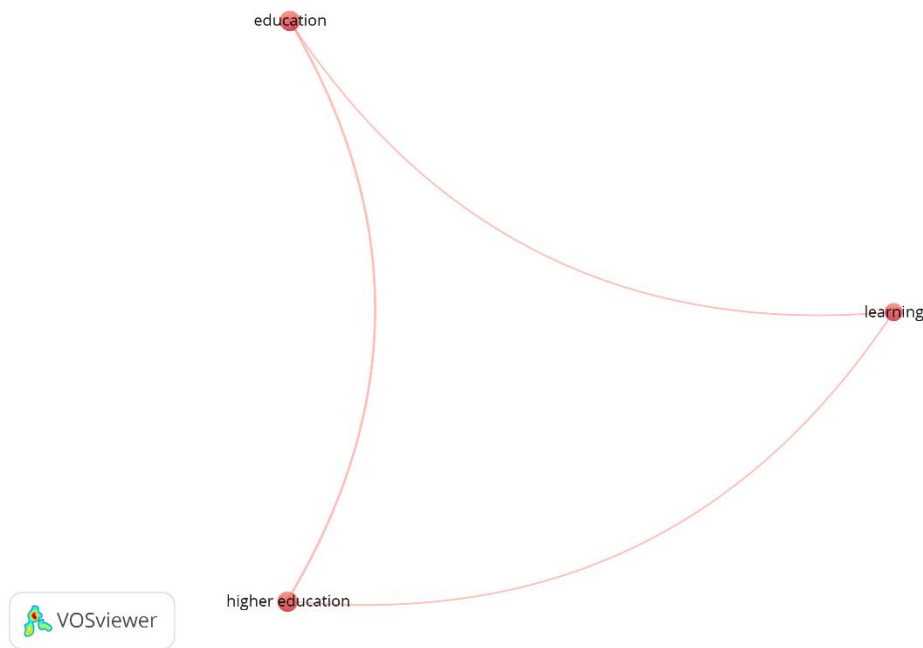
#### 3.1.3 Phase 3: Drafting of conclusions and outcome document

In this phase, we proceed with the analysis of the results previously yielded resulting in the determination of conclusions and, therefore, the obtaining of the final document.

## 4. Resultados

### 4.1 Co-occurrence of words

Figure 2 shows the Co-occurrence of keywords found in the publications identified in the Scopus database.



**Figure 2.** Co-occurrence of words

**Source:** Authors. (2023); based on data exported from Scopus.

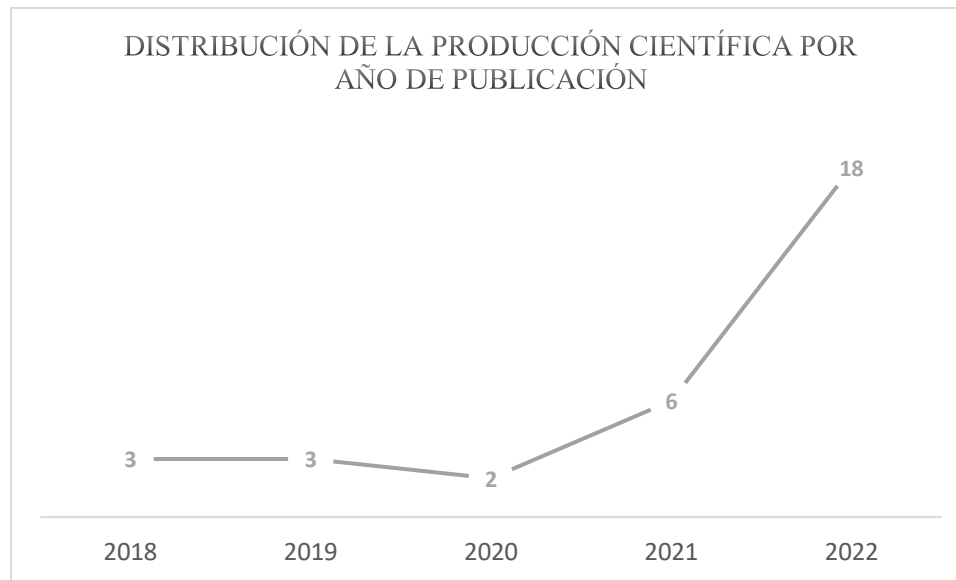
The data in Figure 2, exported from Scopus, shows us our variables and their relationship with other terms which we will explain below.

