Best Practices In Higher Education Virtual Learning

Marizabel Vásquez Bedoya[1] , Senior-Naveda Alexa[2] , Winston Adrian Castañeda Vargas[3] , Gerardo Renato Arias Vascones[4] , Xochitl Tamez Martínez[5]

[1]*PhD Student, Universidad Nacional de la Plata, Argentina, marizabelvasquezbedoya@gmail.com, https://orcid.org/0000-0003-1142-3087*
[2]*Universidad de la Costa- Barranquilla, Colombia, asenior@cuc.edu.co, https://orcid.org/0000-0002-4768-3115*
[3]*Universidad Privada de Tacna, wiacastaneda@virtual.upt.pe, https://orcid.org/0000-0003-4257-1760*
[4]*Universidad Privada de Tacna, gerariasv@virtual.upt.pe, https://orcid.org/0000-0002-0123-1834*
[5]*Universidad Autónoma de San Luis Potosí, xochitl@uaslp.mx, https://orcid.org/0000-0002-7230-1879*

Abstract

A documentary review was carried out on the production and publication of research papers on the study of the variable Good Practices in Virtual Education for Higher Education in Latin America. The purpose of the bibliometric analysis proposed in this document is to know the main characteristics of the volume of publications registered in the Scopus database during the period 2016-2021 in Latin American countries, achieving the identification of 40 publications. The information provided by the said platform was organized through tables and figures categorizing the information by Year of Publication, Country of Origin, Area of Knowledge, and Type of Publication. Once these characteristics were described, the position of different authors regarding the proposed topic was referenced through qualitative analysis. Among the main findings of this research, it is found that Brazil, with 19 publications, is the Latin American country with the highest production. The Knowledge Area that made the greatest contribution to the construction of bibliographic material referring to the study of Best Practices in Virtual Education in Higher Education was Social Sciences with 20 published documents, and the Type of Publication that was most used during the above-mentioned period was the Journal Article, which represents 55% of the total scientific production.

Keywords: Virtual Education, Best Practices, Higher Education.

1. Introduction

Virtual Education is becoming more common, as it is a more flexible alternative to access education without the need to be in a classroom, which can also be asynchronous, facilitating the creation of new pedagogical models to enhance educational systems. This new educational model was given thanks to technological advances allowing the use of information and communication technologies (ICT) to access a greater amount of information at any time in the digital age. For this reason, education must be in line with social evolution and implement these innovations to offer a comprehensive formation.

Virtual education was more useful at the beginning of 2020 where as a result of COVID 19 a pandemic was declared and quarantines were decreed in most countries making it impossible to attend a classroom, so this educational model was the ideal tool to

continue with the pedagogical processes, all this consisted of an accelerated transition from traditional educational models to online education, which brought challenges in educational methodologies and the practices of teachers when imparting knowledge. Not having Good Practices in Virtual education can affect the quality of this, since according to Durán and Estay-Niculcar (2016), good practices allow the generation of meaningful learning applicable to everyday life, involve students in learning activities, and establish interconnections between the actor's educational process.

Thanks to the above, it can be said that the Good Educational Practices are the ideal tools to offer a quality and equitable virtual education that allows the development of Virtual Education by modifying the methodologies used in the traditional educational model, guaranteeing good results from the use of technological tools that allow making the pedagogical processes more flexible. Therefore, it is important to know in terms of bibliographic resources, the current state of research related to the Adoption of Good Practices in Virtual Education in Higher Education in Latin America, so a bibliometric analysis of the scientific production registered in the Scopus database during the period 2016-2021 is proposed to answer the question: How

has been the production and publication of research papers related to the study of the variable Adoption of Good Practices in Virtual Education in Higher Education in Latin America during the period 2016-2021?

2. General objective

To analyze from a bibliometric and bibliographic perspective, the production of high-impact research papers on the variable Adoption of Good Practices in Virtual Education in Higher Education during the period 2016-2021.

3. Methodology

This paper performs a quantitative analysis of the information provided by Scopus under a bibliometric approach to the scientific production related to the Adoption of Good Practices in Virtual Education for Higher Education. Likewise, from a qualitative perspective, examples of some research works published in the area of the study mentioned above are analyzed from a bibliographic approach to describe the position of different authors on the proposed topic.

The search is performed using the tool provided by Scopus and the parameters listed in Table 1 are established.

