Online classroom : Bibliometric analysis

Educação à distância: Uma análise bibliométrica

Darel Chris Daudet Mavoungou
E-mail: mavoungoudarel647@gmail.com

ABSTRACT

Advances in information and communication technology (ICT) have profoundly transformed organizational processes, educational institutions have not been left out of these changes either. Moreover in the beginning of 2020 the Covid-19 pandemic came to extend the use of ICT tools in education through the educational design of emergency remote teaching (ERE). It was sought to understand the evolution of teaching in academic production, for this a bibliometric study was carried out between 2004 and 2021 on the subject "online teaching" comparing the Scopus base and Web of Science (WoS) that according to Marín-Velásquez and Arrojas-Tocuyo (2021) are worldwide recognized and accepted bases of academic search. In this way, the evolution of publications, the areas, the authors, the most cited documents, as well as the key words that appear the most, are highlighted in this work. We noticed as main findings the dominance of the number of Scopus publications and while Scopus is dominated by the area of computing and WoS is led by the area of education.

Keywords: Distance education, Online learning, Bibliometric.

1 INTRODUCTION

Being a social being, the human being has always integrated in his daily routine the act of teaching and learning, because to survive in the wild nature with its little imposing physical characteristic, had as the only way out to group. In this way, the sharing of the experiences lived was organized in a natural way, such as the mastery of fire, whose knowledge was passed from generation to generation, marking the essence of teaching. According to Piaget (1964), this is exactly the starting point of the construction of new knowledge, which begins by overcoming the cognitive conflict between the existing internal structure, the experiences lived and the unknown external reality. This led Mizukami (1986) to see teaching or rather education being the essence of man, which calls educated human beings a finished man "ready" and the "student a miniature adult".

In the contemporary world, most countries have implemented specific places to obtain diverse knowledge, which have been called schools, colleges, universities, among others that for many authors is the reflection of society. As Tanus (2020) points out, universities through teaching, research and extension have activities that are not only

aimed at academics, but it also has the mission of transferring knowledge and services to the whole society. This means that education is made possible beyond the educational environment, influencing politics and reflecting on the society in which such establishments are inserted (ALMEIDA, 2021). Today, thanks to advances in information technology, teaching has modernized and brought the concept of Distance Education (EaD), which consists of a non-face-to-face teaching modality. In Brazil, Distance Education is made feasible and regulated through Decree - Law No. 2,494, of February 10, 1998, seen in Art. 80 of the Law of Guidelines and Bases of National Education.

With the Covid-19 health crisis that affected the world in early 2020, the social distancing strategy was implemented as the main option to contain the spread of the virus, educational institutions started to operate with fully online classes to continue their activities. This form of teaching was called emergency remote education (ERE), like distance education, ERE is also a form of online education.

RLE has received several definitions, with the term "online class" being the most used nomenclature in society, as Saldanha (2020, p. 127) highlights. In addition to this definition, other terms have emerged to try to define this type of activity such as Saldanha (2020): "emergency remote teaching", "remote education", "remote activities", "remote learning", "remote learning", "remote learning strategies" and "remote classroom", "online teaching", "online learning" "online education", "online classes", "online classroom", "classes in digital media" and "teleclasses". Or even "remote classes" Lunardi *et al.*, (2021), "virtual classroom" Guimaraes (2012), "distance learning" Regina; Yamauchi, (2022), among others.

Martins (2020) comments that in a post-pandemic scenario the difference between face-to-face and online classes will disappear and the use of both will mark the new "normal" in the academic world. In this context, we sought to map the academic production on this topic in the Scopus and Web of Science (WoS) databases. In the academic sphere, between 2004 and 2021, the number of scientific studies on "online class" in the aforementioned databases were 880 and 337 publications, respectively, a theme well dispersed in several areas of knowledge, something that may indicate that the subject is multidisciplinary. The number of bibliometric studies on the subject is even lower, which is why the present study seeks to overcome such deficiencies by analyzing and comparing the data obtained in two highly regarded databases (Scopus and WoS) in order to better understand the current state of academic research on the subject.

The article was structured in five sections, including the current one that concerns the introduction; The next topic will address the literature review. The third will be dedicated to the methodological procedure; The fourth portrays the analysis of the results and finally the fifth is dedicated to the conclusions and final considerations.

2 LITERATURE REVIEW

This article deals with "online classes" in general, which, as we have seen, contain very close meaning between "distance learning" and "emergency remote class", but the didactic-pedagogical approaches are different between them (PALMEIRA; DA SILVA; RIBEIRO, 2020).

