

# THE APPLICATION OF ICTS THROUGH THE USE OF DATABASES AND ONLINE RESOURCES IN HIGHER EDUCATION

Oswaldo Villacrés Cáceres<sup>1</sup>, Lourdes Emperatriz Paredes Castelo<sup>2</sup>, Jaime David Camacho  
Castillo<sup>3</sup>, Juan Carlos Yungán Cazar<sup>4</sup>

<sup>1</sup>*Facultad de Ciencias, Escuela Superior Politécnica de Chimborazo (ESPOCH), Riobamba - Ecuador.  
0000-0002-5894-5248. [ovillacres@epoch.edu.ec](mailto:ovillacres@epoch.edu.ec)*

<sup>2</sup>*Facultad de Ciencias, Escuela Superior Politécnica de Chimborazo (ESPOCH), Riobamba - Ecuador.  
0000-0002-5331-2759. [lparedes@epoch.edu.ec](mailto:lparedes@epoch.edu.ec)*

<sup>3</sup>*Facultad de Informática y Electrónica, Escuela Superior Politécnica de Chimborazo (ESPOCH)  
0000-0002-9110-6585. [jaimed.camacho@epoch.edu.ec](mailto:jaimed.camacho@epoch.edu.ec).*

<sup>4</sup>*Sede Morona Santiago Escuela Superior Politécnica de Chimborazo (ESPOCH).  
0000-0001-5682-0399. [jyungan@epoch.edu.ec](mailto:jyungan@epoch.edu.ec).*

## Abstract

A documentary review was carried out on the production and publication of research papers related to the study of ICT variables, databases, higher education as online resources within the different study methodologies at the university level. 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 2017-2022, achieving the identification of 82 publications in total. 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 Spain with 19 publications, was the country with the highest scientific production registered on behalf of authors affiliated with institutions of dicho nation. The Area of Knowledge that made the greatest contribution to the construction of bibliographic material referring to the study of the implementation of queries to Databases, ICT Resources as a strategy in university education was Social Sciences with 50 published documents, and the Type of Publication that was most used during the period indicated above was the Journal Article that represents 52% of the total scientific production.

**Keywords:** ICT, DATABASES, HIGHER EDUCATION, ONLINE RESOURCES.

## I. Introduction

The application of ICT, at present, has become an essential and fundamental component in human daily life, generating new forms of communication, socialization, education and production of knowledge and access to multiple levels of information. These applications of technologies and communication have led to the

growing manifestation in the alternatives of database and connectivity tools, the fierce demand for the use of technology and smart devices and the massive consumption of digital content in our technological media; bringing with it, the need to give it an adequate use by society, being everyone's responsibility, and many to strengthen educational institutions, to perform a better

academic performance for both students and teachers.

That is why it is necessary the development and due training of professionals in teaching and pedagogy in a technological environment that facilitates the quality and improvement of new teaching training environments with pedagogical strategies in the educational training classrooms of the different levels of education, allowing teachers to take full advantage of the technological tools that allow to facilitate in a way Faster access and organization of information, being deposited in knowledge and knowledge to improve the education sector.

A priority in educators are the proper knowledge of ICT and how university professors use its different computer applications in their daily training performance, integrating technology and the media with practice in the classroom. Consequently, it is necessary that higher education be at the forefront of new technological models of learning in order to obtain information for the development of new training proposals and teaching strategies that allow the improvement of the educational quality of the different universities. By virtue of the above, the general objective of this article is the analysis of the current situation of the use of ICT technologies by higher education institutions, teachers and students for the development of new educational proposals aimed at vocational training, positively impacting the quality of education in university classrooms. For this reason, this article seeks to describe the main characteristics of the

compendium of publications indexed in Scopus database related to the variables ICT, DATABASES, HIGHER EDUCATION, as well. As the description of the position of certain authors affiliated with institutions, during the period between 2017 and 2022.

