INNOVATIVE RESEARCH JOURNAL VOLUME: 3 ISSUE: 2, DECEMBER, 2024

DOI: https://doi.org/10.3126/irj.v3i2.79486

Impact of Virtual Classes on Secondary Level Students in Public Schools in Nepal

Milan Acharya

PhD Scholar

Graduate School of Education

milanpanga123@gmail.com

Abstact

Information and Communication Technology plays a major function in online/virtual classes. This study explores the impact, effectiveness, and challenges of virtual classes among secondary school students and teachers in Kirtipur Municipality. The research involved 20 secondary level teachers and 80 students from grades nine. Using a quantitative approach, data were collected through survey questionnaires. Simple random sampling was used to select the participants. The findings revealed that technical devices like smartphones, laptops, and desktop were commonly used for online classes. Virtual classes proved to be effective during the pandemic but require better resources, skills, and strategies to maximize their potential in future teaching and learning practices. However, participation among students remained l ow despite access to devices. Teachers and students faced challenges in adopting to online classes due to lack of technical skills. The study recommends training programs for teachers and students to improve their ability to use technology effectively. It also highlights the need to integrate online teaching during critical times and emergencies.

Key words: *Online classes, public schools, COVID 19 pandemic, secondary level*

Introduction

In today's digital era, the widespread use of social media among students and teenagers has become a growing phenomenon. Students are taking interest in using social media but regrettably, social media networks affect education. Information and communication Technology (ICT) helps communication are basically used for accessing social media networks websites any time anywhere. These digital devices are Tablets, iPhones, pocket computers, laptops, palm-tops, iPads, and even mobile

phones support learning. ICT is a step towards advancement, no doubt but any technology which provides ease of online resources can be harmful to the physical and mental health of students. The online media sites deflect them towards non-educational, immoral and unsuitable actions like useless chatting, time-killing by unnecessary searching on the internet (Ali & Pasha, 2024; Nikolinakou et al., 2024). Pandemic has affected people regardless of nationality, level of education, income or gender. Education is no exception. The crisis has exposed the many inadequacies and inequities in the entire education system of affected countries. However, it has opened a door to online education and the supportive environments necessary to focus on educational pedagogy especially in developing countries like Nepal. The people's republic of China was the first to close schools in response to the COVID 19 pandemic. The school closures were imposed on 16 February 2020 in some parts of China. Other countries began to close as the pandemic extended (Papadopoulos, 2024). In Nepal, all educational activities were shut down from 2076 Chaitra 11 (Acharya & Rana, 2024). Since then, the academic programmes have been disturbed almost for the whole academic year and followed by the second web of pandemic even in 2021 A.D.

According to the recent report of the United Nations, this pandemic has badly affected the world's education system as more than 1.60 billion students from primary to higher education levels in more than 200 countries have been stuck at home for months due to the lockdown (Lamichhane, 2024). The lockdown in response to COVID 19 has interrupted the conventional pedagogy throughout the world. Many countries of the world have switched on virtual teaching-learning practice as the alternative approach to education during the COVID 19 crisis. However, in the context of Nepal, online teaching seems only a means, not an end. Most of the schools and colleges have made their effort to resume teaching-learning after the consent of the Government of Nepal. The students have to rely more on their own resources and the teachers also should adopt new pedagogical concept and mode of teaching; however, both of them may not have sufficient training in online classes. Moreover, the students from the marginalized groups, who do not have access to digital resources mostly affected as they had to learn on their own resource, are at risk of falling behind (Mpolomoka et al., 2024).

Educated people are more advantaged and are likely to get empowered via this technical breakthrough. Information is on the tip of fingers that may come within

seconds. Communication has become the basic need for everyone. It has become a good source of knowledge for those who seek something. In the field of academia, it is a boon for both the learners and teachers. Power point presentation, animation, Photoshop and visual effects are some of the most useful programs that almost all ICT literate folks entertain in their professional deeds. The teachers and students who involve in the exchange, promotion and exploration of knowledge are the main users of ICT in education. The use of ICT in education has been considered as one of the strategies to achieve broader education. ICT in education mentions the importance that has been identified as an innovative and effective means of teaching and learning (Joshi et al., 2024). Realizing this fact, this research work penetrate through the use of ICT in teaching and learning of secondary in Nepalese schools.