The "Distance Class" refers to teaching whose teachers and students are not in the same place physically, however, teaching occurs mediated by information technology tools (such as cell phone, computer) Karinne; Saraiva; Macedo (2021), this form of learning can be both synchronous and asynchronous (PINHEIRO, 2011). While the emergency remote class differs from distance education in the sense that, normally, students in the remote class are unable to attend classrooms and laboratory spaces (SIMÃO; CARVALHO; ROCHADEL, 2013). In the scenario of the pandemic, students and teachers who once had the only experience of distance education in the face-to-face modality, perhaps that is where part of the conceptual confusion that we are witnessing today between distance education and remote teaching comes from (Rodrigues, 2020).

Each year there is an exponential worldwide growth of Distance Education in Higher Education (NASCIMENTO; SANTOS, 2021). In Brazil, distance education courses have received more enrollment than face-to-face courses since 2018 (OLIVEIRA, 2019). Most of the courses offered (80%) in 2020 were face-to-face and hybrid distance education (CENSO EAD.BR, 2020). As EBC (2022) more than 3.7 million entrants in 2020 (public and private institutions), more than 2 million (53.4%) opted for distance learning courses and 1.7 million (46.6%) for face-to-face courses. It was noted by Figueiredo et al. (2017) based on Enade data, the undergraduate courses offered in the distance modality present little difference, most of them, the distance education courses are better or equal than the courses offered in the face-to-face modality.

Distance education is provided for since the Law of Guidelines and Bases (LDB) of education Law No. 9,394, of December 20, 1996. According to Decree No. 9,057, of May 25, 2017, it is a teaching modality that enables didactic-pedagogical mediation through information and communication technologies, and can make use of education

professionals and students in different places and times (BRASIL, 2017). The expansion and intensification of distance education in Brazil was also favored by Ordinance No. 2,117 of December 6, 2019, which authorizes that up to 40% of the total workload of face-to-face undergraduate courses at IFES be offered in this modality.

Data from the United Nations Educational, Scientific and Cultural Organization (UNESCO) indicate that 1.37 billion children and adolescents were left without face-to-face classes with the onset of the pandemic, that is, 80% of students in the world (UNESCO, 2020). this caused the World Health Organization to encourage the adoption of remote class as a requirement to establish social distancing as a way to contain the progression of the disease and not interrupt teaching-related activities (BAUTISTA et al., 2021). However, the number of institutions that were prepared to carry out 100% distance learning was relatively small (Ontong; Waghid, 2020). In this sense, DEE is understood as a modality that is not definitive, but temporary to the epidemic scenario.

Silva (2022) "predicted a minimum of 60% of synchronous activities (i.e. corresponding to classes, in which teacher and students must be logged in in real time and work together) and up to 40% of asynchronous activities (in which the teacher leaves readings, tests, various activities and the student can log in and watch / perform them whenever he wants, as long as within the time limit predetermined by the teacher)". Liguori and Winkler (2020) report that innovative solutions implemented by educational institutions through emergency remote classes could deal with the effects of the pandemic. Also Mazlan *et al.* (2021) state that during the Covid-19 pandemic the remote classroom strategy ensured that students could learn effectively, serving as a support to the conventional classes we know.

Both distance learning and online learning are part of online education, both use virtual platforms as a study room. Distance Education usually makes use of a Virtual Learning Environment (VLE), such as Moodle or Google Classroom, among others, while ERE usually uses platforms such as Zoom, Google Meet, Discord and Microsoft Teams (BAUTISTA et al., 2021). Both modalities were necessary to maintain student links with teaching during the pandemic (CARVALHO et al, 2020). Hack (2011), points out that the internet provided this exchange of information that was once used more by television and radio as resources to pass on educational content.

3 METHODOLOGICAL PROCEDURE

We sought to analyze the impacts on academic production on online teaching, a topic that was heard more frequently in society with the arrival of the Covid-19 pandemic. Bibliometrics was used as a research method in this study. According to Wallin (2005), bibliometrics emerged in the early 1950s, gaining strength and academic recognition over time. Bornmann; Marewski (2019) highlight that bibliometric analysis is made possible through the Systematic Literature Review (SRL) method, which helps to generalize the development trend of the field being researched, with an emphasis on capturing the number of publications (Zupic; Cater, 2015). Bibliometrics also helps to map the evolution and offer a predictive scenario on a given subject, facilitating researchers, professionals and managers in their performance. According to Gunashekar, Wooding and Guthrie (2017), understanding bibliometric panels better supports decision making. More specifically, this study delimits as period of analysis the productions published between 2004 and 2021. In its "Open University" project created by the State Forum and instituted on September 21, 2004, marks the starting point in the arrival of distance education in Brazilian education, we will try to highlight the Brazilian academic production on the subject. It was not included 2022, because we want to have a year counting the full 12 months where you can expect less indexing that would make the overall result unfeasible. On the other hand, we want to seek in this study: The evolution of the number of publications over the years; the areas, researchers and institutions with the highest publication; the most cited articles and the keywords that stand out.