## 2. General objective

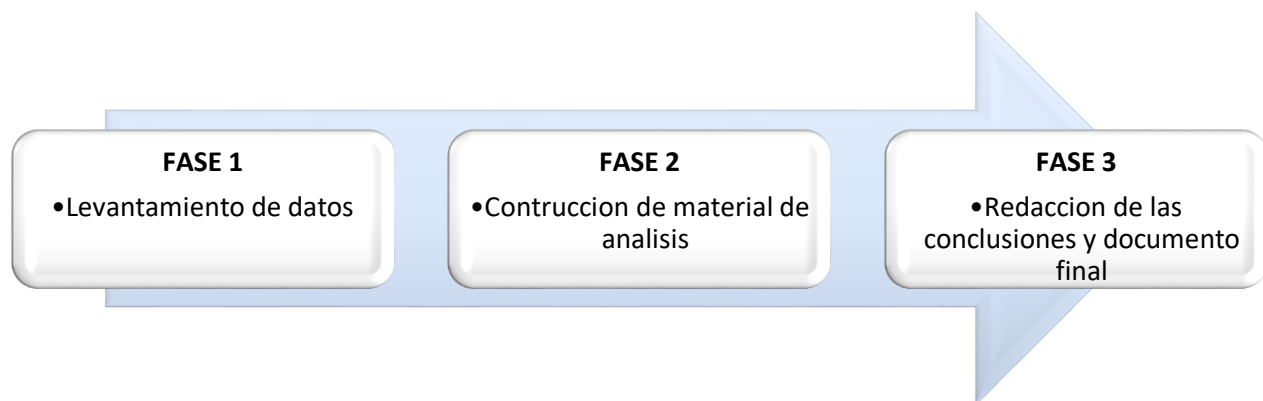
Analyze from a bibliometric and bibliographic perspective, the production of research papers on the variables ICT, DATABASES, HIGHER EDUCATION registered in Scopus during period 2017-2022.

## 3. Methodology

Quantitative analysis of the information provided by Scopus is carried out under a bibliometric approach on the scientific production referring to the study of ICT variables, DATABASES, HIGHER EDUCATION. Likewise, it is analyzed from a qualitative perspective, examples of some research works published in the area of study indicated above, from a bibliographic approach to describe the position of different authors regarding the proposed topic.

The search is carried out through the tool provided by Scopus and parameters referenced in Figure 1 are established.

### 3.1 Methodological design



**Figure 1.** Methodological design

**Source:** Authors.

### 3.1.1 Phase 1: Data collection

Data collection is carried out through the Search tool on the Scopus website, through which a total of 82 publications are identified. For this purpose, search filters were established consisting of:

TITLE-ABS-KEY ( ict, AND databases, AND higher AND education ) 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 ) OR LIMIT-TO ( PUBYEAR , 2017 ) )

- ✓ Published documents whose study variables are related to the study of ICT variables, databases, higher education.
- ✓ Without distinction of country of origin.
- ✓ Without distinction of area of knowledge.
- ✓ Without distinction of type of publication.

### 3.1.2 Phase 2: Construction of analytical material

The information identified in the previous phase is organized. The classification will be made by

means of graphs, figures and tables from data provided by Scopus.

- ✓ 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

After the analysis carried out in the previous phase, we proceed to the drafting of the conclusions and preparation of the final document.