However, quality education matters for all. Every conscious citizen seeks education that can equip the young to contest in the global markets. However, the community schools i.e., schools supported and funded from the national budget, are lagging behind regarding quality education. Most of the community schools use traditional medium of instruction while conducting teaching learning activities in the classrooms (Gautam & Acharya, 2023). During the pandemics of corona virus, the community schools are also endeavoring to make a leap in the field of educational enterprise. Besides this venture for providing quality education, the community schools are trying to be furnished and accommodated with modern gadgets of communication technology. This research is based on the perceived effect of virtual classes used during pandemic at secondary level community schools of Kirtipur Municipality.

Nepalese students in school level have taken virtual classes for the first time in order to continue their study during corona virus pandemic. The use of technology is one of the challenging phenomena in community schools. Moreover, it is not an easy way to cope with recent technological development with no little orientations. The lack of technical knowledge to the students, teachers and even to the guardians has been the biggest challenge that the community schools are facing to implement virtual classes to facilitate teaching and learning; however, it does not seem so. Moreover, the consequences of corona virus pandemics barred the students to take classes in their physical presence for which their learning should be linked with virtual classes and continue their study.

The virtual world serves as a playing ground for developmental issues from the physical world, such as identity and also to examine how online communication affects real-world communication and relationships. As technology and teaching go side by side, the technology has been a boon during pandemic situation equally to city area and more or less to remote area. Students learn the best when they are engaged in the real-life learning situations for which their learning should be linked with advanced technology. The use of technology in education has been used throughout the world and it is commonly used in Nepal during COVID 19 pandemic (Sapkota et al., 2024). However, it has not been used effectively in most part of the country. Even the teaching learning methods we practiced in the past could not fulfill the needs and demands of our learners in this 21st century. It is a great challenge to engage students in learning activities and produce the dynamic human resources needed to tackle the problems during the corona virus pandemic. If the students are encouraged to learn through the use of modern technology, it enables them to cope up with the pandemic challenges and prepares the required human resources as per the need of time in order to fulfill the social, political, and economical needs of the society. This study examines how online communication affects learning in pandemic situation. This study also explore how influential virtual world among the secondary level students of Kirtipur Municipality and what are the impacts that causes upon them.

Method

It uses quantitative research design using descriptive statistics such as frequencies, percentage and mean to analyze the data (Adeniran and Tayo-Ladega, 2024). The research area of this study was Kirtipur Municipality. Only five government aided public schools were selected for this study. The field of this study was based on the perceived effect of virtual classes on secondary level students and teachers. Grades IX students were selected by gender, along with the number of male and female teachers. The total number of students was 187, comprising 89 girls and 98 boys. According to Brown et al. (2024) a sample is a subject of the population to which the researcher intends to generalize the results. The sample population in this research work consisted of high school students and teachers of Kirtipur Municipality. For this study, the sample population included 80 students and 20 teachers from five community schools located in Kirtipur. Altogether, there were 100 respondents with whom the researcher collected the required information for the study.

The researcher adopted a survey questionnaire for collecting data. The main tool for the collection of data was survey questionnaire and also interview guidelines to collect qualitative data from both students and teachers. Interview of the sampled respondents were taken. The questions for interviews consisted of both close-ended and open-ended questions. Initially, each set of questionnaire was developed for both secondary level teachers and students. The remaining data were taken with the help of interview guidelines. The collected data were processed systematically on the basis of quantitative approach along with necessary description. The result from the qualitative data were supported by the qualitative data.

Result

The result of this study is categorized in to different topics like gender, academic qualification, teaching experiences, etc.