The data collection was done in two different databases: Scopus and WoS, these platforms are notable references in the academic world as confirmed by the study of Marín-Velásquez and Arrojas-Tocuyo (2021), Scopus and WoS are two international databases of high impact. In both platforms, the following keywords were used as a string in the search for the document: "online teaching" OR "online" OR "distance learning" OR "distance learning" OR "remote classes" OR "remote education" OR "remote classes" OR "remote learning" OR "remote classroom". Since this is a topic focused on teaching, no area was delimited, as it is believed that all areas are involved closely or far with teaching. We reached a total in Scopus of 880 documents and in WoS of 337 documents.

4 DATA ANALYSIS

Data analysis is the fundamental point of a bibliometric research whose without it the research could not take place, bibliometric analysis can and aims to facilitate the analysis of data. Mapping of large volumes of scientific literature (GONZÁLEZ *et.al*, 2020). In this context, we will present a succession of tables, graphs and comments on them.

4.1 EVOLUTION OF RESEARCH IN BRAZIL

We start with Figure 1 number of publication per year which illustrates the evolution of publications in Scopus and WoS databases adding respectively a total of 880 and 337 publications between 2004 and 2021.

Figure 1: Total number of documents published in the two databases (2004-2021)
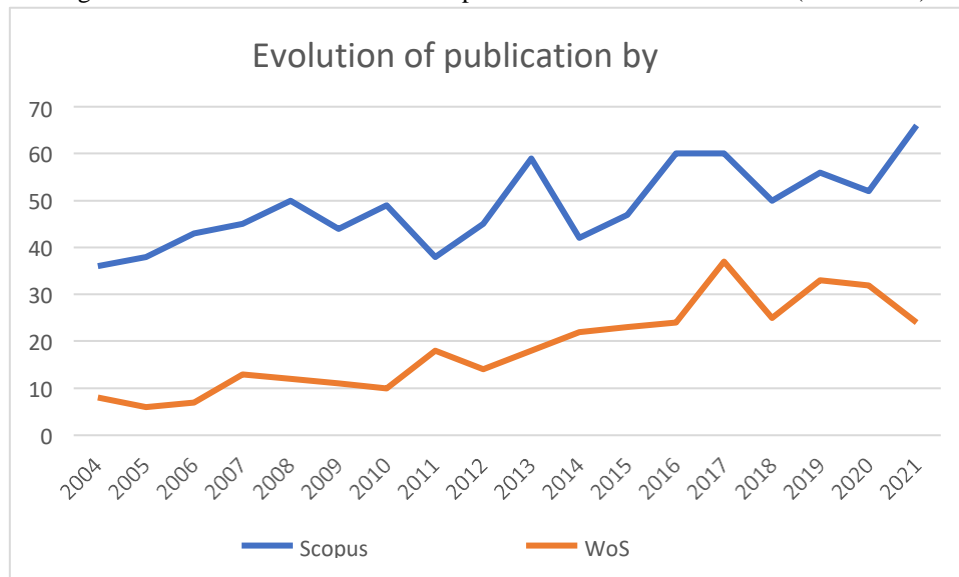
Author: Prepared by the author

We clearly realize from the two bases that the Scopus platform is the base where researchers seek to publish more on the subject.

Scopus published 36 articles in 2004 while WoS published only 8 articles, from 2020 and 2021 while Scopus registers its greatest growth from 52 to 66 publications surpassing on the same occasion its highest peak so far of 60 publications reached in 2016 and 2017. On the other hand, WoS does not show the same behavior, between 2020 and 2021 it indicates a decrease in publications from 32 to 24 on the same dates, we note that it had its peak in 2017 with 37 publications.

4.2 NUMBER OF PUBLICATIONS BY AFFILIATION

Table 1 below shows the top ten (10) Brazilian higher education institutions that publish the most on the subject in both databases.

Table 1: Institutions that publish the most - Scopus (2004-2021)

	Scopus			WoS	
Position	Membership	Publications	Position	Membership	Publications
1	University of São Paulo	177	1	University of São Paulo	52
2	State University of Campinas	127	2	Federal University of Rio Grande do Sul	27
3	Federal University of Rio de Janeiro	72	3	Federal University of Santa Catarina	18
4	Federal University of São Carlos	53	4	State University of Campinas	16
5	Federal University of Santa Catarina	53	5	Federal University of São Carlos	15
6	Paulista State University Júlio de Mesquita Filho	47	6	University of Brasilia	13
7	Federal University of Minas Gerais	47	7	Federal University of Pernambuco	11
8	Federal University of Rio Grande do Sul	33	8	Federal University of Uberlandia	10
9	State University of Southwest Bahia	32	9	Federal Institute of São Paulo	9
10	State University of Londrina	32	10	Federal University of Maranhão	9

Author: Prepared by the author

The University of São Paulo comes first in both Scopus with 177 publications and WoS with 52 publications, The State University of Campinas ranks second in Scopus with 127 publication followed by the Federal University of Rio de Janeiro with 72 publications in third place. Already in WoS is the Federal University of Rio Grande do Sul the second place with 27 and the Federal University of Santa Catarina closes in third place with 18 publications.