3.1 Methodological design

	PHASE	DESCRIPTION	CLASSIFICATION
PHASE 1	DATA COLLECTION	Data was collected using the Scopus web page search tool, through which a total of 40 publications were identified.	Published papers whose study variables are related to the Adoption of Good Practices in Virtual Education in Higher Education. Research papers were published during the period 2016-2021.

|			Limited to Latin American countries. Without distinction of the area of knowledge. Without distinction of the type of publication.
PHASE 2	CONSTRUCTION OF ANALYSIS MATERIAL	The information identified in the previous phase is organized. The classification will be made through graphs, figures, and tables based on data provided by Scopus.	Word Co-occurrence. Year of publication Country of origin of the publication. Area of knowledge. Type of publication
PHASE 3	DRAFTING OF CONCLUSIONS AND FINAL DOCUMENT	After the analysis carried out in the previous phase, we proceed to the drafting of the conclusions and the preparation of the final document.	

Table 1. Methodological design.
Source: Own elaboration (2022)

4. Results

4.1 Co-occurrence of words
Figure 1 shows the co-occurrence of keywords within the publications identified in the Scopus database.
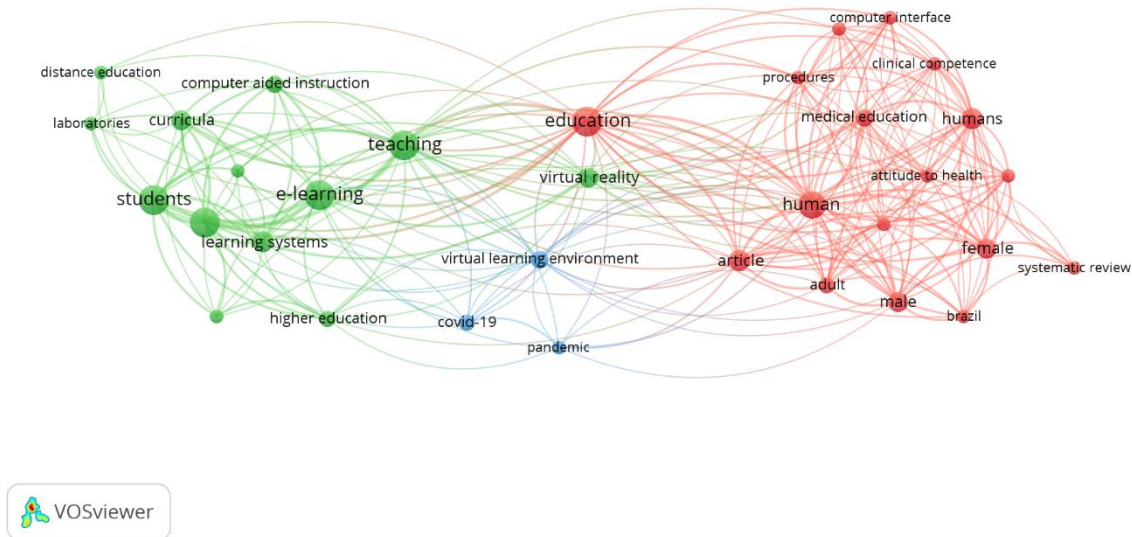
Figure 1. Co-occurrence of words

As shown in Figure 1, the keyword most used in research related to the variables under study is education, which is the process of integral formation of an individual and from which virtual education emerges as a new educational model, allowing the use of technological tools to impart knowledge without the need to enter a physical classroom. Teaching, e-learning, learning systems, curriculum, and higher education are keywords that refer to the factors that determine the Good Practices in virtual education, taking into account the methodologies used, the digital tools, the spaces available for socialization, and the information search that allow offering a quality education taking into account the needs and expectations of the university of the XXI century. On the other hand, there are keywords such as a pandemic, COVID 19, and procedures that shed light on the important events that led to making a mandatory transition to Virtual Education to continue imparting knowledge, this being the pandemic decreed because of the COVID 19 that forced to digitize most of the procedures going from a traditional educational model purely face-to-face and experimental to a virtual one at a distance.

