



Relationship between Online Learning and Academic Performance of Students: A Review of Trends and Ways Forward

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Abstract: *The education sector is one of the most affected sectors during Covid-19 global pandemic. This study investigates the relationship between online learning and academic performance of students through the analysis of documents extracted from Scopus database. The benefits of online learning and its impact on academic performance has motivated us to investigate the past research for getting a detailed insight into it. The subject areas focused in online learning, countries where this topic is highly researched, collaboration with authors and number of publications done during this period is analysed in this researched. Through this article we provide information on the areas which are under researched and directions for future research.*

Key Words: *Academic performance, Bibliometric analysis, Covid 19, Higher education, Online learning, Students.*

1. INTRODUCTION:

The evolution of online learning has not been seamless, it's still an evolving field. Yet it had been a right alternative to the conventional classroom or face-to-face learning method at a right time when the world of education needed it. Initially, online learning was considered as a challenge by many educators, due to lack of familiarity with digital learning. Moreover, the efficacy of online learning was doubtful. The COVID-19 pandemic also posed unprecedented challenges on students in terms of learning adjustments (Isabelle Chang 2022). The implementation of both physical and social distancing norms in the field of education compelled the learning events to be carried over online platforms (Ida Bagus Nyoman Mantra et al., 2022). Teachers adopted and implemented different strategies whichever they thought to effectively improve learning of students. Advancement in technology posed global disruption in the field of education. (Kuliukas et al., 2021, de Oliveira Araújo et al., 2020) In order to support online learning across domains and levels of proficiency, learning environments have been broadened to support and enhance learning environment. Learning outcomes have been reported to be influenced by self-efficacy, ICT and other factors (Cussó-Calabuig et al., 2018, So et al., 2012), but recent meta-analyses have attributed academic self-efficacy as an important factor influencing online learning outcomes (e.g., Robbins et al., 2004; Richardson et al., 2012; Honicke & Broadbent, 2016). In conventional learning, regulation of goals, grades and efforts have a solid impact on the learning outcomes. (Richardson et al., 2012; Honicke & Broadbent, 2016) According to earlier research studies academic performance has a positive correlation with academic self- efficacy in an online learning (Lynch & Dembo, 2004; Kitsantas & Chow, 2007; Yukselturk & Bulut, 2007) Students orientation towards task is positively correlated to outcomes in online learning (Joo et al., 2013, 2007). These differences in learning outcomes can be attributed to students' traits and type of learning environment. Task based online instructions, learners' attitudes, and operating knowledge of devices motivates task-oriented students. (Cussó-Calabuig et al., 2018). Some studies have also scrutinized factors influencing academic performance in an online learning environment. Yukselturk and Bulut (2007) The task value has a positive correlation with online learning outcomes (Joo et al. 2013). Students' intrinsic motivation and goal attain mastery are found to have a strong influence on academic performance. (Crippen et al. 2009). Additionally, students' verbal ability (Lynch and Dembo, 2004), level of education, willingness to seek help, external threats (Kitsantas and Chow, 2007), self-regulated learning strategies, intellectual strategy use (Yukselturk and Bulut, 2007), screen time, efforts (Cho and Shen, 2013), gratification, and determination (Joo et al., 2013) were found to have a positive correlation with online learning outcomes. In this research paper, we attempt to get a deeper understanding of the past research by doing a bibliometric analysis of research articles obtained from Scopus database. This article we aim to answer three research questions

RQ1: What is the available literature on the topic "Online learning and Academic Performance"?

RQ2: What kind of research collaborations are made between countries and authors?

RQ3: How are the publications spread across various subjects/Domains?



2. METHODOLOGY:

In order to do our SLR, we searched Scopus database for articles related to our research topic “Online Learning and Academic Performance. Scopus database is an indexing database which provide abstracts & full-texts articles. It gives access to articles published in various disciplines. It is managed by Elsevier and allows researcher to access a range of past and present articles (Ayyagari Ramlal & Rubina Chongtham, 2021). From the Scopus database, we extracted 422 documents related to our topic. Then we fixed a search period between 2012 and 2022 and documents further reduced to 398. We wanted documents only from Business management and social sciences background which further eliminated documents to 254. We wanted to analyse only research articles published in journals and thus eliminated other documents. We further eliminated research articles published in languages other than English which finally gave us 192 articles which we used to do our SLR. The methodology adopted in conducting our SLR is discussed in figure 2. We have depicted our plan through PRISMA flow chart and enumerated various stages of our research from planning to implementation (Moher D. et al ,2009). We planned and implemented our work in three different stages.