4.3 NUMBER OF PUBLICATION PER AREA

Regarding the number of publications by area of knowledge, we attach table 2 which deals with the Scopus and WoS databases.

Table 2: Area with most publications (2004-2021)

	Scopus			**WoS**	
Position	Area	Publications	Position	Area	Publications
1	Chemistry	290	1	Education Educational Research	158
2	Engineering	187	2	Computer Science	152
3	Computer Science	166	3	Engineering	65
4	Social Sciences	109	4	Telecommunications	16
5	Chemical Engineering	100	5	Business Economics	8
6	Biochemistry, Genetics and Molecular Biology	96	6	Public Environmental Occupational Health	8
7	Medicine	90	7	Health Care Sciences Services	7
8	Environmental Science	72	8	Arts Humanities Other Topics	5
9	Agricultural and Biological Sciences	61	9	Science Technology Other Topics	5
10	Mathematics	60	10	Information Science Library Science	4

Author: Prepared by the author

We observe that the first three areas that publish more on the subject in Scopus are respectively chemistry with 290 publications, engineering with 187 publications and computer science with 166 publications. On the other hand, in WoS the first three areas with more publications are respectively education research with 158 publications, computer science 152 publications and engineering with 65 publications.

4.4 MOST CITED ARTICLE IN SCOPUS

This item concerns the most cited documents in Scopus since they were published, so table 3 presents a list of the top ten (10).

Table 3: Most cited articles

Position	Title	Authors	Year	Quotes
1	ANN-based soft-sensor for real-time process monitoring and control of an industrial polymerization process	Gonzaga, J.C.B., Meleiro, L.A.C., Kiang, C., Maciel Filho, R.	2009	274
2	Electrospray ionization mass spectrometry: A major tool to investigate reaction mechanisms in both solution and the gas phase	Eberlin, M.N.	2007	164
3	Solid-phase extraction system for Pb (II) ions enrichment based on multiwall carbon nanotubes coupled on-line to flame atomic absorption spectrometry	Barbosa, A.F., Segatelli, M.G., Pereira, A.C., (...), Luccas, P.O., Tarley, C.R.T.	2007	164

4	Amberlite XAD-2 functionalized with 2-aminothiophenol as a new sorbent for on-line preconcentration of cadmium and copper	Lemos, V.A., Baliza, P.X.	2005	160
5	Use of modified rice husks as a natural solid adsorbent of trace metals: Characterization and development of an on-line preconcentration system for cadmium and lead determination by FAAS	Teixeira Tarley, C.R., Costa Ferreira, S.L., Zezzi Arruda, M.A.	2004	144
6	Preconcentration system for cadmium and lead determination in environmental samples using polyurethane foam/Me-BTANC	Gama, E.M., da Silva Lima, A., Lemos, V.A.	2006	121
7	Taxi and ride sharing: A dynamic dial-a-ride problem with money as an incentive	Santos, D.O., Xavier, E.C.	2015	116
8	Advanced oxidation of caffeine in water: On-line and real-time monitoring by electrospray ionization mass spectrometry	Dalmázio, I., Santos, L.S., Lopes, R.P., Eberlin, M.N., Augusti, R.	2005	108
9	Synthesis and application of a functionalized resin for flow injection/F AAS copper determination in waters	Cassella, R.J., Magalhães, O.I.B., Couto, M.T., (...), Neves, M.A.F.S., Coutinho, F.M.B.	2005	104
10	SVM practical industrial application for mechanical faults diagnosis	Baccarini, L.M.R., Rocha E Silva, V.V., De Menezes, B.R., Caminhas, W.M.	2011	101

Author: Prepared by the author

The article "ANN-based soft-sensor for real-time process monitoring and control of an industrial polymerization process" by Gonzaga *et al.* (2009) stands out in first place with 274 publications, followed by the article "Electrospray ionization mass spectrometry: A major tool to investigate reaction mechanisms in both solution and the gas phase" by Gonzaga *et al.* (2009).

Eberlin (2007) with 164 publications, in third place the article "Solid-phase extraction system for Pb (II) ions enrichment based on multiwall carbon nanotubes coupled on-line to flame atomic absorption spectrometry" by Barbosa *et al.* (2007) also with 164 publications, among others.

4.5 MOST CITED ARTICLE IN WOS

As the previous table is about the ranking of the most cited documents, this time in the base, so table 4 also presents a list of the top ten (10).