The Educational Processes consist of several stages where several agents participate who can receive information or influence others, that is, we find students and teachers. In Higher Education, mainly, much emphasis is placed on the role of the teacher in this process since it is who can successfully capture the attention of students and contribute to the formation of an

integral subject that strives to acquire knowledge related to the chosen area of study and additionally is concerned with contributing positively in the situations that arise around them and that influence in achieving the long-awaited social inequality.

#### **4.2 Distribution of scientific output by year of publication**

Figure 3 shows how the scientific production is distributed according to the year of publication.



**Figure 3.** Distribution of scientific production by year of publication.

**Source:** Authors. (2023); based on data exported from Scopus

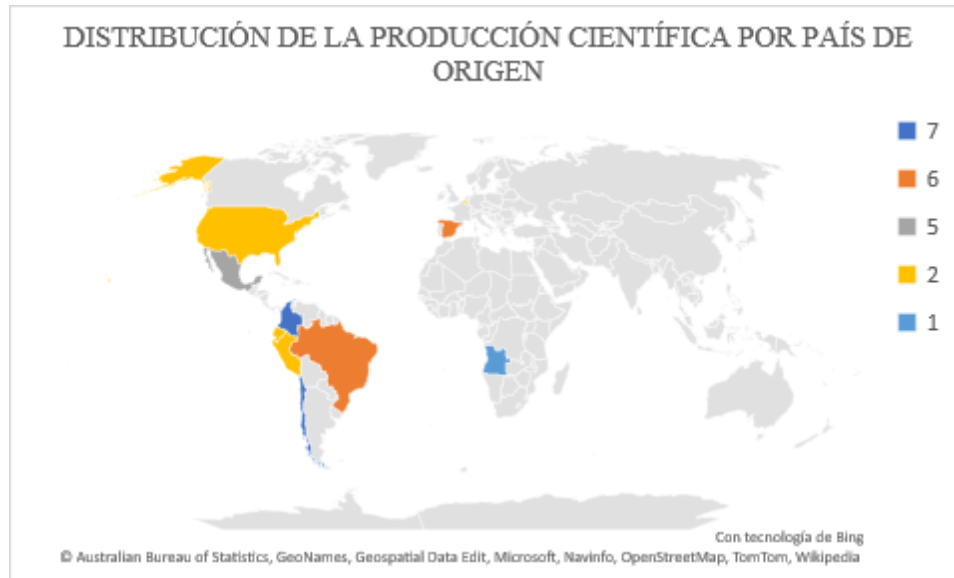
In figure 3 we find the scientific production concerning the variables Psychological Foundations of the University Educational Process based on ICTs during the period between 2018 and 2022 at the Latin American level, which resulted in the publication of 30 documents, in the Scopus database, containing the keywords. Likewise, it is evident that throughout the period some changes were experienced. We started with the year 2018 with 3 documents, a number that remains stable during the following year, experiencing changes again in 2020, year in which it decreased to 2 documents. It was in 2021 where again the number of publications increases reaching 6 texts during the year, a figure that is tripled the following year.

From the year 2022, the article "Validation of a Technostress Measurement Scale for University Students in Chile" was highlighted, (Andreucci-Annunziata, Bilbao-Cotal, Contreras-Barraza, Estrada-Muñoz, & Vega-Muñoz, 2022) which sought to "validate a scale

to measure technostress in Chilean university students in the context of hybrid education. 212 university students from the central-southern zone of Chile participated (Andreucci-Annunziata, Bilbao-Cotal, Contreras-Barraza, Estrada-Muñoz, & Vega-Muñoz, 2022)". The idea was to determine the level of stress to which people are exposed after being subjected to changes in their environment and the negative effects that exposure to technologies can cause in educational processes, therefore they took into account "factors such as Techno-Educational Skills-Demands, Needs-Supplies of Resources and Person-People Factor". (Andreucci-Annunziata, Bilbao-Cotal, Contreras-Barraza, Estrada-Muñoz, & Vega-Muñoz, 2022)

#### 4.3 Distribution of scientific production by country of origin.

Figure 4 shows how scientific production is distributed according to the nationality of the authors.