## 4. Results

### 4.1 Co-occurrence of words

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

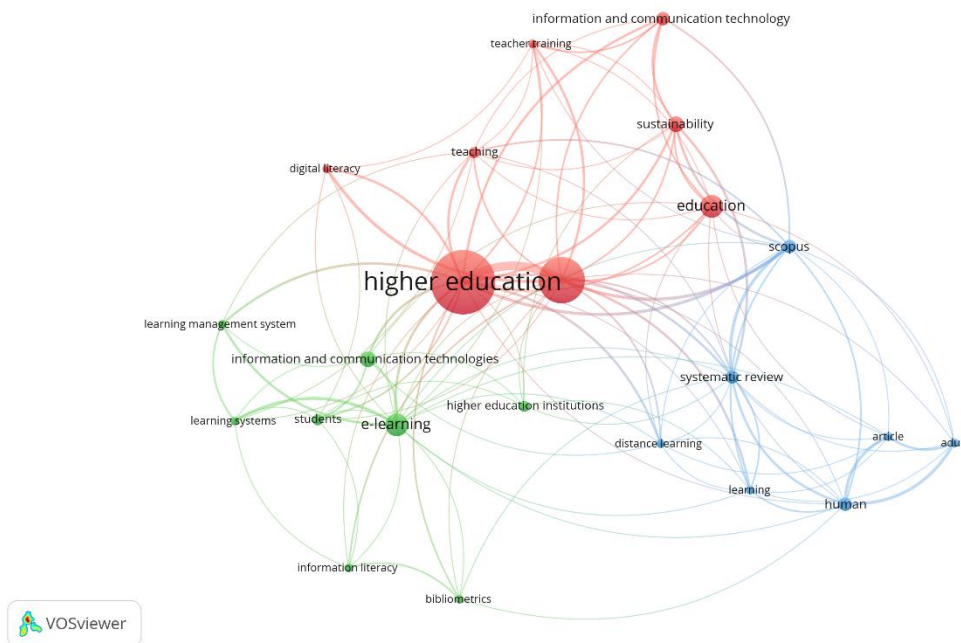


Figure 2. Co-occurrence of words

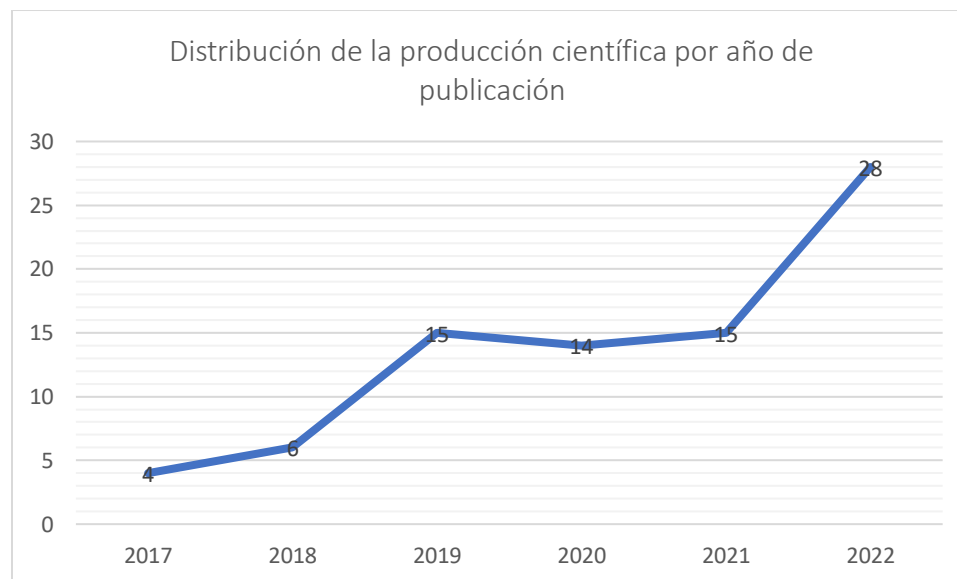
Source: Authors. (2023); based on data provided by Scopus.

Within the study of the research thrown by the Scopus platform, referring to the variable of the DATABASES, HIGHER EDUCATION, object of this scientific debt, it is counted to incorporate the application of ICT, teachers and students interact in a process of academic growth and of learning since everyone enjoys access to the knowledge provided by communication technologies. It is for this reason that through the interpretation of Figure 2, it is possible to determine as keywords of the publications reported in Scopus Higher Education, Professor, Information and Communication, For this reason, human activity must be used to the maximum means to achieve efficiency in the integral

development as people, and in the higher educational community, the proper implementation of ICT must be promoted to improve those processes that lead to learning and teaching and with them new paradigms of how to teach through technological mediation are framed.

#### 4.2 Distribution of scientific production by year of publication.

Figure 3 shows how the scientific production is distributed according to the year of publication, taking into account that the period between the years 2017 and 2022 is taken



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

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

Figure 3, shows the scientific production around the variables DATABASES, HIGHER EDUCATION in the period between the validity of 2017 and 2022, where there is evidence of an increase in production volume in 2022, with a total of 728 publications according to keywords, among which the article called "Dispersion of thematic terms related to ICT in publications on information management stands out. and knowledge: a Bradford analysis" (Onyancha, 2022) This study attempts to use the principles of

law to determine the core concepts of ICT within the information and knowledge management literature. Data were obtained from EBSCO Discovery's Library, Information Science and Technology Abstracts (LISTA) and Library and Information Science Source (LISS) databases using a variety of keywords as search terms. The procedures of conducting a Bradford analysis to determine the basic terms of ICT were followed, as reflected in the group of IKM articles published between 1998 and 2017. The results indicate that

the application of ICT in IKM occurs largely in the fields of medicine, business and commerce, education and training (higher education and training), decision sciences and industrial management. It was also noted that core subjects varied from study period to study; The subject terms associated with the technology were largely visible; and the scattering of subject terms conforms to Bradford dispersion