Table 4: Most cited WoS articles

Position	Article	Authors	Year	Quotes
1	Comparing strategies for modeling students learning styles through reinforcement learning in adaptive and intelligent educational systems: An experimental analysis	Dorca, Fabiano A ; Lima, Luciano V; Fernandes, Marcia A; Lopes, Carlos R	2013	50
2	Explaining university students' effective use of e- learning platforms	Moreno, Valter; Cavazotte, Flavia; Alves, Isabela	2017	48
3	A model for learning objects adaptation in light of mobile and context-aware computing	Abech, Marcia; da Costa, Cristiano Andre; Victoria Barbosa, Jorge Luis; Rigo, Sandro Jose; Righi, Rodrigo da Rosa	2016	30
4	Satisfaction and continuous use intention of e-learning service in Brazilian public organizations	de Melo Pereira, Fernando Antonio; Martins Ramos, Anatalia Saraiva; Gouvea, Maria Aparecida; da Costa, Marconi Freitas	2015	29
5	Revealing the whiteboard to blind students: An inclusive approach to provide mediation in synchronous e-learning activities	Freire, Andre P; Linhalis, Flavia; Bianchini, Sandro L; Fortes, Renata P. M; Pimentel, Maria da Graca C	2010	28
6	Gamification in e-Learning Systems: A Conceptual Model to Engage Students and Its Application in an Adaptive e-Learning System	Tome Klock, Ana Carolina; da Cunha, Lucas Felipe; de Carvalho, Mayco Farias; Rosa, Brayan Eduardo; Anton, Andressa Jaqueline; Gasparini, Isabela	2015	23
7	E-learning: a comparative study for knowledge apprehension among nurses	Padalino, Yara; Ciqueto Peres, Heloisa Helena	2007	22
8	Steps, techniques, and technologies for the development of intelligent applications based on Semantic Web Services: A case study in e-learning systems	Barros, Heitor; Silva, Alan; Costa, Evandro; Bittencourt, Ig Ibert; Holanda, Olavo; Sales, Leandro	2011	20
9	Cognitive Load and Self-Determination Theories Applied to E-Learning: Impact on Students'	Guerra Grangeia, Tiago de Araujo; de Jorge, Bruno; Franci, Daniel; Santos, Thiago Martins; Vellutini Setubal,	2016	19
	Participation and Academic Performance	Maria Silvia; Schweller, Marcelo; de Carvalho-Filho, Marco Antonio		
10	Zoom In, Zoom Out: The Impact of the COVID-19 Pandemic in the Classroom	Joia, Luiz Antonio; Lorenzo, Manuela	2021	18

Author: Prepared by the author

We have in first place the article "Comparing strategies for modeling students learning styles through reinforcement learning in adaptive and intelligent educational systems: An experimental analysis" by Docas *et al.* (2013) with 50 publications, followed by the article "Explaining university students' effective use of e-learning platforms" by

Moreno *et al*. (2017) with 48 publications, in third place the article "A model for learning objects adaptation in light of mobile and context-aware computing" by Abech *et al.* (2016) also with 30 publications, among others.

4.6 THE AUTHORS WITH THE HIGHEST NUMBER OF PUBLICATIONS

In the present item we sought to expose the researchers who publish in the two academic search bases, in this sense a list of the top ten was attached to table 5 below.

Table 5: Authors with the most publications (2004-2021)

SopusWoS					
Position	Author	Publications	Position	Author	Publications
1	Tarley, C.R.T.	29	1	Barbosa EF	10
2	Lemos, V.A.	28	2	Gasparini I	10
3	Segatelli, M.G.	23	3	De Oliveira JPM	8
4	Carasek, E.	13	4	Zaina LAM	7
5	Cass, Q.B.	12	5	Brandao AAF	5
6	Figueiredo, E.C.	11	6	De Oliveira AEF	5
7	Eberlin, M.N.	10	7	Anacleto JC	4
8	Ho, L.L.	10	8	Barbosa JLV	4
9	Bezerra, M.A.	9	9	Costa E	4
10	Curtius, A.J.	9	10	De Oliveira CD	4

Author: Prepared by the author

On the Scopus platform it is Tarley who leads with 29 publications followed by Lemos with 28 publications, that is, with only one publication of difference between the first two, in third place Segatelli with 23 publications. On the WoS platform, Barbosa and Gasparini are respectively the two first placed with 10 publications each and in third position is Oliveira with 8 publications, i.e. two publications less than his predecessors.

4.7 KEY WORDS

This last point refers to the key words, we used the Vosviewer software to count and highlight the sum of these words that each highlighted documents put in the spotlight. We also limited a minimum of 8 words in both bases as a criterion for inclusion in the