4.2 Distribution of scientific production by year of publication

Figure 2 shows how the scientific production is distributed according to the year of publication, taking into account the period from 2016 to 2021.
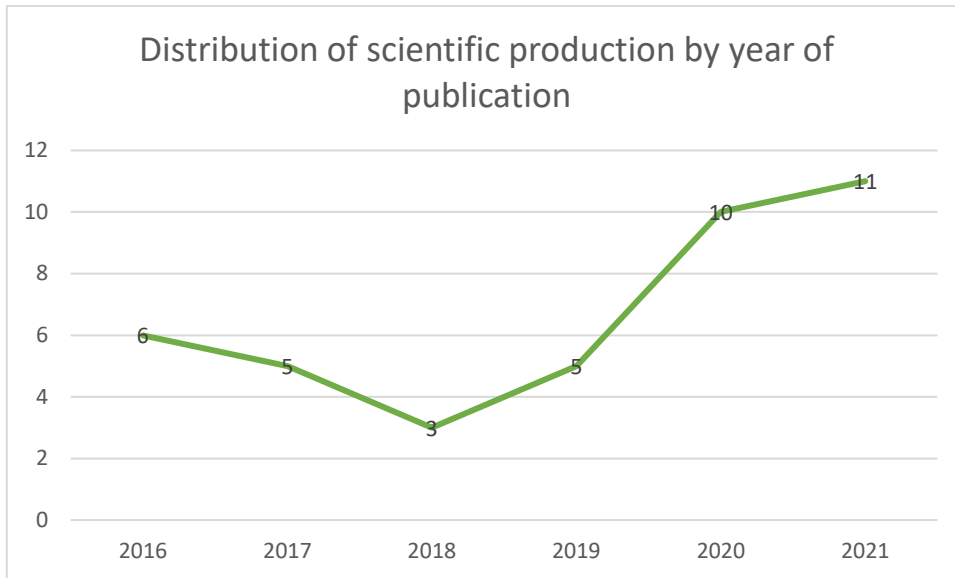
Figure 2. Distribution of scientific production by year of publication.
Source: Own elaboration (2022); based on data provided by Scopus.
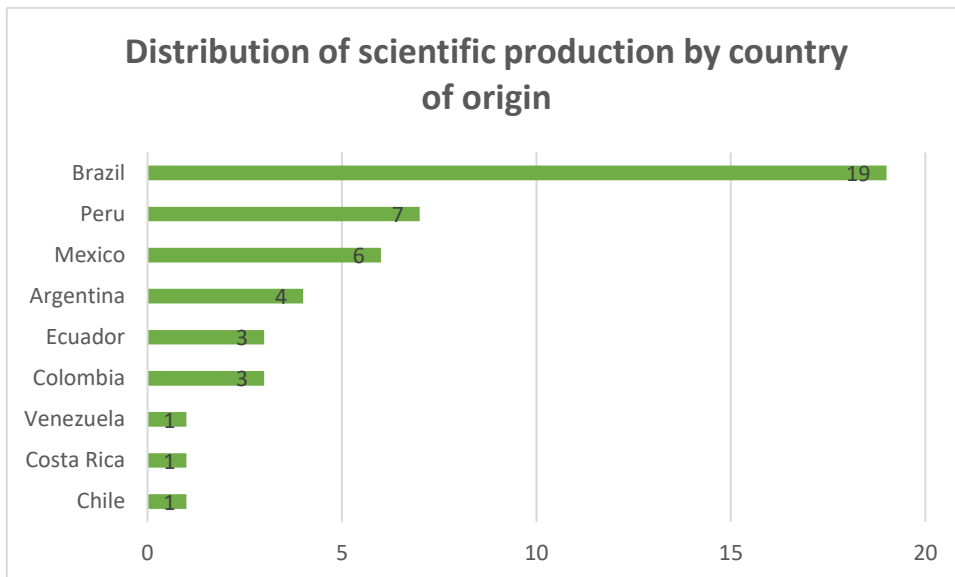
2021 is the year with the highest number of publications related to the variables under study presenting 11 publications, among which is the title "Work in Progress: Inverted classroom as a pedagogical model in virtual education in networked courses with the Moodle Learning Management System versus COVID 19" (Vilchez-Sandoval et al., 2021) the main objective of this document is to identify good practices that help to enhance the advantages of distance learning taking into account that it is an educational model that came to stay, therefore, identifying the tools that produce satisfactory results is of great importance. For this reason, this paper analyzes the inverted classroom applied in Moodle to determine its effectiveness, presenting in this article the first results of the use of this methodology in virtual learning.