#### 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.

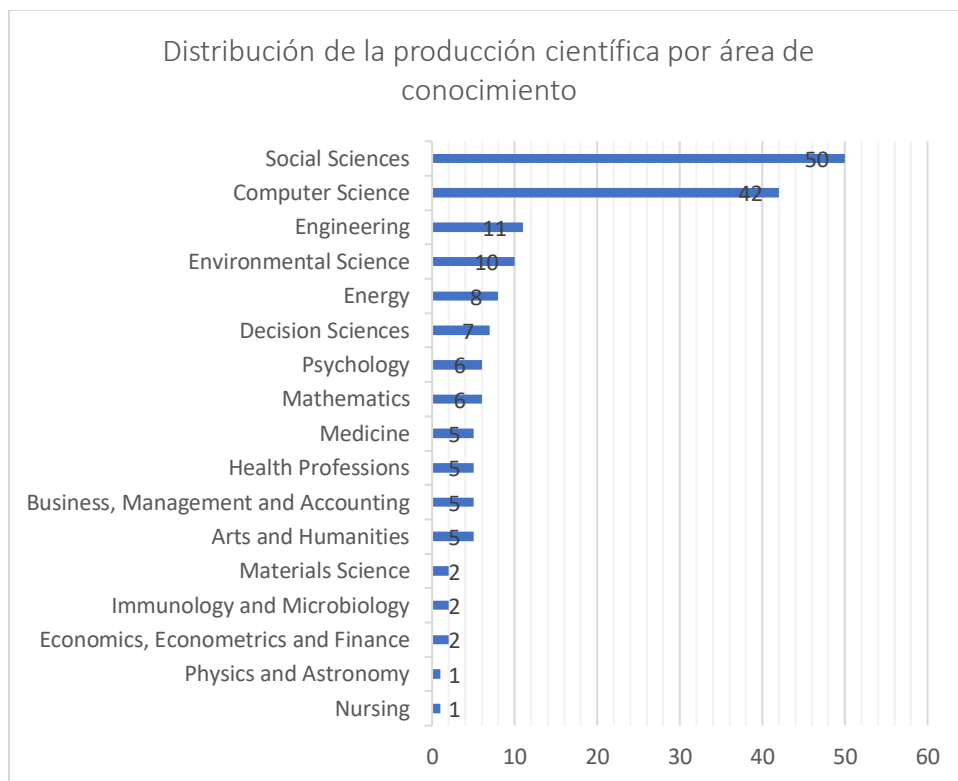
Spain was the Latin American country with the highest number of publications registered in Scopus referring DATABASES, HIGHER EDUCATION during the period 2017-2021 with a total of 19 publications, followed by India with 7 registrations and China with 4. Of the latter, the article entitled "Frequency of use of ICT by teachers to provide sustainable learning opportunities: mediation analysis using a reading database" stands out. This study aimed to investigate the above correlation and explore the mediating effects of teachers' self-efficacy and the use of flexible teacher strategies to solve individualized challenges (i.e. adaptive instruction). Data from 10,796 teachers in 389 secondary schools were analyzed using R based on a multilevel mediation model. As the results of this study indicate, teachers achieved higher levels

of self-efficacy and adaptive instruction when ICT was used more frequently in reading classrooms, which would further improve OTL provision for students. In addition, experienced teachers were better at facilitating adaptive instruction and self-efficacy using ICT. The above results could lay a solid foundation for future empirical studies to incorporate ICT into the design of reading courses. In addition, it is imperative to carry out teacher education programmes to improve teachers' beliefs and practices by providing OTL for better sustainable education in ICT educational contexts.(Hu, 2022)

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

Next, it is shown in Figure 5, how the production of scientific publications is distributed according

to the area of knowledge through which the different research methodologies are executed.



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

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

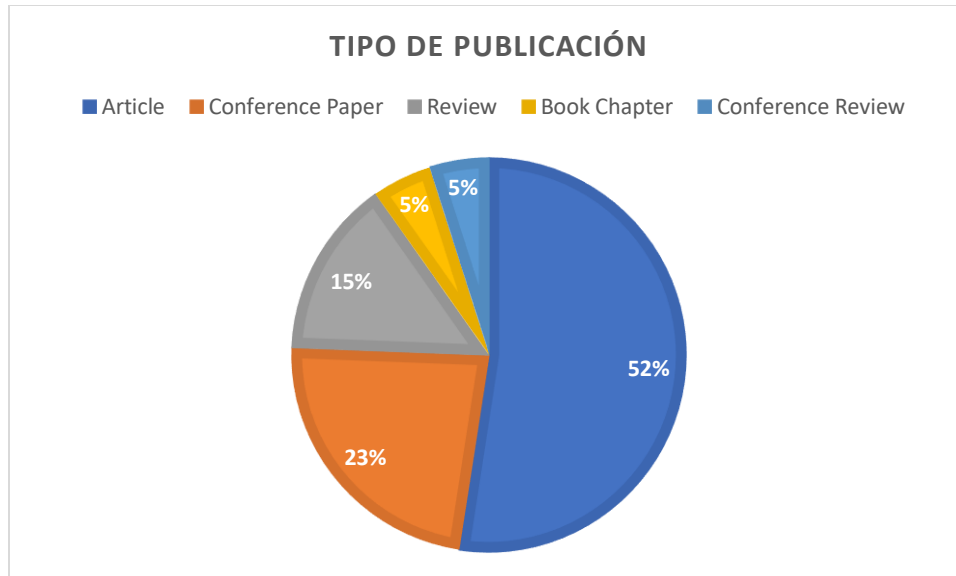
Social Sciences was the area of knowledge with the highest number of publications registered in Scopus with a total of 50 documents that have based their methodologies on the impact DATABASES, HIGHER EDUCATION. Secondly, Communication Sciences with 7 documents. The above can be explained thanks to the contribution and study of different branches, the article with the greatest impact was registered by the Social Sciences area entitled "Virtual University and Educational Transformation in the Context of the Pandemic" The objective of the article was to deepen the knowledge about the impact of the virtual university on educational transformation during the COVID-19 pandemic. The methodology used was a literature review. In the Scopus database, different searches were made for reliable and recently published sources. The