Table 1

Gender Profile of Teachers

Gender	No. of Teachers	Percent
Male	10	50
Female	10	50
Total	20	100

Table 1 shows the gender profile of the respondent teachers. Accordingly, 50 percent male teachers and 50 percent female teachers teaching in the study area were involved in this study.

Table 2

Academic Qualification of Teachers

Qualification	No. of Teachers	Percent
Graduate	15	75
Post-graduate	5	25
Total	20	100

Table 2 shows graduate and post-graduate teachers were teaching at high school level in the study area. Among the respondent teachers, there were 75 percent teachers who

had graduate level qualification. The teachers who had post-graduate qualification were 25 percent in the study.

Table 3

Teaching Experience of Teachers

Teaching Experience	No. of Teachers	Percent
Less than 5 years	5	25
6-10 years	7	35
11-15 years	2	10
16-20 years	3	15
21-25 years	2	10
Others	1	5
Total	20	100

Table shows that the teaching experience profile of the teachers. It shows that 35 percent teachers have 6-10 years and 25 percent of the teachers have less than 5 years of teaching experience. Out of the total teachers, 15 percent teachers have16-20 years teaching experience and 10 percent teachers have either 11-15 years or 21-25 years. Finally, 5 percent teachers have not mentioned their teaching experience in the study. The data shows that most of the teachers are experienced and they had more than 6 years of teaching experience in high school level. This fact was also proved by the teachers during interview since all the interviewed teachers were serving in the study area for a decade.

Table 4

Teaching Grades

Grades	No. of Teachers	Percent
Nine and Ten	35	53.85
Other classes	30	46.15
Total	20	100

Table 4 shows the analysis of grades taught by the sampled teachers. Thre result shows that 53.85 percent of the teachers teach in grade nine and ten whereas 46.15 percent of them teach in other grades. The data show that the highest number of

teachers teach in grade nine and ten whereas the lowest number of teachers teach in other grades in the study area.

Table 5

Class Size in terms of Teachers and Students

No. of Students	No. of Teachers	Percent
Less than 15	1	5
15-25	5	25
25-35	8	40
35-45	5	25
More than 45	1	5
Total	20	100

The analysis shows the class size and number of teachers. It shows that 40 percent of the teachers teach in the class with 25-35 students, 25 percent of them teach in the class having 15-25 and 35-45 students. Only 5 percent of them teach in the class with less than 15 and more than 45 students. It has been cleared that highest number of teachers teach 25-35 students and lowest number of teachers teach less than 15 as well as more than 45 students in the study area.

Use of Teaching and Learning Resources

Teaching learning is a triangular process of teachers, students and teaching aids and materials. The use of authentic resources in the online classes is very beneficial for both teachers and the learners. The teacher should make their teaching interesting and ensure students' active participation of all students. For this purpose, the teacher should make the classroom activities live with various authentic materials. The teacher can use authentic materials from different sources.

The teacher (T1) said that he never use materials rather delivers the classes orally on the basis of the prescribed textbook. Another teacher (T5) said that he used some materials for teaching in the online classroom. He used flash cards like word and sentence cards and displayed them to his students and told them to copy on their exercise book. The teacher (T3) reported for not using any of the teaching and learning materials in the classroom. However, the teacher (T1) said that he used some materials such as flannel board, charts, cut-out pictures for teaching students in the

online classroom. The teacher (T5) said that she used teaching materials like laptop, manuals, prospectus, flannel board, charts, graphs and newspaper cutouts with a prepared lesson plan for teaching students online.

Another teacher (T2) said that she used materials such as laptop, dialogue cards, pictures and word and sentence cards for teaching students in the online classes. Similarly, the teacher (T3) reported that he often uses teaching aids and materials in his classes. Finally, the teacher (T1) said that he sometimes used prepared teaching aids and materials in the classroom. Out of 20 teachers, only six teachers used teaching learning materials to motivate the students. It indicates that most of the teachers do not use teaching aids and materials while teaching students in online classes. They use the traditional lecture method and present their lesson orally with the help of prescribed textbooks.