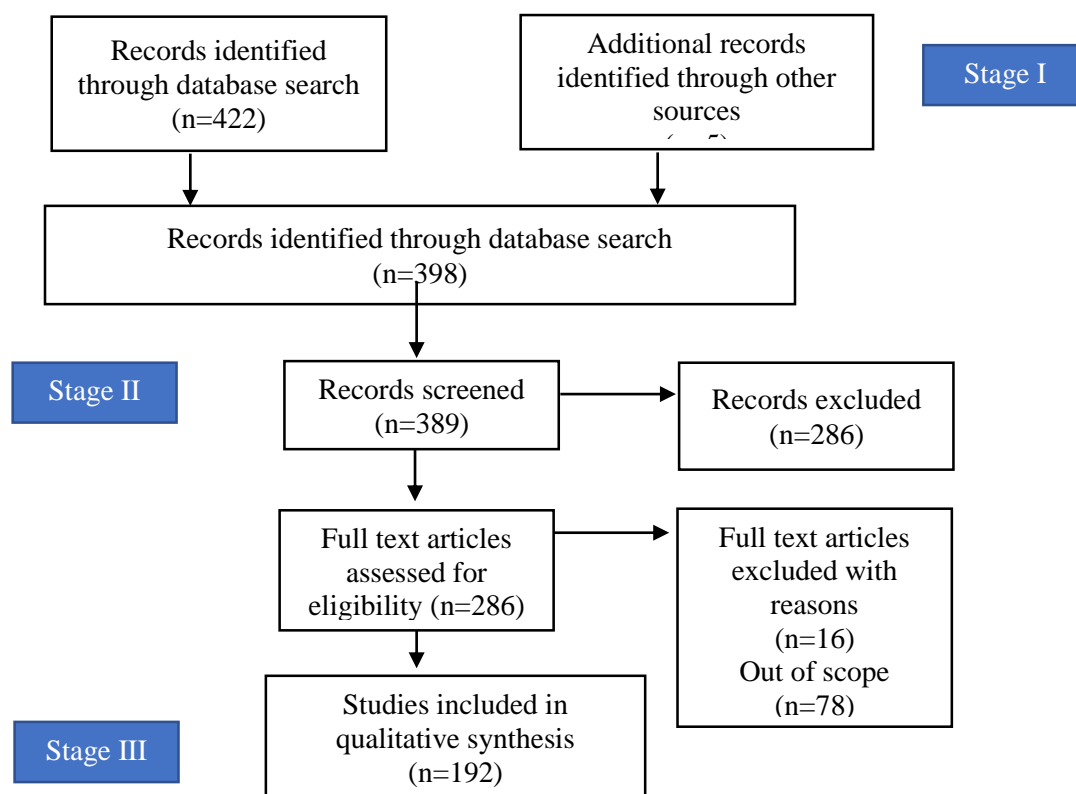


Figure 1 - PRISMA Chart showing methodology adopted in SLR

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Stage I- we prepared the design for our study and began our work with the objective of finding answers to research questions through a bibliometric analysis. We made a careful selection of keywords to search relevant articles and chose Scopus database to extract documents for our SLR. In Stage II, the documents obtained from Scopus database were screened and articles which were not relevant to our research topic were eliminated. The documents thus obtained were loaded into VOS viewer software for bibliometric analysis. With the documents extracted from Scopus database, we aim to do an analysis of publications by author, country, subject & year. We then developed objectives of the study, decided on analysis methods, results expected and future research direction. In stage III, we worked on analysing the documents based on publications by year, by author, country and subject. To carry out a “bibliometric analysis”, the Scopus database was searched for articles relating to “Online learning and “Academic performance”. A systematic process was adopted in generating literature depicted in figure 2.

