Online Teaching and COVID-19: A Bibliometric Analysis

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Abstract: *The COVID-19 pandemic has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries. Closures of schools, institutions and other learning spaces have impacted more than 94% of the world's student population. This has brought far-reaching changes in all aspects of our lives. Social distancing and restrictive movement policies have significantly disturbed traditional educational practices. Reopening of schools after relaxation of restriction is another challenge with many new standard operating procedures put in place. Several schools, colleges and universities have discontinued face-to-face teachings. This article aims to provide a comprehensive view on the impact of the COVID-19 pandemic on online teaching and learning through Bibliometric analysis. The results highlight a strong linkage of online education, teaching, COVID-19 and the flipped classrooms.*

Key Words: *Online teaching, COVID-19, VOSviewer, educational research.*

1. INTRODUCTION :

The global outbreak of the COVID-19 pandemic has spread worldwide, affecting almost all countries and territories. The outbreak was first identified in December 2019 in Wuhan, China. The countries around the world cautioned the public to take responsive care. The public care strategies have included hand washing, wearing face masks, physical distancing, and avoiding mass gathering and assemblies. Lockdown and staying home strategies have been put in place as the needed action to flatten the curve and control the transmission of the disease (Sintema, 2020). Bhutan first declared closing of schools and institutions and reduction of business hours during the second week of March 2020 (Kuensel, 2020, 6 March). The complete nationwide lockdown was implemented from 1 August 2020 (Palden, 2020). In between, movements were allowed, offices began functioning, schools and college reopened for selected levels and continued with online classfor others. More than 170,000 children in Bhutan from classes PP–XII are, today, affected by the school closure. The impact is far reaching and has affected learning during this academic year or even more in the coming days. Several schools, colleges and universities have discontinued face-to-face teaching. There is a pressing need to innovate and implement alternative educational and assessment strategies. The COVID-19 pandemic has provided us with an opportunity to pave the way for introducing digital learning (Dhawan, 2020).

Research highlights certain dearth such as the weakness of online teaching infrastructure, the limited exposure of teachers to online teaching, the information gap, non-conducive environment for learning at home, equity and academic excellence in terms of higher education. This article evaluates the impact of the COVID-19 pandemic on teaching and learning process across the world. The challenges and opportunities of online and continuing education during the COVID-19 pandemic is summarized and way forward suggested.

Lockdown and social distancing measures due to the COVID-19 pandemic have led to closures of schools, training institutes and higher education facilities in most countries. There is a paradigm shift in the way educators deliver quality education—through various online platforms. The online learning, distance and continuing education have become a panacea for this unprecedented global pandemic, despite the challenges posed to both educators and the learners. Transitioning from traditional face-to-face learning to online learning can be an entirely different experience for the learners and the educators, which they must adapt to with little or no other alternatives available. The education system and the educators have adopted "Education in Emergency" through various online platforms and are compelled to adopt a system that they are not prepared for.

E-learning tools have played a crucial role during this pandemic, helping schools and universities facilitate student learning during the closure of universities and schools (Subedi et al., 2020). While adapting to the new changes, staff and student readiness needs to be gauged and supported accordingly. The learners with a fixed mindset find it difficult to adapt and adjust, whereas the learners with a growth mindset quickly adapt to a new learning environment. There is no onesize- fits-all pedagogy for online learning. There are a variety of subjects with varying needs. Different subjects and age groups require different approaches to online learning (Doucet et al., 2020). Online learning also allows physically challenged students with more freedom to participate in learning in the virtual environment, requiring limited movement (Basilaia & Kvavadze, 2020). As schools have been closed to cope with the global pandemic, students, parents and educators around the globe have felt the unexpected ripple effect of the COVID-19 pandemic. While governments, frontline workers and health officials are doing their best slowing down the outbreak, education systems are trying to continue imparting quality education for all during these difficult times. Many students at home/living space have undergone psychological and emotional distress and have been unable to engage productively. The best practices for online homeschooling are yet to be explored (Petrie, 2020).

The use of suitable and relevant pedagogy for online education may depend on the expertise and exposure to information and communications technology (ICT) for both educators and the learners. Some of the online platforms used so far include unified communication and collaboration platforms such as Microsoft Teams, Google Classroom, Canvas and Blackboard, which allow the teachers to create educational courses, training and skill development programmes (Petrie, 2020). They include options of workplace chat, video meeting and file storage that keep classes organized and easy to work. They usually support the sharing of a variety of content like Word, PDF, Excel file, audio, videos and many more. These also allow the tracking of student learning and assessment by using quizzes and the rubric-based assessment of submitted assignments. The flipped classroom is a simple strategy for providing learning resources such as articles, pre-recorded videos and YouTube links before the class. The online classroom time is then used to deepen understanding through discussion with faculty and peers (Doucet et al., 2020). This is a very effective way of encouraging skills such as problem-solving, critical thinking and self-directed learning. The virtual classroom platforms like videoconferencing (Google Hangouts Meet, Zoom, Slack, Cisco, WebEx) and customizable cloud-based learning management platforms such as Elias, Moodle, BigBlueButton and Skype are increasingly being used.