Use of Technology in Virtual Classroom

The use of technological devices such as television, computer, tape recorders, video recorders, OHP has been incorporated as a tool for teaching students online. However, teaching has been more challenging because of the innovation of science and technology after the advent of computer-assisted teaching and learning. It is even more useful during pandemic situation. The influence of technology has brought innovation in teaching-learning. However, the selection and use of such technology in online class depends on different factors such as class size, classroom management, electronic literacy of the teachers and students, subject area, availability of ICT tools, electricity and so on. All of the teachers responded that they had to use technology available to them. The use of technology has been presented in the sample below.

Table 5

Technology Used in the Virtual Classes

Technology	No. of Teachers	Percent
Laptop	10	50
Desktop Computer	3	15
Tablet	2	10
Smartphone	3	15
Other accessory devices	2	10
Total	20	100

The analysis presents the use of technology during online classes. Table 5 shows that 50 percent of the teachers used personal laptops, 15 percent of them either used desktop computer or smart phones, and 10 percent each of them used either tablet or other accessories to teach the students in the online class. It indicates that the teachers have limited excess to technology in public schools.

Table 6

Use of Virtual Classes for Time Management

Yes	NO			
Responses	No. of Teachers	Percent	No. of	Percent
Time saving in collecting teaching materials	20	100	---	---
Finishing the course book within time	18	90	2	10
Increasing students' time in active participation	20	100	---	---
Minimizing time to write on the board	20	100	---	---
No need to copy the content	20	100	---	---

The analysis reveals that out of 20 teachers, all responded that use of virtual classes saves time while collecting the teaching materials and no one gave negative responses to it. Similarly, the use of virtual classes can help to finish the course book with in time among the respondents 90 percent teachers gave positive and 10 percent provided negative responses. Likewise, virtual classes increase students' time in active participation, all the teachers were positive to this effect. Regarding the statement, the virtual classes minimize time to write on the board, all the teachers were positive and all of them agreed that there is no need to copy the content in virtual classes.

Regarding the use of virtual classes for time management, the teachers responded that they were able to manage classroom time effectively. The teacher (T2)

said that it was more effective for the teachers to collect the teaching materials for effective time management in classroom. From the above analysis it can be inferred that virtual classes had been more effective for managing the time in classroom teaching. They need not to use white board and these classes give students time for their reading. Moreover, the teachers were able to present vivid materials and content in short period of time. So, the virtual classes helped the teachers to finish the course book within the given time. Motivation is one of the most important factors in teaching learning through virtual classes. It influences students' success or failure in learning.

Table 7

Motivation on Virtual Classes

Statements	Yes	%	No	%
Motivate students for participating in classroom activities.	14	70	6	30
Motivate for developing language skills.	12	60	8	40
Learning and solving the task collaboratively.	10	50	10	50
Virtual classes are waste time and money.	---	---	20	100
Encourage students for self-study.	20	100	---	---

The analyzed information shows that out of 20 teachers, 70 percent positively and 30 percent negatively responded that virtual classes motivate students for participating in classroom activities. Similarly, 60 percent teachers were positive and 40 percent of them were negative towards the effectiveness of virtual classes that motivate students for developing language skills. Regarding the effectiveness of virtual classes, half of the teachers agreed upon and remaining half of them disagreed that virtual classes motivate the students for learning and solving the task collaboratively. Finally, all of the teachers negatively and all of them positively responded to the effectiveness of

virtual classes that virtual classes are waste of time and money; and encourage students for self-study respectively.

The teachers were also asked how the virtual classes facilitate to increase students' motivation in learning. Regarding this question, the teacher (T5) said that the students get the opportunity of learning and seeing in and out of classroom, they don't need to copy whole content line by line. They have opportunity to listen, record, looking at the videos, pictures, map, and graphs so it increases students' motivation toward the language learning. Another teacher (T1) said that the virtual classes provide a good opportunity to the students for searching required information independently. Similarly, the teacher (T9) said that students can get various information through google search, various apps and YouTube, etc. From the responses given by the teachers it can be concluded that virtual classes provide an opportunity to the students for audio and visual information with support of videos, pictures, texts, maps, graphics, etc.