**Figure 4.** Distribution of scientific production by country of origin.

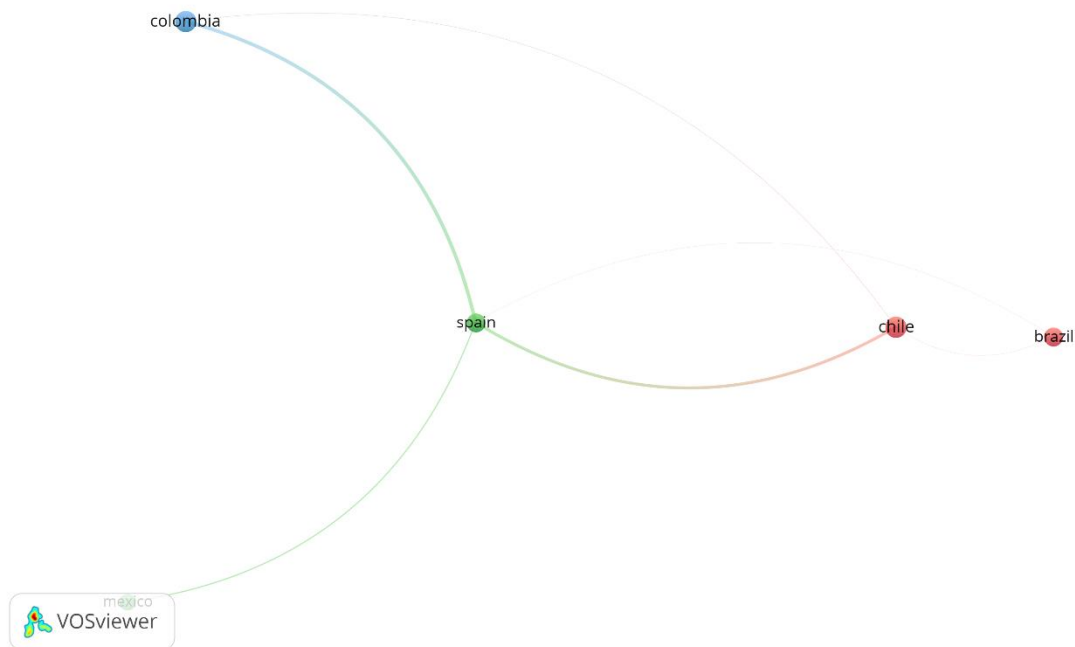
**Source:** Authors. (2023); based on data provided by Scopus.

In the study of the Psychological Foundations of the Educational Process, Chile and Colombia lead the list of published documents with a total of 7 records in the Scopus database during the period of the years 2018-2022, followed by Brazil and Spain with 6 documents each.

The book "Practical perspectives on educational theory and game development" (by Oliveira & Marzullo, 2021) of Brazilian origin ensures that the video game market is constantly growing because "they create engagement and offer entertainment and a powerful way to understand and interact with the world". (by Oliveira & Marzullo, 2021) Education is not a case apart since little by little teachers have discovered the potential of games "as a learning tool that can help students who have difficulty learning and also reinvent it". (by Oliveira & Marzullo, 2021) For all the

above, "the book supports professionals in the creation of strategies to use gamification and game-based learning theory with effectiveness and measured results". (by Oliveira & Marzullo, 2021)

At this point, it is important to note that the preparation of scientific publications in many cases is carried out from collaborations that may involve private and / or public institutions from one or several countries. Therefore, the same publication can be linked to one or more authors with different nationality and thus to more than one country simultaneously, being part of the total number of articles or publications of each of them in the final sum. They will then see, in *Figure 5*, in greater detail the flow of collaborative work by several countries.