In second place is the year 2020 where 10 publications were registered in this study, within these documents is the document entitled "Comparative study on the use of PeruEduca educational resources by teachers in Arequipa and Moquegua" (Bejarano et al., 2020). This document has as its main objective to perform an analysis of the use of PeruEduca in the teaching-learning process. Therefore, surveys were conducted among teachers in two cities evaluating digital competencies and the teaching-learning process, with the result that in Moquegua there was greater use of digital tools than in Arequipa, identifying the greater use of these as a determining factor in the level of use of PeruEduca.

4.3 Distribution of scientific production by country of origin.

Figure 3 shows the distribution of scientific production according to the nationality of the authors.

Distribution of scientific production by country of origin

| Country	Value
Brazil	19
Peru	7
Mexico	6
Argentina	4
Ecuador	3
Colombia	3
Venezuela	1
Costa Rica	1
Chile	1

Figure 3. Distribution of scientific production by country of origin.
Source: Own elaboration (2022); based on data provided by Scopus.

Brazil is the country with the greatest contribution to research related to the Adoption of Good Practices in Virtual Education, presenting 19 documents among which is "Distance education in times of pandemic: Reflections in the academic context" (Bollela et al., 2021). In this document reflections, strategies and actions focused on the potential of distance education and remote education are provided, taking into account that since 2020 Virtual Education was seen as the most viable alternative to continue with the educational processes. The study identified students' opinions, which were not based on the use of technologies but on the possibilities of transforming educational programs based on good practices, whether in face-to-face, distance, or hybrid education.

Aspects related to technology, infrastructure, human resources, and accessibility to virtual learning are also emphasized.

At this point, it is worth noting that the production of scientific publications, when classified by country of origin, presents a special characteristic and that is the collaboration between authors with different affiliations to public and private institutions, and these institutions can be from the same country or different nationalities so that the production of an article with co-authorship of different authors from different countries of origin allows each of the countries to add up as a unit in the general publications. This is best explained in Figure 4, which shows the flow of collaborative work from different countries.
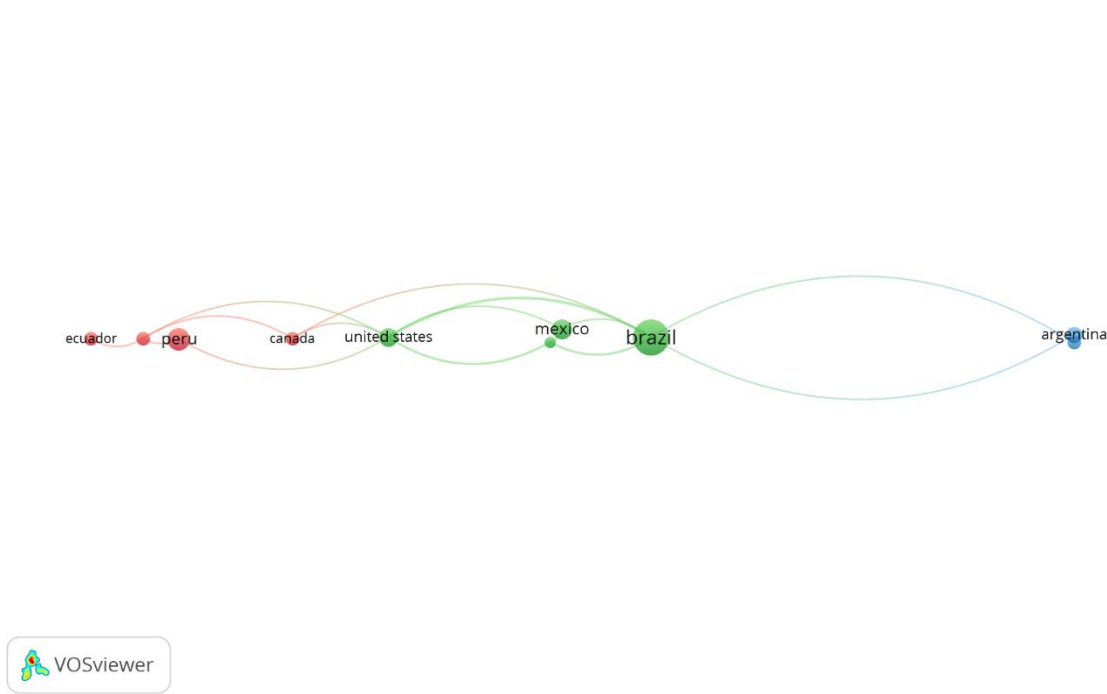
Figure 4. Co-citations between countries.
Source: Own elaboration (2022); based on data provided by Scopus.