Table 8

Challenges Faced by Teacher while Using Technology in Virtual Class

Activities	Not a Challenge	Minor Challenge	Major Challenge
Not enough and limited hardware	---	4 (20%)	16 (80%)
Availability of computer software	5 (25%)	6 (30%)	9 (45%)
Lack of time in school schedule for project involving in technology	1 (5%)	1 (5%)	18 (90%)
Not enough teachers training opportunity for technical knowledge	---	---	20 (100%)
Lack of knowledge about way to integrate technology to enhance pedagogy	1 (5%)	2 (10%)	17 (85%)
The integration of technology is not a school priority	---	5 (25%)	15 (75%)
Difficult to attend training physically during lockdown	1 (5%)	7 (35%)	12 (60%)
Students do not have access to the necessary technology at home	---	4 (20%)	16 (80%)

Integrating and using technical tools in online class	2 (10%)	8 (40%)	10 (50%)

The analysis shows that all the teachers faced major challenges as the teachers are not getting enough training opportunity for technical knowledge whereas integration and using technical tools in online class and availability of computer software were not major challenges as compared to other activities mentioned in the table.

Discussion

The findings of the study reveal that virtual classes have significant advantages in terms of time management for teachers and students. Out of twenty teachers surveyed, all agreed that virtual classes save time in collecting teaching materials, and no negative responses were recorded. This result aligns with previous studies that highlight how virtual platforms streamline access to educational resources (Siddique et al., 2024). Teachers emphasized that virtual classes enabled them to prepare and deliver lessons more efficiently, avoiding the time-consuming processes of traditional classroom setups. One critical aspect of time management in virtual classes is their ability to ensure timely completion of course materials. Result shows that nearly all teachers agreed that virtual classes help finish the course book within the allocated time, while only one-tenth of them expressed reservations. This finding supports the argument by Ulanday et al. (2021) who emphasized that technology-assisted teaching allows educators to meet curriculum requirements within stricter time frame. Teachers in the study highlighted that virtual classes reduce the need for traditional board writing and copying content, giving both teachers and students more time to focus on engaging with the material. Virtual classes were also reported to increase students' active participation. All teachers responded positively to the idea that these classes create more opportunities for interaction and engagement. This finding resonates with earlier research, which shows that digital tools in education enhance student involvement through multimedia and interactive content (Butola, 2021).

Teachers observed that virtual classes provided a platform for presenting vivid materials in a short amount of time, thereby encouraging students to remain attentive and actively involved. In addition to time management, the motivational aspect of virtual classes emerged as a key theme. Motivation plays a pivotal role in determining

the success of teaching and learning processes (Aithal & Aithal, 2023). In this study, nearly one fourth percent of teachers believed that virtual classes positively motivate students to participate in classroom activities, while one-third disagreed. Similarly, more than fifty percent of teachers found virtual classes effective in motivating students to develop language skills, whereas less than forty percent expressed concerns about their effectiveness. These mixed responses suggest that while virtual classes offer certain motivational benefits, they may not equally benefit all students. Factors such as access to technology and individual learning preferences could influence these outcomes. But in contrary, Acharya et al. (2023) researched that students engagement in the school gardens promote better learning.

The role of virtual classes in fostering collaborative learning and problem-solving skills yielded divided opinions among the teachers. Half of the respondents agreed that virtual classes motivate students to work collaboratively, while the other half disagreed. This split aligns with research by Rehan (2023), who argued that while virtual platforms have the potential to promote collaboration, their effectiveness often depends on the design and facilitation of the learning environment. Teachers in this study noted that virtual classes offer tools for collaborative tasks but acknowledged the challenges of maintaining student focus and interaction in a virtual setting. Interestingly, all teachers disagreed with the notion that virtual classes are a waste of time and money, emphasizing instead their value in encouraging self-study. This unanimous response aligns with the findings of Alam (2022), who argued that virtual learning environments empower students to take ownership of their learning by providing access to diverse resources. Teachers highlighted that students can access videos, pictures, maps, and graphs, which enhance their understanding of complex concepts and motivate them to learn independently.