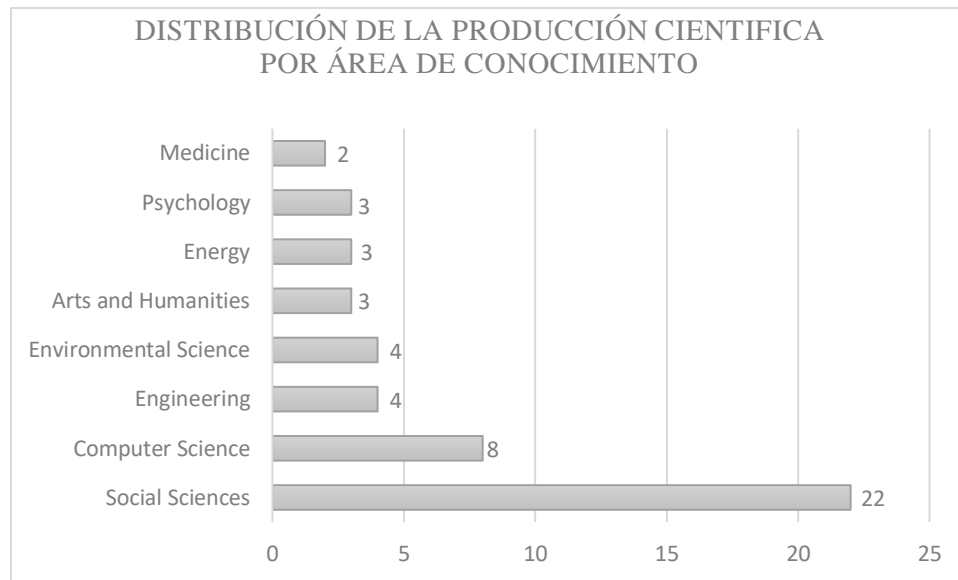
**Figure 5.** Co-citations between countries.

**Source:** Authors. (2023); based on data provided by Scopus.

*Figure 5* shows the grouping of research according to the collaboration between authors belonging to various international institutions. There is evidence of outstanding participation among authors affiliated with Latin American institutions such as Chile, Colombia, Brazil, Spain and Mexico.

#### **4.4 Distribution of scientific production by area of knowledge**

*Figure 6* shows the distribution of the elaboration of scientific publications from the area of knowledge through which the different research methodologies are implemented.



**Figure 6.** Distribution of scientific production by area of knowledge.

**Source:** Authors. (2023); based on data provided by Scopus.

Due to the nature of our variables and the repercussions they can generate in an entire community, it is not surprising that most of the publications found in the Scopus database, on these are made from the social sciences occupying the main position in the publication of documents. Other areas such as computer science and engineering have contributed to the study of these variables, managing to publish 8 and 4 papers respectively.

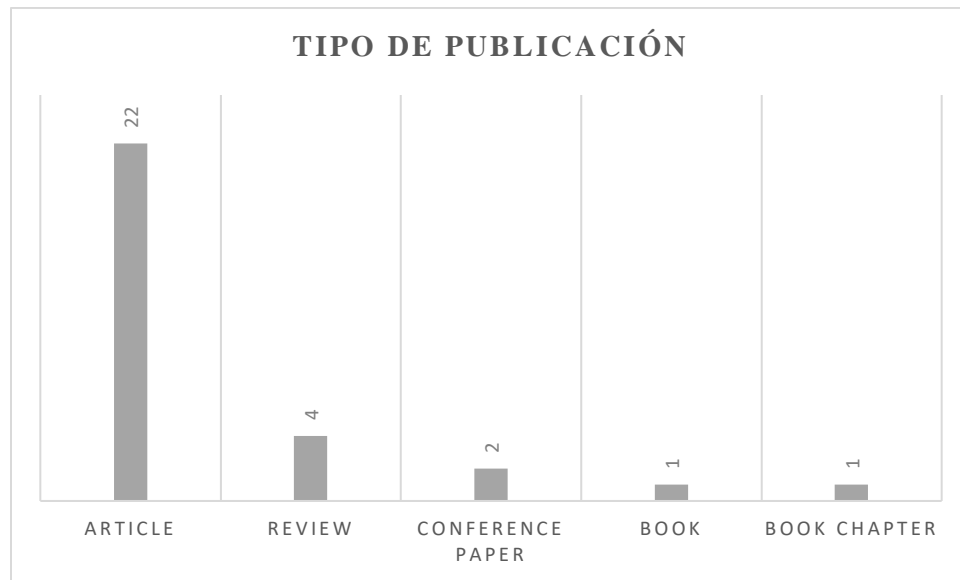
As we can see in *figure 6*, the variables object of this study are relevant in various areas of