figure that costs as a result of this search. The keywords are useful to the extent that it helps to find a text or a set of text on the same topic (SCOTT; TRIBBLE, 2006; BONDI, 2010). In this way we will present the first ten (10) keywords of Scopus and then WoS.
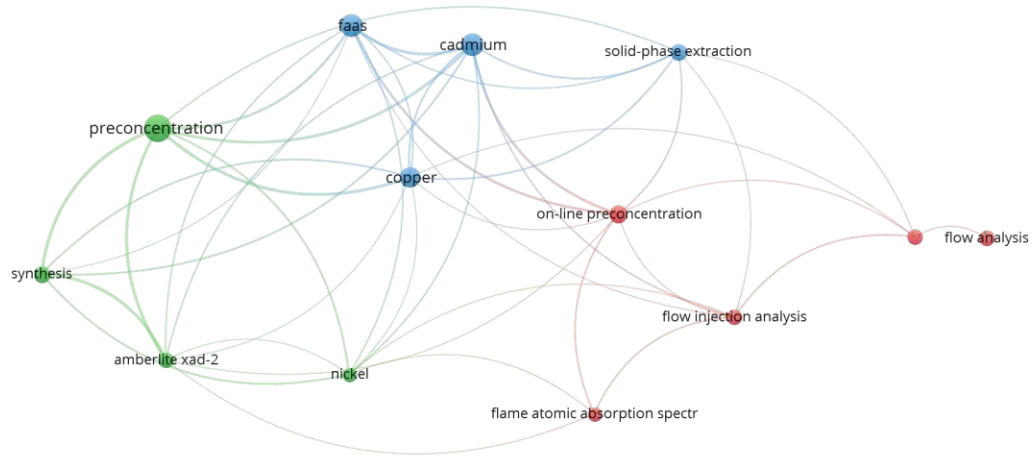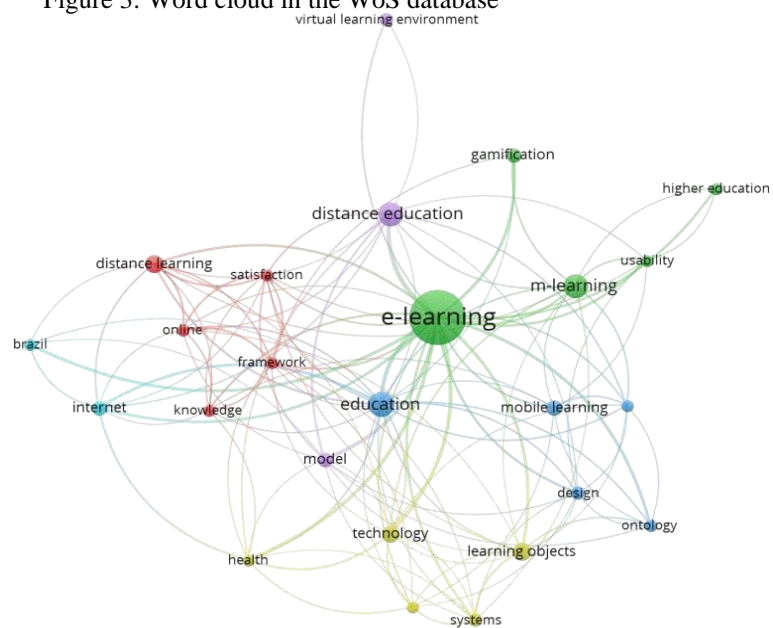

Figure 2: Word cloud in Scopus database
Author: Prepared by the author

In figure 2 regarding Scopus keywords we have respectively as the top 5: preconcentration (53 appearances), cadmim (41 appearances), faas (32 appearances), synthesis (32 appearances) and copper (31 appearances).

Figure 3: Word cloud in the WoS database

Author: Prepared by the author

In figure 3, referring to the Wos database, the first five (5) keywords are respectively: e-learning (175 appearances); education (63 appearances), distance education (39 appearances), technology (33 appearances) and learning objects (32 appearances).

5 CONCLUSION

In this comparative exercise between the two bases Scopus and WoS we noticed a strong difference in the area of knowledge where the Scopus base returns more documents of computing and the WoS base focuses more on the area of teaching, consequently the same phenomenon is observed in the keyword cloud. This indicates that probably the search *strings* did not efficiently retrieve documents on distance education, or the computer area in public Scopus so much influenced the result. So that is a tip for future research to check the viability of these *strings* in the Scopus base or exclude in the selection criteria the area of computing if it is not important in the proper research that one wishes to do.

On the other hand, in terms of the number of publications between Scopus and WoS may indicate to researchers that Scopus is the base of the two where they would find more documents that could corroborate in their research. Bibliometrics is a technique that maps scientific production and helps researchers make decisions about the relevance of the research topic (DONTHU et al., 2021). There is a tendency to continue observing the publications of the theme in the Scopus database for a few years, something that indicates that academic discussions have not been exhausted and that it is under conceptual construction, that is, in the construction or strengthening of its theory as stated by Liu *et al* (2013) publications become widely recognized after many years, it is a process that takes time for fields with smaller scales and / or that develop more slowly. Thus bibliometrics has the power to show when the topic may be attractive to the researcher, this study provides academics with reliable data that could be used as contributions in the subjects around the theme. As Wallin (2005) informs, bibliometric studies can only offer a short-term prediction of field research. That said, improvements in the academic world bring about change and decision-making that will impact society in general, especially in relation to expanding access to education.