Teachers' qualitative responses further illustrate the motivational benefits of virtual classes. For instance, Teacher T5 highlighted that virtual classes expose students to a broader learning environment beyond the traditional classroom. By providing access to multimedia content such as videos and graphs, these classes increase students' interest and motivation in language learning. n the same way, the teacher remarked that virtual classes encourage students to learn information by themselves, thereby developing critical thinking and research skills. This observation is in agreement with the constructivist learning approach, which stresses the importance of self-directed exploration and active engagement in knowledge (Al

Mamun et al., 2022). Another teacher supported the same view by indicating that virtual platforms afford students access to a plethora of resources using Google, educational apps, and YouTube. These tools provide diverse opportunities for audio-visual learning, which, in return, aids in enhancing better understanding and retention (van Woezik et al., 2021). The availability of multimedia resources not only helps in academic learning but also nurtures the different learning styles, which in turn tends to create inclusivity and effectiveness of the learning process.

Another important finding is that virtual classes minimize the need for repetitive tasks, such as copying content from the board. All teachers agreed that this feature of virtual classes allows students to spend more time reading and engaging with the material. This is in line with the work of Zhu et al. (2024), who proved that e-learning minimizes redundant activities, making the pupils competent in higher levels of learning. Without the necessity of manual copy, online classes give more time for students to discuss, ask questions, enhance the subject matter they are studying. Even though these pros, the study also pointed out drawbacks of virtual classes in motivating students. While a significant majority of teachers viewed virtual classes as effective in certain areas, the relatively high percentage of negative responses one-third percent for general motivation and forty percent for language skill development indicates room for improvement. This finding suggests that virtual classes may not fully replace traditional methods for some students, particularly those who thrive in face-to-face learning environments. Research by Lowenthal and Trespalacios (2022) supports this notion, noting that virtual learning environments can sometimes lack the personal connection and immediacy of traditional classrooms, which are essential for building motivation.

Findings of this study underscore the dual benefits of virtual classes in enhancing time management and student motivation. Teachers reported that these classes allow for efficient use of classroom time by providing quick access to teaching materials, reducing manual tasks, and enabling the timely completion of course content. Additionally, virtual classes offer motivational benefits by exposing students to diverse multimedia resources and encouraging independent learning. Still, opinions are mixed as to their effectiveness in certain places, which means that virtual teaching methods have to be implemented with caution and perfected all along. By pushing forward through these challenges, teachers can bring out the full potential of virtual

classes to make them the best ways to interact on the web and to be a safer and more inclusive learning environment.

Reference

Acharya, B. N., & Rana, K. (2024). How students and teachers voyaged from physical classroom to Emergency Remote Teaching in COVID-19 crisis: A case of Nepal. *E-Learning and Digital Media*, *21*(2), 125-140.

Acharya, K. P., Acharya, M., & Magar, K. B. S. (2023). Gardening at school for new good life: Entrepreneurship for sustainable education in the public schools in Nepal. *The Qualitative Report*, *28*(6), 1817-1834.

Adeniran, A. O., & Tayo-Ladega, O. (2024). Critical Analysis of Phenomenological Research Design in a Qualitative Research Method. *Management analytics and social insights*, *1*(2), 186-196.

Aithal, P. S., & Aithal, S. (2023). Stakeholders' Analysis of the Effect of Ubiquitous Education Technologies on Higher Education. *International Journal of Applied Engineering and Management Letters (IJAEML)*, *7*(2), 102-133.

Al Mamun, M. A., Lawrie, G., & Wright, T. (2022). Exploration of learner-content interactions and learning approaches: The role of guided inquiry in the self-directed online environments. *Computers & Education*, *178*, 104398.

Alam, A. (2022). Platform utilising blockchain technology for eLearning and online education for open sharing of academic proficiency and progress records. In *Smart data intelligence: Proceedings of ICSMDI 2022* (pp. 307-320). Singapore: Springer Nature Singapore.