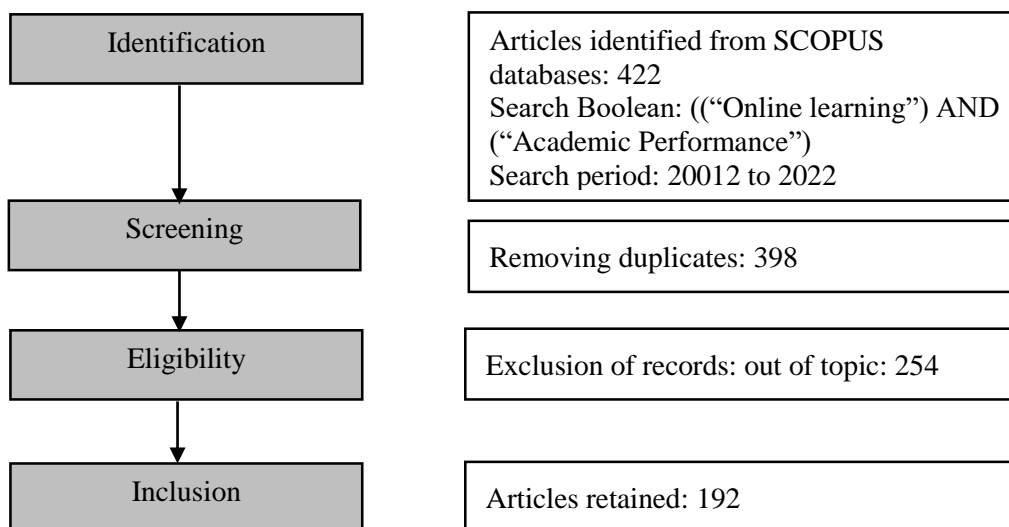


Figure 2: Flow chart showing inclusion/exclusion criteria

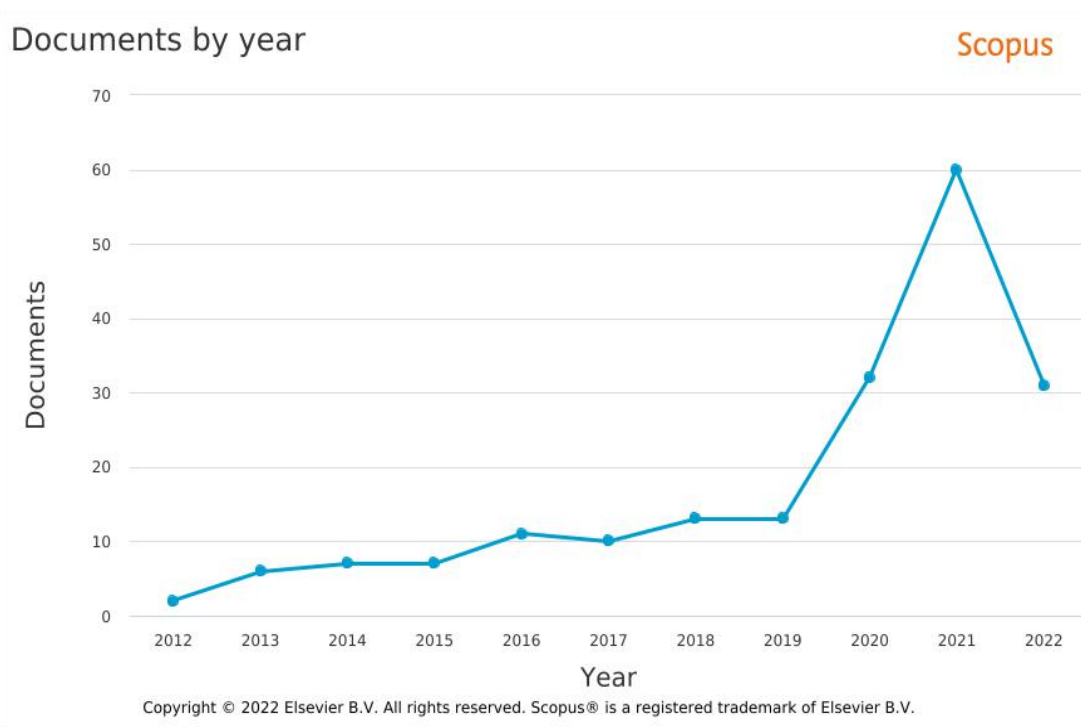


Figure 3: Showing number of documents published from the year 2012 to 2022

The number of documents published in the year 2012 were only 2, it slowly increased to 12 in 2019, reached the maximum number of 60 in the year 2021. The number of publications fell down to 31 indicating that research on online learning declined in the year 2022.