following four points were prioritized: global context, ICT, e-learning and the emotional aspect of students and teachers. The results indicate that the adaptation to an online education exposed important gaps in the sector, affecting both students and teachers, and resulting in a lack of motivation in their academic work. It is concluded that virtual education is in total development mode. Therefore, institutions must improve their entire organization to adapt to the new way of teaching and learning.(Tito-Huamani, 2022)

#### 4.5 Type of publication

Figure 6 shows how the bibliography production is distributed according to the type of publication chosen by the authors





**Figure 6.** Type of publication

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

The type of publication most frequently used by researchers was the Article; 52% of the total scientific production corresponds to this type of document. Secondly, Session Papers with 23% and Revisions with 15%. In this last category, the one entitled "Usable and useful help in the search of literature databases? A pedagogical implementation and evaluation of an interactive Screencast for Iraqi university students" This study pursues two objectives. First, it suggests how this problem can be encountered, presenting the process of developing and pedagogical implementation of an interactive screencast that teaches ICT skills for literature search with the PubMed database. Second, it assesses screencast acceptance among master's students in Iraq, focusing on the questions of how easy the screencast can be used (usability) and how useful the screencast is for students to meet academic requirements (utility). The evaluation design is based on the Technology Acceptance Model and LORI. An online questionnaire with a Likert scale was used to collect data. Data (n = 29) were analyzed using a quantitative and statistical descriptive approach. Overall, utility was rated higher than usability. The findings suggest that ease of use is particularly increased through a clear overview of the topics covered in the screencast

and through a specific selection of topics. Regarding the usefulness of the screencast, students appreciate using an authentic way of how skills can be acquired and practiced. In addition, students experienced control over their learning process, referring to screencast features that allow them to control the pace of learning.(Steger, 2022)

## 5. Conclusions

Through the bibliometric analysis carried out in this research work, it was established that Spain was the country with the highest number of records published for the variables ICT, DATABASES, HIGHER EDUCATION with a total of 19 publications in Scopus database during the period 2017-2021. In the same way, it was established that the application of theories framed in the area of Social Sciences, were the most frequently used in the measurement of the impact generated by the impact databases, higher education, the implementation and application of ICT information and communication tools by teachers of higher education institutions, It demonstrates a competitive level that pedagogues have, highlighting positive figures in the implementation of these new educational models,

however, it is important to note that the implementation of these resources in the medium and long term to access the digital world can expand and deepen new strategies of teachers thus achieving an educational quality, it is worth mentioning, That the existing methodology has been sold strengthened in a way never before seen in traditional learning models, likewise, we show its dynamics in favor of improving teaching. However, it is prudent to highlight, motivate, the multiple options that knowledge and the appropriate use of ICT can offer; more than the management of pedagogical tools as a simple transmission of education, it is to show clearly of the contents with academic rigor how the levels of education acquired in the different generations can be improved.

It is important to mention that, according to the educational level and with postgraduate studies, 30% have a specialization, 10% have master's degrees, the competence was identified, the operation of virtual classrooms with incorporation of ICT in university educational processes, helps students since the demand flexible and open modality allows to overcome rigid pedagogical models, allowing the use of ICT to facilitate new forms of teaching to improve training processes for the improvement of the academy.