2. RESEARCH METHOD :
2.1 Bibliometric Analysis:

Bibliometric Analysis is a quantitative methodology to identify literature's volume and growth pattern for a particular emerging area. It gives a retrospective view of the published literature that evaluates academic contributions in a focal field. The study adopted two effective techniques: performance analysis and science mapping. The performance analysis evaluated the publications' performance in terms of publication output by countries, authors, affiliating institutions and growth trends over the years. The other relational technique of bibliometric or science mapping analysis identified relationships among publications and explored the research field's structure and evolution. For this co-citation analysis, co-authorship analysis, co-word Analysis and thematic evolution analysis were performed. Co-citation analysis helps understand the predominant publications and authors of a research area with the help of citations. In addition, researchers conduct the evolution analysis to understand the research field's development process over the years and its future trends (Ding and Yang, 2020).

2.2 Data Source

The data source for the study was the core Web of Science (WoS) collection. WoS is one of the world's most famous scientific citation index databases. In addition, research in financial literacy and crypto-currency is conducted. The publications first appeared in 2020 in the research area. Then the internationally widely used free bibliometric analysis software VOSviewer (Visualization of Similarities) was applied to analyze and visualize the relationships among the authors, countries, journals, co-citations, and terms. Because it is tough to identify clusters in mapping and derive themes out of them, VOSviewer has a compelling user graphic interface that quickly examines these maps (Cobo et al., 2011). Later from biblo-mapping, the gap and need for online teaching and COVID-19 are depicted.

3. Empirical Findings :
3.1Publication Statistics:

Figure 1 reflects that after COVID-19, the trend in online teaching and research on the topic has attracted a sharp trend in the publication on it. The demand on the consequences of the advantages and disadvantages of online learning as well as teaching has been studied in depth by the researchers.

Figure 1: Publication stats:
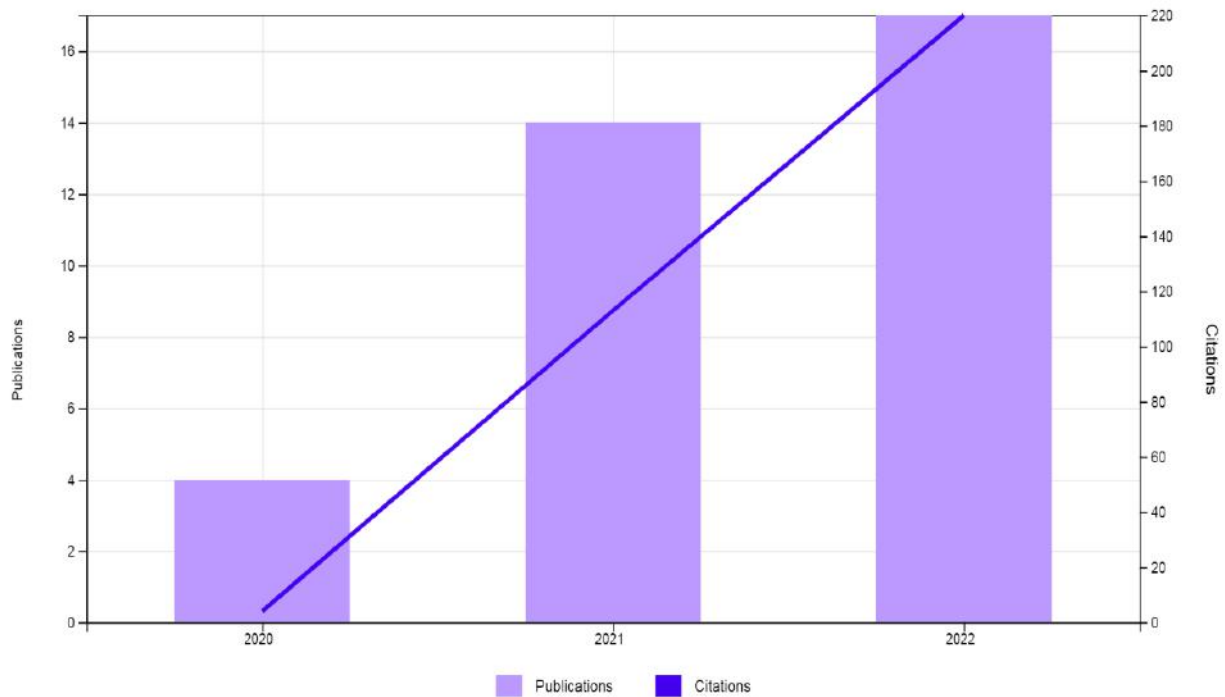
3.2 Publication Field

Figure 2 reflects the research field in which the studies related to online teaching and learning has been commenced. Out of which the burning field is the education and educational research as researchers as well as countries are keen to understand the impact of shift of online teaching and learning in the academy on students and teachers likewise.