Ali, S., & Pasha, S. A. (2024). Examining parents' awareness about children's accidental exposure to online indecent content: a micro-level qualitative study in Rawalpindi City. *Pakistan Journal of Psychological Research*, *39*(2), 371-393.

Brown, C. L., Peltier, C., Lee, D. Y., Webster, F. R., & Al Shabibi, A. (2024). A systematic review of single case research design graph construction in counseling. *Measurement and Evaluation in Counseling and Development*, *57*(1), 72-88.

Butola, L. K. (2021). E-learning-a new trend of learning in 21st century during COVID-19 pandemic. *Indian Journal of Forensic Medicine & Toxicology*, *15*(1), 422-426.

Gautam, T. R., & Acharya, K. P. (2023). Science Learning Strategies at Secondary Level Schools in Nepal. *Pragyaratna प्रज्ञारत्न*, *5*(1), 138-151.

Joshi, B. M., Acharya, U., & Khatiwada, S. P. (2024). Policy versus reality: Challenges of implementing ICT in higher education in Nepal. *Pragyaratna प्रज्ञारत्न*, *6*(2), 226-234.

Lamichhane, Y. R. (2024). A silver lining or digital divide? Systematic review of literature on online learning during Covid-19 in Nepal. *E-Learning and Digital Media*, *21*(4), 367-386.

Lowenthal, P. R., & Trespalacios, J. (2022). Classroom Community and Time: Comparing Students' Perceptions of Classroom Community in Traditional vs. Accelerated Online Courses. *Online Learning*, *26*(4), 59-77.

Lunn, P. D., Timmons, S., Robertson, D. A., Julienne, H., Lavin, C., Barjaková, M., ... & Papadopoulos, A. (2024). Behavioural evidence to inform the COVID-19 pandemic response: Ireland's Social Activity Measure (SAM). *Behavioural Public Policy*, 1-15.

Mpolomoka, D. L., Mwaka, P., & Mandyata, J. (2024). Secondary School Learners' Experiences During COVID-19 in Africa and Beyond: A Systematic Review. *Challenges and Transitions in Education in Times of Crisis*, 115-134.

Nikolinakou, A., Phua, J., & Kwon, E. S. (2024). What drives addiction on social media sites? The relationships between psychological well-being states, social media addiction, brand addiction and impulse buying on social media. *Computers in Human Behavior*, *153*, 108086.

Rehan, H. (2023). Shaping the Future of Education with Cloud and AI Technologies: Enhancing Personalized Learning and Securing Data Integrity in the Evolving EdTech Landscape. *Australian Journal of Machine Learning Research & Applications*, *3*(1), 359-395.

Sapkota, J. B., Neupane, P., & Iijima, M. (2024). The COVID-19 Pandemic and Education in Nepal and Japan: A Comparison between a Developing and a Developed Country. *The International Journal of Interdisciplinary Educational Studies*, *19*(2), 161.

Siddique, I. M., Arde, R. A., & Siddique, A. A. (2024). The Future of Distance Learning: Streamlined Labs in Virtual Education. *Journal of IoT and Machine Learning, 1*(1), 30-37.

Ulanday, M. L., Centeno, Z. J., Bayla, M. C., & Callanta, J. (2021). Flexible learning adaptabilities in the new normal: E-learning resources, digital meeting platforms, online learning systems and learning engagement. *Asian Journal of Distance Education, 16*(2).

van Woezik, T. E., Koksma, J. J. J., Reuzel, R. P., Jaarsma, D. C., & van der Wilt, G. J. (2021). There is more than 'I'in self-directed learning: an exploration of self-directed learning in teams of undergraduate students. *Medical Teacher, 43*(5), 590-598.

Zhu, M., Berri, S., Koda, R., & Wu, Y. J. (2024). Exploring students' self-directed learning strategies and satisfaction in online learning. *Education and Information Technologies, 29*(3), 2787-2803.