The number of publications done by different authors is shown in figure 4. Author Han F. has published 5 articles, Altun A. and Yu F.Y. have published 3 articles each, Akcapinar G., Askar P, Betts K., Bidjerno T., Clary R. M., Darus N.A., and Dawson S. Have published 2 articles each on the topic.

Country wise publications done on the topic is depicted in figure 5, The United States have 47 publications, Australia has 24 publications, China has 23 publications, Spain and Turkey has 14 publications each, Malaysia and The United Kingdom have 11 publications each, Taiwan has 7 publications, and Canada and Saudi Arabia have 6 publications each on the topic.

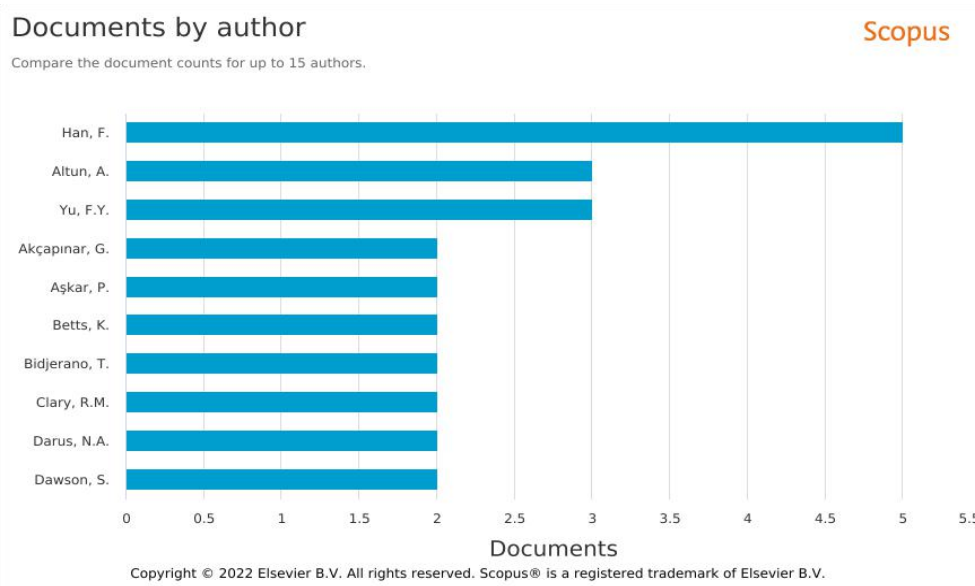


Figure 4: Showing documents published per author

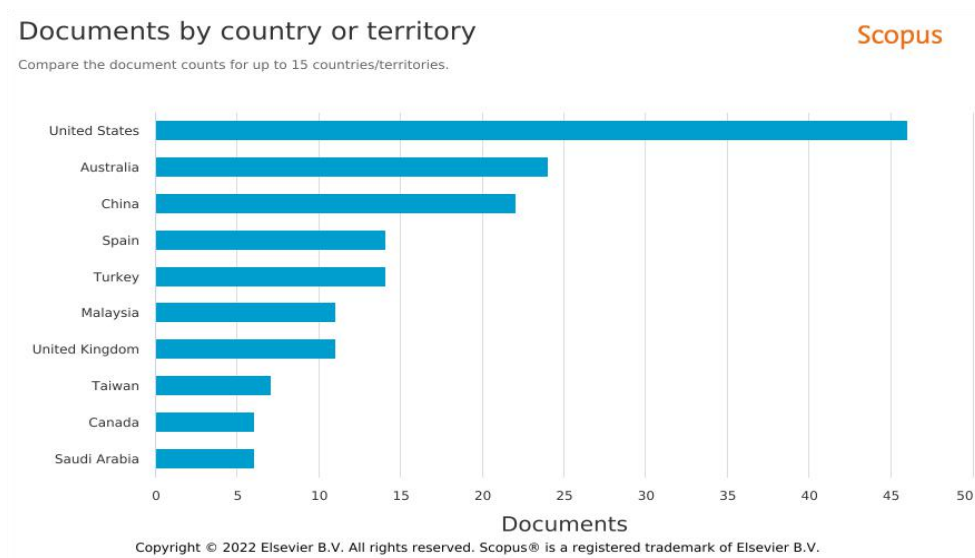


Figure 5: Showing documents published country wise

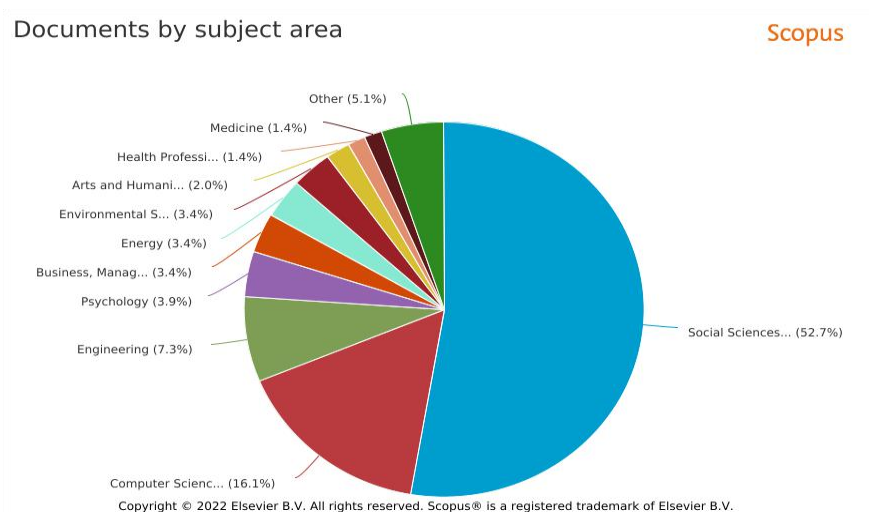


Figure 6: Showing documents published in different subject areas



The number of documents published by subject area is shown in figure 6. Publications related to online learning in the field of Social sciences is highest with 52.7%, followed by Engineering with 7.3%, Psychology with 3.9%, Business Management with 3.4%, of Energy & Environment with 3.4%, Arts and humanities with 2.0%, Health Professionals with 1.4%, Medicine with 1.4%, and others with 5.1% of publications.

3. RESULTS AND DISCUSSION:

According to the bibliometric study, 2021 saw a total of 60 research articles on the subject, which is the most when compared to the full period from 2012 to 2022. Author Han F. has written five papers on the subject, and the United States has produced 47 publications on it overall. Social sciences account for around 57% of all publications on the subject. Unfortunately, it was discovered that there was a dearth of studies that looked at how online learning affected secondary school students' academic efficiency. There were no studies that accurately assessed the effectiveness of an online learning system in comparison to classroom-based training in secondary schools (Bakia, Marianne 2012). The development of new curricula, the sharing of best practises, the supply of technical infrastructure, and the training of instructors and students in technical expertise are all effective ways to support students' digital learning. (Cherry Ann C. Ballad