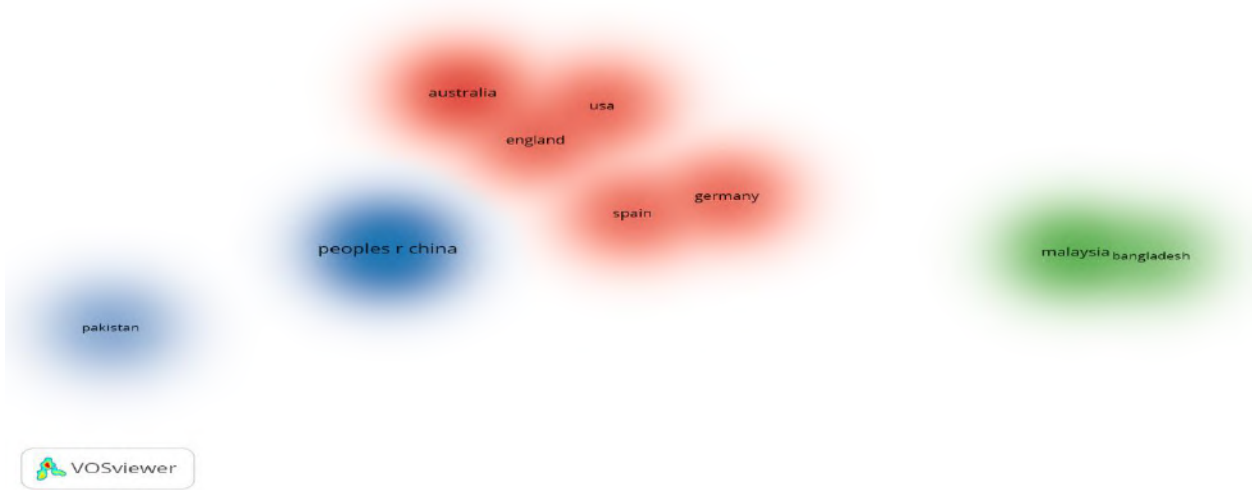**Figure 2: Research Field**
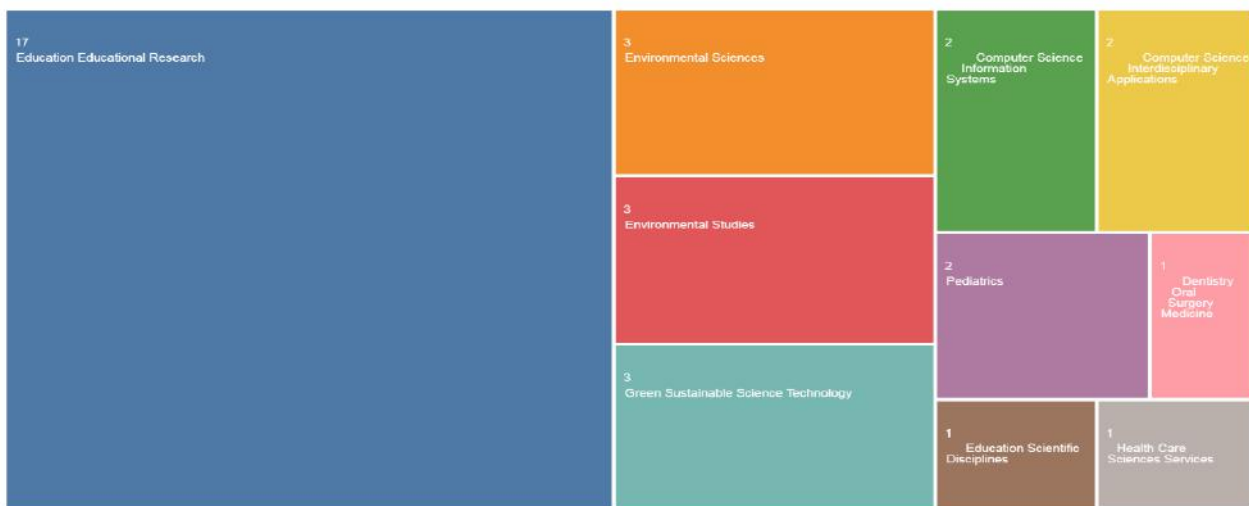
3.3 Emerging Countries

Figure 3 demonstrates the trend and the number of research conducted in the emerging economies after the COVID-19 on the online teaching and learning. Mostly after COVID china has conducted the research to analyse the after effects on online teaching and then Malaysia and Bangladesh.