## References

- [1] Hu, J. H. (2022). *Frequency of teachers' use of ICT to provide sustainable learning opportunities: mediation analysis using a reading database*. China.
- [2] Onyancha, O. B. (2022). *Dispersion of thematic terms related to ICT in publications on information and knowledge management: an analysis of Bradford*. South Africa.
- [3] Steger, F. K. (2022). *Usable and useful help in searching literature databases? A pedagogical implementation and evaluation of an interactive Screencast for Iraqi university students*. Germany.
- [4] Tito-Huamani, P. A. (2022). *Virtual University and Educational Transformation in the Context of the Pandemic*. Peru.
- [5] Ali, A. (2020). Cloud computing adoption at higher educational institutions in the KSA for sustainable development. *International Journal of Advanced Computer Science and Applications*, 11(3), 413-419. Retrieved from [www.scopus.com](http://www.scopus.com)
- [6] Ang, K. L. -, Ge, F. L., & Seng, K. P. (2020). Big educational data analytics: Survey, architecture and challenges. *IEEE Access*, 8, 116392-116414. doi:10.1109/ACCESS.2020.2994561
- [7] Antonoaie, C., & Bucur, C. (2021). Considerations concerning ict specialists in europe. Paper presented at the ELearning and Software for Education Conference, 21-27. doi:10.12753/2066-026X-21-002 Retrieved from [www.scopus.com](http://www.scopus.com)
- [8] Astashova, N. A., Melnikov, S. L., Tonkikh, A. P., & Kamynin, V. L. (2020). Technological resources in modern higher education. [ТЕХНОЛОГИЧЕСКИЕ РЕСУРСЫ СОВРЕМЕННОГО ВЫСШЕГО ОБРАЗОВАНИЯ] *Образование и Наука*, 22(6), 74-101. doi:10.17853/1994-5639-2020-6-74-101
- [9] Bagateeva, A., Ziganshina, C., Islamova, A., & Akhmetshina, A. (2021). The processes of informatization and digitalization in the linguistic education doi:10.1007/978-3-030-66093-2\_24 Retrieved from [www.scopus.com](http://www.scopus.com)
- [10] Batanero, J. M. F., Rueda, M. M., Cerero, J. F., & García, S. A. (2022). Challenges and trends in the use of technology by hearing impaired students in higher education. *Technology and Disability*, 34(2), 101-111. doi:10.3233/TAD-220372
- [11] Bayona-Oré, S. (2022). Student dropout in information and communications technology careers. Paper presented at the Iberian Conference on Information Systems and Technologies, CISTI, , 2022-June doi:10.23919/CISTI54924.2022.9820074 Retrieved from [www.scopus.com](http://www.scopus.com)
- [12] Bere, A., & McKay, E. (2017). Investigating the impact of ICT tutorial strategies to promote improved database knowledge acquisition. Paper presented at the Proceedings of the 28th Australasian Conference on Information Systems, ACIS 2017, Retrieved from [www.scopus.com](http://www.scopus.com)