RN, et. al. 2021). If we embrace the media and make the most of its potential, online learning could play a crucial role in this endeavour. Unfortunately, if teachers are under pressure to create online courses fast, it might prevent the creation of truly novel ideas. Without caution, the outcome could be a class that is less engaging for the learner. Information technology should be used effectively as a learning aid because it is not only desired but also impermissible for any educator to ignore its potential.

4. CONCLUSION:

The learning approaches of individual students impact the learning outcomes more than the mode of teaching. (Isabelle Chang 2022). Unfortunately, there is an extensive, unintentional online learning experimentation going on and Institutions of Higher Education (IHEs) must look for lessons that will help stakeholders and IHEs co-design a blended learning future post Covid 19. The articles extracted from Scopus database report that issues with teaching and learning delivery speed, student attitudes, and stress associated with online learning modes are their top difficulties. The findings of this study contribute to the body of knowledge on the potential of online education as a different pedagogy for the education sector after COVID-19. Online education has the potential to completely change how students get higher education. Education prospects may soon be approached on a broader regional, national, or even international scale. The instructor must consider elements like communication, active and collaborative learning, and reflective practises in order to successfully adapt the curriculum to a new learning environment (Gresh & Mrozowski, 2000; Palloff & Pratt, 1999). In order to enhance their ability to learn, students must also change their paradigms of learning. It is advised that schools widen their horizons to investigate cutting-edge tactics for leveraging the online learning medium before online learning methodologies become established and amenable to just minor revisions. As online learning becomes more widespread, it will have an impact on curriculum, instruction, society, as well as people's personal and professional life. While still in its infancy, educators must evaluate current online learning approaches to assure effective advancements.

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