As mentioned above, Brazil is the Latin American country with the largest bibliographic production related to the variables under study in the period 2016-2021, presenting documents in collaboration with authors affiliated with institutions belonging to the United States, Mexico, and Argentina, which demonstrates the interest of certain countries in knowing how best educational practices are developed in virtual education.

In second place is Peru with 7 publications presenting documents in collaboration with countries such as Canada and Ecuador which are comparative analyses to determine the progress of each country and determine the factors that determine it, within these documents is the title "Synchronous virtual environment and its effect on the development

of a health program in pandemic contexts" (Rivera et al., 2021). This document aims to explore the effects of the instructional model on the development of student competencies. A study was conducted with 106 students where 53 were analyzed through synchronous encounters and 53 through asynchronous encounters showing that students who used synchronous encounters had better results in 4 competencies than the other group.

4.4 Distribution of scientific production by area of knowledge

Figure 5 shows how the production of scientific publications is distributed according to the area of knowledge through which the different research methodologies are executed.
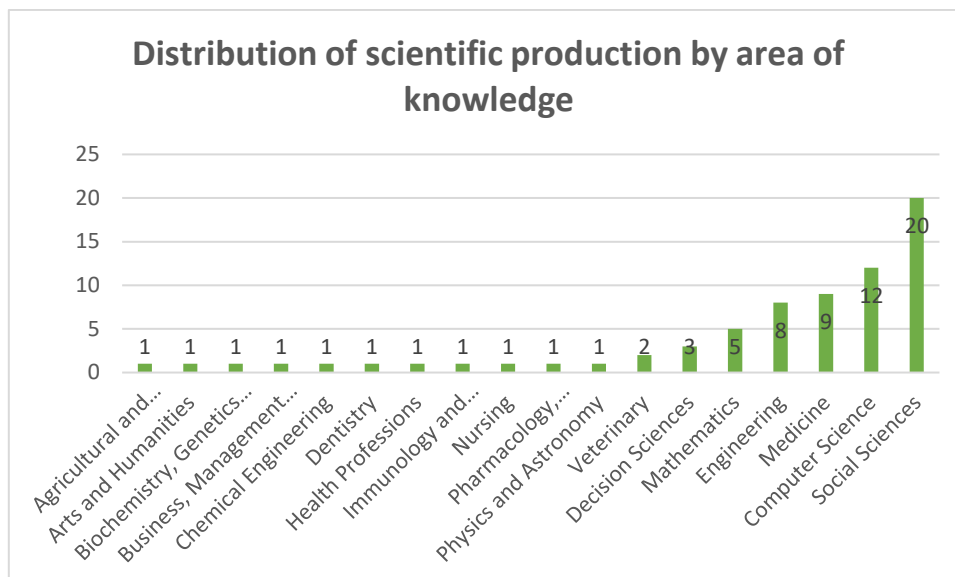
Figure 5. Distribution of scientific production by area of knowledge.
Source: Own elaboration (2022); based on data provided by Scopus.

Social Sciences in the area of knowledge with the largest number of contributions through the theories that are framed in it, in the search for new knowledge on the Adoption of Good Practices in Virtual Education in Higher Education presenting 20 publications, within which is the title "New Trends in e-Technologies and e-Learning" (Alfaro et al., 2021). This document aims to determine the most appropriate e-learning technologies to support personal requirements in teaching taking into account the learning opportunities for students within the framework of COVID 19 this document reviews the E-LEARNING alternatives highlighting Web environments and Virtual Reality as the most used in this modality.

In second place in Computer Science, where 12 documents were written following the guidelines of the topics related to this area. Among these publications is "Predicting student performance based on logs in Moodle LMS" (Tamada et al., 2021). The main objective of this paper is to use Machine Learning techniques based on logs in the Object-Oriented Modular Dynamic Learning Environment, comparing 7 algorithms to help determine a prediction model of students at risk using ML techniques on logs in Moodle LMS in Virtual Education.