- [13] Bhattacharjee, D., & Mohanty, P. C. (2022). Do information differentials and confidence in medical institutions influence out-of-pocket expenditure on health care in india? *Clinical Epidemiology and Global Health*, 13 doi:10.1016/j.cegh.2021.100952
- [14] Bhuyan, D. J., & Borthakur, P. P. (2019). Effects of information and communication technology in social science research: Probability and usefulness. *International Journal of Innovative Technology and Exploring Engineering*, 8(8), 2724-2730. Retrieved from [www.scopus.com](http://www.scopus.com)
- [15] Brown Wilson, C., Slade, C., Wong, W. Y. A., & Peacock, A. (2020). Health care students experience of using digital technology in patient care: A scoping review of the literature. *Nurse Education Today*, 95 doi:10.1016/j.nedt.2020.104580
- [16] Burinskienė, A., & Seržantė, M. (2022). Digitalisation as the indicator of the evidence of sustainability in the european union. *Sustainability (Switzerland)*, 14(14) doi:10.3390/su14148371
- [17] Caldevilla-Domínguez, D., Martínez-Sala, A. -, & Barrientos-Báez, A. (2021). Tourism and ICT. bibliometric study on digital literacy in higher education. *Education Sciences*, 11(4) doi:10.3390/educsci11040172
- [18] Chiappe, A., & Lee, L. L. (2017). Open teaching: A new way on e-learning? *Electronic Journal of e-Learning*, 15(5), 369-383. Retrieved from [www.scopus.com](http://www.scopus.com)
- [19] Cisneros-Barahona, A., Marqués Molías, L., Samaniego Erazo, G., Uvidia-Fassler, M., de la Cruz-Fernández, G., & Castro-Ortiz, W. (2022). Teaching digital competence in higher education. A comprehensive scientific mapping analysis with rstudio doi:10.1007/978-3-031-18347-8\_2 Retrieved from [www.scopus.com](http://www.scopus.com)
- [20] Cisneros-Barahona, A., Molías, L. M., Erazo, N. S., Fassler, M. U., Castro-Ortiz, W., & Rosas-Chávez, P. (2022). Digital competence of university teachers. an overview of the state of the art. [COMPETENCIA DIGITAL DEL PROFESORADO UNIVERSITARIO. Una panorámica del estado de la cuestión] *Human Review. International Humanities Review / Revista Internacional De Humanidades*, 11, 1-25. doi:10.37467/revhuman.v11.4355
- [21] Claros-Perdomo, D. -, Millán-Rojas, E. -, & Gallego-Torres, A. -. (2020). Use of augmented reality, gamification and M-learning. *Revista Facultad De Ingeniería*, 29(54) doi:10.19053/01211129.v29.n54.2020.12264
- [22] Colás-Bravo, P., Conde-Jiménez, J., & Reyes-De-cózar, S. (2021). Sustainability and digital teaching competence in higher education. *Sustainability (Switzerland)*, 13(22) doi:10.3390/su132212354
- [23] Contreras, J. L. G., Torres, C. A. B., & Ojeda, Y. C. E. (2022). Using of ICT and LKT in higher education: A bibliometric analysis. [Use of ICT and TAC in Higher Education: A Bibliometric Analysis] *Revista Complutense de Educacion*, 33(3), 601-613. Doi:10.5209/RCED.73922
- [24] Enescu, F. M., Bizon, N., & Ionescu, V. M. (2021). Blockchain technology protects diplomas against fraud. Paper presented at the Proceedings of the 13th International Conference on Electronics, Computers and Artificial Intelligence, ECAI 2021, doi:10.1109/ECAI52376.2021.9515107 Retrieved from [www.scopus.com](http://www.scopus.com)
- [25] Escorcía Guzmán, J., & Barros Arrieta, D. (2020). Knowledge management in higher education institutions: Characterization from a theoretical reflection. [Knowledge Management in Higher Education Institutions: Characterization from a Theoretical Reflection] *Journal of Social Sciences*, 26(3), 83-97. Retrieved from [www.scopus.com](http://www.scopus.com)
- [26] Farhangi, A., Yazdani, H., & Haghshenas, M. (2018). Identification of learning management systems functional areas and limitations (case study: E-learning center of university of tehran). *Journal of Information Technology Management*, 10(2), 331-354. doi:10.22059/jitm.2017.219238.1849
- [27] Farhangi, A., Yazdani, H., & Haghshenas, M. (2018). Identification of LMS dimensional problems in iranian E-learning centers. Paper presented at the 12th National and the 6th