knowledge, since they can be analyzed from the different approaches that emphasize the influence of Information and Communication Technologies ICTs in today's life.

#### **4.5 Type of publication**

In the following graph, you will observe the distribution of the bibliographic finding according to the type of publication made by each of the authors found in Scopus.





**Figure 7.** Type of publication.

**Source:** Authors. (2023); based on data provided by Scopus.

*Figure 7* clearly shows that the predominant type of publication in the study of the Psychological Foundations of the University Educational Process Based on ICT was the journal article with a total of 22 documents. In second place, the revisions are located with 4 documents followed by the conference proceedings with 2 publications.

The article called "Aptitudes, attitudes and professional development of higher education faculty of the University of Cuenca" sought to respond to the concern of whether Higher Education Institutions in Ecuador comply with the good preparation of their students, thus delivering graduates with high "competencies to (Cabrera-Arias, Cabrera-Tenecela, Espinoza, & Pacheco, 2021) provide timely economic, ecological and sustainable solutions" (Cabrera-Arias, Cabrera-Tenecela, Espinoza, & Pacheco, 2021) Additionally, HEIs must prepare graduates to find employment in a society characterized by greater uncertainty, extensive use of information technologies, speed, risk, complexity and interdisciplinary work. (Cabrera-Arias, Cabrera-Tenecela, Espinoza, & Pacheco, 2021) That is why it is considered the need to have qualified teachers, with "a

good combination of skills, attitudes and professional development in teaching, research and services" (Cabrera-Arias, Cabrera-Tenecela, Espinoza, & Pacheco, 2021) so it "uses a sequential explicative approach of mixed methods to explore the impact of the aptitudes, attitudes and professional development of teachers in the teaching and learning of students at the University of Cuenca" (Cabrera-Arias, Cabrera-Tenecela, Espinoza, & Pacheco, 2021).

## 5. Conclusions

From the bibliometric analysis carried out in the present research work, it was established that Chile and Colombia were the country with the highest number of records published for the variables Psychological Foundations of the University Educational Process Based on ICTs a total of 7 publications, each, in Scopus database during the period 2018-2022 at the Latin American level and that the area of knowledge with the greatest contribution was the social sciences with 22 texts.

The information collected with reference to our subject was very broad and although it was

mostly focused on students, some documents highlighted the important role played by teachers in the Educational Process based on ICTs, even more taking into account that new technologies emerge every day, which leads them to remain in constant training and updating to meet the requirements of Higher Education Institutions, its students and society itself.

Regarding the Psychological Foundations of the University Educational Process we find that research is one of the most important tools in the capacities that the individual develops through his training. As stated in the article "Psychological foundations of pedagogical activity (Espinoza Freire, Guamán Gómez, & Herrera Martínez, 2020)":

Research occupies an important place in pedagogical activity; finds its psychological foundation, from the socio-constructivist perspective, in educational models in which the student is an active subject, the teacher becomes a guide and facilitator, the unity of the cognitive and the affective is established, self-awareness and self-assessment of the student is stimulated as resources of self-direction of learning, communication is a fundamental factor, The level of development achieved by the student and their potentialities are taken into account for each content object of appropriation, learning is significant and due attention is paid to individual differences, clearly specifying the contents object of learning. (Espinoza Freire, Guamán Gómez, & Herrera Martínez, 2020)