4.5 Type of publication

Figure 6 shows how the bibliographic production is distributed according to the type of publication chosen by the authors.
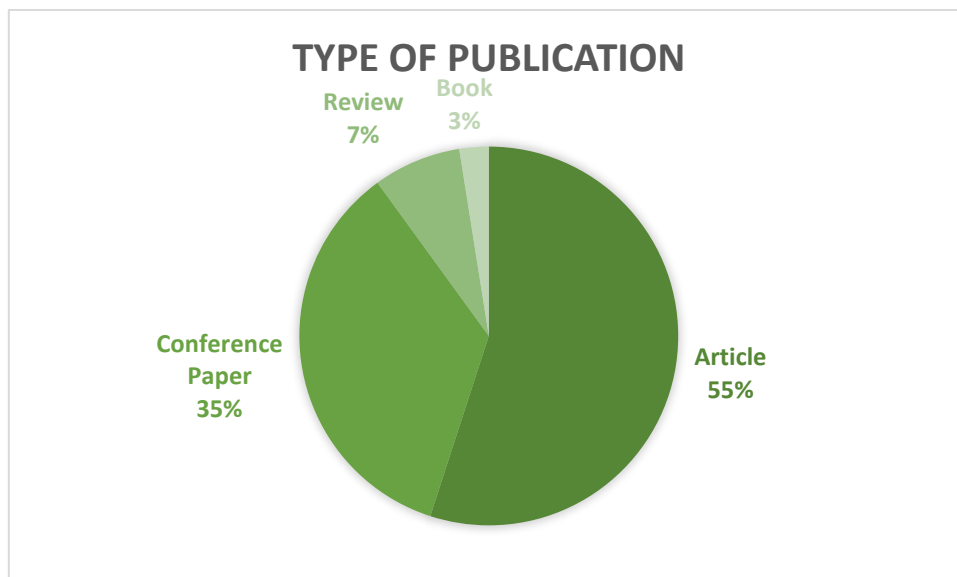
Figure 6. Type of publication.
Source: Own elaboration (2022); based on data provided by Scopus.

As shown in Figure 6, within the different types of publications, 55% of the total number of documents identified through Phase 1 of the Methodological Design, correspond to Journal Articles, among which is the one entitled "Open Access and Distance Education: New configurations for the democratization of knowledge" (De Oliveira & Anna, 2019). This document determines the first steps of Virtual Education talking about the open access that scientists have by being able to have at hand a large amount of immediate information to the advances that have been made and determines its use in education democratically accessing knowledge, without restrictions of any kind allowing inclusion. Brazil is making efforts to allow education to be taken to all corners of the country, especially in regions far away from large urban centers, which have several difficulties such as distance from the pole, lack of adequate material to meet the needs, and greater dissemination of services.

In second place are the conference proceedings which represent 35% of the total number of documents related to this study, within which is the title "Virtual globalization: an experience for engineering students in the framework of education 4. 0" (Caratozzolo et al., 2021). This document aims to enhance and

promote experiential learning through cooperative education and virtual practices taking into account what education 4.0 requests and the challenge that this represented in early 2020 with the arrival of COVID-19 forcing a forced transition to Virtual Education.

5. Conclusions

Thanks to the bibliometric analysis proposed in the present research, it can be determined that Brazil is the Latin American country with the largest number of bibliographic records in the Scopus database during the period from 2016 to 2021 with a total of 19 documents. The scientific production related to the study of the Adoption of Good Practices in Higher Education Virtual Learning has presented an important growth during the above mentioned period, going from 6 publications in 2016 to 11 units in 2021, i.e., it was possible to increase the creation of bibliographic records in 5 years, which indicates the importance that the identification of Good Practices represents in the improvement of virtual Education being this the key to the integrated education based on technological tools that allow the asynchronous modality as an effective educational model.