Figure 3: Trends in Countries

3.4 Online Teaching and COVID-19

Figure 4 demonstrates the trend of research conducted in the education field and the sudden shift in teaching level from tradition to technological. The clusters represents that in 2021 trend was to evaluate the impact, which later got shifted to education styles and then to examine the impact of online learning, teaching, systematic review and their impact of both students and teachers.

Figure 4: Trend in Online teaching after COVID-19
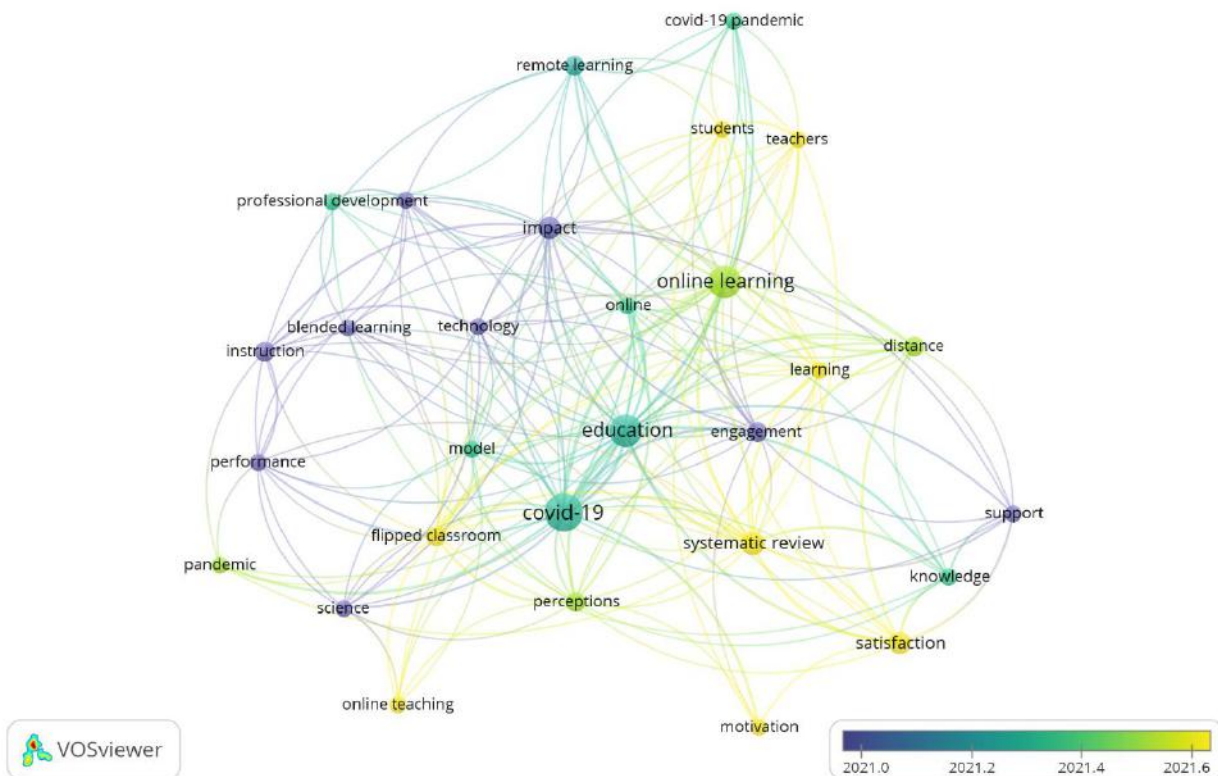
4. CONCLUSION:

The COVID-19 pandemic has created the largest disruption of education systems in human history, affecting nearly 1.6 billion learners in more than 200 countries. Closures of schools, institutions and other learning spaces have impacted more than 94% of the world's student population. This has brought far-reaching changes in all aspects of our lives. Social distancing and restrictive movement policies have significantly disturbed traditional educational practices. Reopening of schools after relaxation of restriction is another challenge with many new standard operating procedures put in place. Several schools, colleges and universities have discontinued face-to-face teachings. This article aims to provide a comprehensive view on the impact of the COVID-19 pandemic on online teaching and learning through Bibliometric analysis. The results highlight a strong linkage of online education, teaching, COVID-19 and the flipped classrooms.

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