One of the weaknesses of this research is seen in the large number of documents, it was not opened one by one to make sure that they all fit the theme "online teaching". Also, given the delay in the evaluation as well as the acceptance of documents in the

bases, a document could be added for 2021 even though it is in 2022, something that will give a small difference in the data if it is to replicate the research. However, this small difference will not contradict the general trend observed in this research.

REFERENCES

ALMEIDA, L. C. Paulo Freire: Present! bibliographic survey in educação & sociedade. Educacao e Sociedade, v. 42, 2021.

BAUTISTA, A. P. et al. School support received and the challenges encountered in distance learning education by filipino teachers during the covid-19 pandemic. International Journal of Learning, Teaching and Educational Research, v. 20, n. 6, p. 360–385, 1 jun. 2021.

BONDI, M. Perspectives on keywords and keyness: an introduction In: BONDI, M.; SCOTT, M. (Eds) Keyness in Texts. Amsterdam/Philadelphia: John Benjamins, 2010, p. 1-18.

BORNMANN, L., & MAREWSKI, J. Heuristics as conceptual lens for understanding and studying the usage of bibliometrics in research evaluation. Scientometrics,120, 419–459, 2019.

CARVALHO, Carla Beatriz et al. Ensino Remoto e Necessidades Específicas: o papel da escola e das famílias. Brazilian Journal of Development, Curitiba, v. 6, n. 10 , p. 74871-74885, oct. 2020. Acesso em: 26/05/2022. Disponível em: https://www.brazilianjournals.com/index.php/BRJD/article/view/17636.

CENSO EAD.BR. Relatório analítico da aprendizagem a distância no Brasil. Person Education do Brasil. CONA Associação Brasileira de Educação a Distância, São Paulo, 2020.

DONTHU, N. et al. How to conduct a bibliometric analysis: An overview and guidelines. Journal of Business Research, v. 133, p. 285–296, 1 set. 2021.

EBC. Censo: matrículas em cursos superiores de EAD superam presencias. 2022 Disponível em:
<Censohttps://agenciabrasil.ebc.com.br/educacao/noticia/2022-02/censo-matriculas-em-cursos- superiores-de-ead-superam-presenciais>. Acesso em 06 ago 2022.

GONZÁLEZ-TORRES, T.; RODRÍGUEZ-SÁNCHEZ, J.-L.; PELECHANO-BARAHONA, E.; GARCÍA-MUIÑA, F.E. A Systematic Review of Research on Sustainability in Mergers and Acquisitions. Sustain. J. Rec. 2020, 12, 513. [Google Scholar] [CrossRef]

Guimaraes, L. S. R. O aluno e a sala de aula virtual. In F. M. Litto & M. Formiga, (Org.), *Educação a distância: O estado da arte*. Sao Paulo, SP: Pearson. 2012.

GUNASHEKAR, S.; WOODING, S.; GUTHRIE, S. How do NIHR peer review panels use bibliometric information to support their decisions? Scientometrics, v. 112, n. 3, p. 1813–1835, 1 set. 2017.

HACK, Josias Ricardo. Introdução à educação à distância. Florianópolis:

LLV/CCE/UFSC, 2011. Disponível em: <https://uab.ufsc.br/portugues/files/2012/04/livro- introdu%c3%a7%c3%a3o-a-EAD.pdf>. Acesso em: 06 ago. 2022.

KARINNE, Ana; SARAIVA, De Moura; MACEDO, Cibele Monteiro. A expansão dos cursos de graduação em Enfermagem : cenário , interesses e desafios do ensino a distância. [*s. l.*], p. 1–9, 2021.

LIGUORI, E. W., & WINKLER, C. From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. Entrepreneurship Education and Pedagogy, 2020. Acesso: 05/15/2022, Disponivél em: https://doi.org/10.1177/2515127420916738

LUNARDI, Nataly Moretzsohn Silveira Simões *et al.* Aulas Remotas Durante a Pandemia: dificuldades e estratégias utilizadas por pais. Educação & Realidade, [*s. l.*], v. 46, n. 2, p. 1–22, 2021.

LIU X, JIANG T e MA F (2013) Collective dynamics in knowledge networks: Emerging trends analysis. Journal of Informetrics 7: 425–438. 2013.

MARÍN-VELÁSQUEZ T. D. & ARROJAS-TOCUYO, D. D. J. Revistas científicas de América Latina y el Caribe en SciELO, Scopus y Web of Science en el área de Ingeniería y Tecnología: su relación con variables socioeco-nómicas. Revista Española de Documentación Científica, 44 (3), e301. 2021. https://doi.org/10.3989/redc.2021.3.1812

MARTINS, R. X. (2020). A COVID-19 E O FIM DA EDUCAÇÃO A DISTÂNCIA: UM ENSAIO. EmRede - Revista De Educação a Distância, 7(1), 242-256, 2020, Acesso em 19/05/2022. Disponível em: https://doi.org/10.53628/emrede.v7.1.620

MAZLAN, A. F. et al. Challenges and Strategies to Enhance Online Remote Teaching and Learning by Tertiary Institution Educators: A Literature Review. Creative Education, v. 12, n. 04, p. 718–726, 2021.