Good Educational Practices are all those measures and strategies that help to learn to be effective and have relevance in daily life, in addition to ensuring access to quality education. Virtual Education is the academic model that is based on the use of technological tools for the development of educational activities, having a great advantage since education can be accessed from anywhere, thus ensuring open access to the entire population; all this according to the university of the XXI century, even so with its forced application in 2020 there were shortcomings when applying it by not having Good Educational Practices for its development to be focused on a traditional educational model purely face-to-face that did not use digital tools or virtual classrooms as its main space for obtaining knowledge. All of the above allows this article to conclude, highlighting the importance of knowing the theory or bibliographic resources that seek to awaken the interest of all educational actors to adopt good educational practices to offer a quality and equitable education that allows universities to be in line with Industry 4.0. That is why it highlights the need for studies such as the one presented in this document, which make a tour of those texts that address the aforementioned topic, to give the reader a broad view of the current situation of the literature on the Adoption of Good Practices in Higher Education Virtual Learning

References

1. Alfaro, L., Rivera, C., Luna-Urquizo, J., Castaneda, E., Zuniga-Cueva, J., & Rivera-Chavez, M. (2021). New Trends in e-Technologies and e-Learning. EDUNINE 2021 - 5th IEEE World Engineering Education Conference: The Future of Engineering Education: Current Challenges and Opportunities, Proceedings. 5th IEEE World Engineering Education Conference, EDUNINE 2021.

2. Bejarano, A., Pareja, S., Córdova, M., Ramos-Quispe, T., Sprock, A. S., & Villalba-Condori, K. O. (2020). Comparative study on the use of the educational resources of PeruEduca by teachers from Arequipa and Moquegua. International Journal of Learning, Teaching and Educational Research, 94 - 109.

3. Bollela, V. R., Medeiros, I. S., & Telles, S. (2021). Remote education in times of pandemic: Reflections in the academic context. Medicine (Brazil).

4. Caratozzolo, P., Friesel, A., Randewijk, P. J., & Navarro-Duran, D. (2021). Virtual Globalization: An Experience for Engineering Students in the Education 4.0 Framework. ASEE Annual Conference and Exposition, Conference Proceedings. ASEE Virtual Annual Conference, ASEE 2021.

5. De Oliveira Costa, M. E., & Anna, J. S. (2019). Open access and distance education: New configurations for the democratization of knowledge. Ciencia da Informacao, 536 - 546.

6. Durán Rodríguez, R. A., & Estay-Niculcar. (2016). Formación en buenas prácticas docentes para la educación virtual. RIED. Revista Iberoamericana de Educación a Distancia.

7. Rivera, L. d., Sedano, C. A., & Apumayta, C. A. (2021). Synchronous virtual environment and its effect on the development of a health program in the context of the pandemic. Boletin de Malariologia y Salud Ambiental, 700 - 707.

8. Tamada, M. M., Giusti, R., & De Magalhaes Netto, J. F. (2021). Predicting Student Performance Based on Logs in Moodle LMS. Proceedings - Frontiers in Education Conference, FIE. lincoln.

9. Vilchez-Sandoval, J., Llulluy-Nunez, D., & Lara-Herrera, J. (2021). Work in Progress: Flipped classroom as a pedagogical model in virtual education in networking courses with the Moodle Learning Management System against

COVID 19. EDUNINE 2021 - 5th IEEE World Engineering Education Conference: The Future of Engineering Education: Current Challenges and Opportunities, Proceedings. Guatemala City: 5th IEEE World Engineering Education Conference, EDUNINE 2021.

10. Agarwal, A., Finelli, R., Durairajanayagam, D., Leisegang, K., Sharma, R., Gupta, S., . . . Henkel, R. (2021). A web-based global educational model for training in semen analysis during the covid-19 pandemic. World Journal of Men's Health, 39 doi:10.5534/WJMH.210075

11. Alfaro, L., Rivera, C., Luna-Urquizo, J., Castaneda, E., Zuniga-Cueva, J., & Rivera-Chavez, M. (2021). New trends in e-technologies and e-learning. Paper presented at the EDUNINE 2021 - 5th IEEE World Engineering Education Conference: The Future of Engineering Education: Current Challenges and Opportunities, Proceedings, doi:10.1109/EDUNINE51952.2021.942 9120 Retrieved from www.scopus.com

12. Bejarano, A., Pareja, S., Córdova, M., Ramos-Quispe, T., Sprock, A. S., & Villalba-Condori, K. O. (2020). Comparative study on the use of the educational resources of PeruEduca by teachers from arequipa and moquegua. International Journal of Learning, Teaching and Educational Research, 19(4), 94-109. doi:10.26803/ijlter.19.4.7