However, we also find some texts where reference is made to the levels of stress caused by the extensive exposure of students to ICTs, which has even generated diseases related to the stomach, turning the Educational Process into a negative experience that hardly wants to be repeated. For this reason and in order to continue generating awareness of the importance of guaranteeing access to this type of information in a transparent way by anyone, we hope to promote with this article the participation of scientific communities in the study of these variables from any scientific profile and area of knowledge. always seeking

to provide more alternatives that contribute to the research of topics of general interest.

## 6. References

- [1] Amores-Valencia, A., Burgos, D., & Branch-Bedoya, J. W. (2022). Influence of motivation and academic performance in the use of Augmented Reality in education. A systematic review. *Frontiers in Psychology*.
- [2] Andreucci-Annunziata, P., Bilbao-Cotal, H., Contreras-Barraza, N., Estrada-Muñoz, C., & Vega-Muñoz, A. (2022). Validation of a Measurement Scale on Technostress for University Students in Chile. *International Journal of Environmental Research and Public Health*.
- [3] Arnaiz Barrios, I., Castillo Estenoz, M., Companioni Álvarez, I., Cruz Dávila, M., Fabá Crespo, M., Ferrer Díaz, M., . . . King Benguría, C. (2010). *A conception of Pedagogy as a science from the historical-cultural approach*.
- [4] Ávila-Palet, J.-E., Núñez-Ríos, J. E., & Soto-Pérez, M. (2022). Justice, Deontology and Moral Meaningfulness as Factors to Improve Student Performance and Academic Achievement. *Journal of Academic Ethics*, 375-397.
- [5] Bastidas, J. A. (2022). Are Language Teaching Methods Really Dead as Some TESOL Gurus Have Proclaimed? *Profile: Issues in Teachers' Professional Development*, 203-213.
- [6] Cabrera-Arias, S., Cabrera-Tenecela, P., Espinoza, M.-I., & Pacheco, G. (2021). Lecturers' aptitudes, attitudes and professional development in higher education at University of Cuenca. *European Journal of Educational Research*, 553-565.
- [7] de la Rosa, A. L., Gómez-Galán, J., López-Meneses, E., & Vázquez-Cano, E. (2020). Socio-educational impact of augmented reality (AR) in sustainable learning ecologies: A semantic modeling approach. *Sustainability (Switzerland)*, 1-14.

- [8] de Miranda, L. C., & Vasiljevic, G. A. (2020). Brain–Computer Interface Games Based on Consumer-Grade EEG Devices: A Systematic Literature Review. *International Journal of Human-Computer Interaction*, 105-142.
- [9] de Oliveira, F. A., & Marzullo, F. P. (2021). *Practical Perspectives on Educational Theory and Game Development*. IGI Global.
- [10] Deroncele Acosta, A., Robles Rojas, E., & Toribio López, A. (2022). Humor and learning: A systematic literature review. *Journal of Social Sciences*, 136-154.
- [11] Espinoza Freire, E., Guamán Gómez, V., & Herrera Martínez, L. (2020). Psychological foundations of pedagogical activity. *Conrad Magazine*, 303-311.
- [12] García-González, A., & Ramírez-Montoya, M. S. (2019). An instrument for evaluating the innovation of an educational platform: Reliability piloting. *ACM International Conference Proceeding Series* (págs. 711-717). León: Association for Computing Machinery.
- [13] Gutierrez Segura, M., Pérez García, L., Ruíz Piedra, A., & Ochoa Rodríguez, M. (2021). Theoretical foundations of a methodology to integrate educational software in Stomatological Rehabilitation. *Medical Humanities*, 871-887.
- [14] Zambrano Quiroz, D., & Zambrano Quiroz, M. (2019). INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTS) IN HIGHER EDUCATION: THEORETICAL CONSIDERATIONS. *Electronic Journal Training and Educational Quality*, 1-16.