MIZUKAMI, Maria da Graça Nicoletti. Ensino: as abordagens do processo. São Paulo: EPU, 1986.

OLIVEIRA, Junia Graduação. na sala de casa? Educação a distância avança mais rápido no Brasil. Jornal Estado de Minas online. 2019. Disponível em: <https://www.em.com.br/app/noticia/gerais/2019/10/13/interna_gerais,1092365/gradu acao-na-sala-de-casa-educacao-a-distancia-avanca-mais-rapido-no.shtml>. Acesso em 06 ago. 2022.

ONTONG, K e WAGHID, Z. Towards cultivating a critical pedagogy of place: a response to teaching practices in higher education amidst COVID-19. In L. Ramrathan, N. Ndimande- Hlongwa, N. Mkhize, & J.A. Smit (Eds.), Re-thinking the humanities curriculum in the time of COVID-19 (pp. 56-73, Alternation African Scholarship Book Series, Volume #01). CSSALL Publishers, 2020.

PALMEIRA, ROBSON LIMA; DA SILVA, Andrezza Araújo Rodrigues; RIBEIRO, Wagner Leite. As metodologias ativas de ensino e aprendizagem em tempos de pandemia: a utilização dos recursos tecnológicos na Educação Superior. Holos, [*s. l.*], v. 5, 2020.

PIAGET, J. Development and learning. In R. E. Ripple & V. N. Rockcastle (Eds.), A Report on the Conference of Cognitive Studies and Curriculum Development. Cornell University. pp.7–20, 1964.

REGINA, Cyntia; YAMAUCHI, De Oliveira. ENSINO A DISTÂNCIA: A EDUCAÇÃO COMO FORMA DE ESPETÁCULO DISTANCE LEARNING: EDUCATION AS A FORM OF SHOW. [*s. l.*], v. 2, n. 3, p. 106–121, 2022.

Rodrigues, A. (2020). Ensino remoto na Educação Superior: desafios e conquistas em tempos de pandemia. *SBC Horizontes*, jun. ISSN 2175-9235. Disponível em: <http://horizontes.sbc.org.br/index.php/2020/06/17/ensino-remoto-na-educacao-superior/>. Obtido em: 22 de Agosto de 2020.

SALDANHA, Luis Cláudio Dallier. O discurso do ensino remoto durante a pandemia de COVID-19. Educação e Cultura Contemporânea, [*s. l.*], v. 17, n. 50, p. 1–9, 2020.

SCOTT, M.; TRIBBLE, C. Textual Patterns: key words and corpus analysis in language. Amsterdam/Philadelphia: John Benjamins Publishing Company, 2006. 203 p.

SILVA, M. C. As aulas remotas emergenciais nas Letras e a interpassividade: lições da pandemia Remote emergency classes in Literature and interpassivity: lessons from the pandemics. p. 2022, [s.d.].

SIMÃO, J. P. S.; CARVALHO, T. J.; ROCHADEL, W. Experimentação Remota e a Construção do Conhecimento no Processo de Aprendizagem. Engenharia da Computação – Teoria Geral de Sistemas. Dissertação (Modelagem Computacional de Sistemas) – Programa de Pós-graduação Modelagem Computacional de Sistemas, Universidade Federal de Santa Catarina, Araranguá, 2013.

TANUS, Gabrielle Francinne De S C. Atuação e desafios das bibliotecas universitárias brasileiras durante a pandemia de COVID-19 Actuación y desafíos de las bibliotecas universitarias brasileñas durante la pandemia de COVID-19 Activities and challenges of Brazilian university libraries during the COVID- 19 pandemic. [*s. l.*], v. 31, n. 3, p. 1–33, 2020.

UNESCO. A Comissão Futuros da Educação da Unesco Apel a ao Planejamento Antecipado Contra o Aumento das Desigualdades após a COVID-19. Paris: Unesco, abr. 2020. Disponível em:
<https://pt.unesco.org/news/comissao–fu-turos–da–educacao–da–unesco–apela–ao–planejamento–antecipado–o–au-mento–das>. Acesso em: 26/04/2022. https://pt.unesco.org/news/comissao–fu-t

WALLIN, J. A. Bibliometric methods: Pitfalls and possibilities. Basic and Clinical pharmacology and Toxicology, 97(5), 261-275, 2005.

ZUPIC, I e CARTER, T. Bibliometric Methods in Management and Organization. Organ. Res. Methods, 18, 429–472, 2015.