13. Bezerra, I. M. P. (2020). State of the art of nursing education and the challenges to use remote technologies in the time of corona virus pandemic. Journal of Human Growth and Development, 30(1), 141-147. doi:10.7322/JHGD.V30.10087

14. Bollela, V. R., Medeiros, I. S., & Telles, S. (2021). Remote education in times of pandemic: Reflections in the academic context. [Educação remota em tempos de pandemia: Reflexões no contexto acadêmico] Medicina (Brazil), 54 doi:10.11606/issn.2176-7262.rmrp.2021.184771

15. Caratozzolo, P., Friesel, A., Randewijk, P. J., & Navarro-Duran, D. (2021). Virtual globalization: An experience for engineering students in the education 4.0 framework. Paper presented at the ASEE Annual Conference and Exposition, Conference Proceedings, Retrieved from www.scopus.com

16. Carlos Begosso, L., Ricardo Begosso, L., & Aragao Christ, N. (2020). An analysis of block-based programming environments for CS1. Paper presented at the Proceedings - Frontiers in Education Conference, FIE, , 2020-October doi:10.1109/FIE44824.2020.9273982 Retrieved from www.scopus.com

17. Clark, T., Lemgruber, A., Rivas, R., Caccavo, F., Velasquez, T. M., & Comacho, J. (2019). Virtual course for the americas: Healthcare technology planning and management over the life cycle. Paper presented at the IFMBE Proceedings, , 68(3) 325-328. doi:10.1007/978-981-10-9023-3_58 Retrieved from www.scopus.com

18. Cobián, J. I., Ferrero, F., Alonso, M. P., & Fontana, A. M. (2021). How to train a complex skill in surgery: Qualitative evaluation of a simulation-based strategy. [¿Cómo entrenar una habilidad compleja en cirugía?: Evaluación cualitativa de una estrategia basada en simulación] Revista Argentina De Cirugia(Argentina),

113(1),   101-110.
doi:10.25132/raac.v113.n1.1569.ei

19. Collaço, E., Kira, E., Sallaberry, L. H.,
Queiroz, A. C. M., Machado, M. A. A.
M., Crivello Jr, O., & Tori, R. (2021).
Immersion and haptic feedback impacts
on dental anesthesia technical skills
virtual reality training. Journal of Dental
Education,   85(4),   589-598.
doi:10.1002/jdd.12503

20. da Cruz, J. A. S., dos Reis, S. T., Cunha
Frati, R. M., Duarte, R. J., Nguyen, H.,
Srougi, M., & Passerotti, C. C. (2016).
Does warm-up training in a virtual reality
simulator improve surgical performance?
A prospective randomized analysis.
Journal of Surgical Education, 73(6),
974-978.
doi:10.1016/j.jsurg.2016.04.020

21. De Alcântara, B. M., Da Silveira, E. E.,
Sabino Pereira, H. C., Da Silva Lisboa
Neto, A. F., Dos Santos, A. C., & De
Assis Neto, A. C. (2019). Digitization and
pinting as a tool for anatomical and
orthopedic studies of pelvis and long
bones of the pelvic limb of the dogs.
[Digitalização e impressão tridimensional
como uma ferramenta para estudo
anatômico e ortopédico dos ossos da
pelve e longos do membro pélvico de

cães] Acta Scientiae Veterinariae, 47(1)
doi:10.22456/1679-9216.91076

22. de Almeida, S. D. C. D., & Vianna, V. H.
(2019). Use of virtual ferramenta
uptodate as practice of aprendizagem of
medicine course. [Uso da ferramenta
virtual uptodate como prática de
aprendizagem de um curso de medicina]
Ciencia Da Informacao, 48(3), 221-235.
Retrieved from www.scopus.com

23. De Oliveira Costa, M. E., & Anna, J. S.
(2019). Open access and distance
education: New configurations for the
democratization of knowledge. [Acesso
aberto e educação a distância: Novas
configurações para a democratização do
conhecimento] Ciencia Da Informacao,
48(3),   536-546.   Retrieved   from
www.scopus.com

24. De Oliveira, F. S., & Santos, S. (2016).
PBLMaestro: A   virtual   learning
environment for the implementation of
problem-based learning approach in
computer education. Paper presented at
the Proceedings - Frontiers in Education
Conference, FIE, , 2016-November
doi:10.1109/FIE.2016.7757388
Retrieved from www.scopus.com