- International Conference on e-Learning and e-Teaching, ICELET 2018, 33-44. doi:10.1109/ICELET.2018.8586751  
Retrieved from www.scopus.com
- [28] Friedman, G. L. (2019). Cross-cultural promotional competence: A comparison of student and DMO marketing text. *Journal of Teaching in Travel and Tourism*, 19(3), 171-190. doi:10.1080/15313220.2018.1536529
- [29] García, G. G., Lucena, F. J. H., Díaz, I. A., & Rodríguez, J. M. R. (2021). Productivity analysis around information literacy in the higher education stage. [Analysis of productivity around information literacy at the higher education level] *Free Text*, 14(2) doi:10.35699/1983-3652.2021.33694
- [30] Garcia-Esteban, S., & Jahnke, S. (2020). Skills in european higher education mobility programmes: Outlining a conceptual framework. *Higher Education, Skills and Work-Based Learning*, 10(3), 519-539. doi:10.1108/HESWBL-09-2019-0111
- [31] Gavinolla, M. R., Swain, S. K., & Livina, A. (2021). Research contribution to the progress of digital learning in india doi:10.1007/978-981-16-1784-3\_8 Retrieved from www.scopus.com
- [32] Ghabban, F., Selamat, A., Ibrahim, R., Krejcar, O., Maresova, P., & Herrera-Viedma, E. (2019). The influence of personal and organizational factors on researchers' attitudes towards sustainable research productivity in saudi universities. *Sustainability (Switzerland)*, 11(17) doi:10.3390/su11174804
- [33] Gogo, K. O., Nderu, L., & Mwangi, R. W. (2018). Fuzzy logic based context aware recommender for smart E-learning content delivery. Paper presented at the 5th International Conference on Soft Computing and Machine Intelligence, ISCMi 2018, 114-118. doi:10.1109/ISCMi.2018.8703247 Retrieved from www.scopus.com
- [34] González-Zamar, M. -, Abad-Segura, E., López-Meneses, E., & Gómez-Galán, J. (2020). Managing ICT for sustainable education: Research analysis in the context of higher education. *Sustainability (Switzerland)*, 12(19) doi:10.3390/su12198254
- [35] Grande-De-Prado, M., Cañón-Rodríguez, R., García-Martín, S., & Cantón-Mayo, I. (2021). Creation of digital contents in primary teachers in training. [Creation of digital content in future primary school teachers] *Faculty*, 25(3), 331-347. doi:10.30827/TEACHING STAFF. V25I3.8377
- [36] Guillén-Gámez, F. D., Ruiz-Palmero, J., Sánchez-Rivas, E., & Colomo-Magaña, E. (2020). ICT resources for research: An ANOVA analysis on the digital research skills of higher education teachers comparing the areas of knowledge within each gender. *Education and Information Technologies*, 25(5), 4575-4589. doi:10.1007/s10639-020-10176-6
- [37] Gün, A., Demir, Y., & Pak, B. (2020). Urban design empowerment through ICT-based platforms in europe. *International Journal of Urban Sciences*, 24(2), 189-215. doi:10.1080/12265934.2019.1604250
- [38] Hairi, F., Mohamad, S. N. M., Saad, S., & Pinandita, T. (2022). A THEMATIC REVIEW ON THE IMPLEMENTATION OF HEUTAGOGY IN UNIVERSITIES. *Journal of Theoretical and Applied Information Technology*, 100(21), 6686-6701. Retrieved from www.scopus.com
- [39] Hu, J., & Hu, J. (2022). Teachers' frequency of ICT use in providing sustainable opportunity to learn: Mediation analysis using a reading database. *Sustainability (Switzerland)*, 14(23) doi:10.3390/su142315998
- [40] Huang, H., & Hwang, G. -. (2021). Advancement and research issues of ICT-based training for newly graduated nurses: A review of journal publications from 1985 to 2017. *Interactive Learning Environments*, 29(1), 164-178. doi:10.1080/10494820.2018.1559865
- [41] Hussain, M., Idrees, D. H., Faqir, D. K., & Haider, M. S. (2021). Assessment of ICT facilities in the public libraries of khyber pakhtunkhwa: A descriptive study. *Library Philosophy and Practice*, 2021, 1-23. Retrieved from www.scopus.com
- [42] Idris, I., Fajrillah, Novarika Ak, W., Hastalona, D., Syarifudin Yahya, A., &

- Marikena, N. (2020). Designing of integrated information system (IIS) scheme for private higher education in indonesia: A strategic plan. Paper presented at the IOP Conference Series: Materials Science and Engineering, , 1003(1) doi:10.1088/1757-899X/1003/1/012151 Retrieved from www.scopus.com
- [43] Jácome-Ortega, A. E., Herrera-Granda, E. P., Herrera-Granda, I. D., Caraguay-Procel, J. A., Basantes-Andrade, A. V., & Ortega-Bustamante, M. C. (2019). Algorithm customization to audit database in higher education institutions. [Temporal and prognostic analysis of the use of ICT, based on the teaching evaluation instrument of a higher education institution] RISTI - Revista Iberica De Sistemas e Tecnologias De Informacao, 2019(E22), 399-412. Retrieved from www.scopus.com
- [44] Jony, S. S. R., Kano, T., Hayashi, R., Matsuda, N., & Rahman, M. S. (2022). An exploratory study of online job portal data of the ICT sector in bangladesh: Analysis, recommendations and preliminary implications for ICT curriculum reform. *Education Sciences*, 12(7) doi:10.3390/educsci12070423
- [45] Karamali, M., Yaghoubi, M., & Parandeh, A. (2021). Scientific mapping of papers related to health literacy using co-word analysis in medline. *Iranian Journal of Health Education and Health Promotion*, 9(3), 280-295. doi:10.52547/ijhehp.9.3.280
- [46] Khlaisang, J., & Koraneekij, P. (2019). Open online assessment management system platform and instrument to enhance the information, media, and ICT literacy skills of 21st century learners. *International Journal of Emerging Technologies in Learning*, 14(7), 111-127. doi:10.3991/ijet.v14i07.9953
- [47] Lima, A. A., Provenza, M. M., & Nunes, M. A. S. N. (2022). Comics as a pedagogical tool for teaching. Paper presented at the 2022 17th Latin American Conference on Learning Technologies, LACLO 2022, doi:10.1109/LACLO56648.2022.10013316 Retrieved from www.scopus.com