

Effective Integration of Digital Games in Learning: A Qualitative Study In Nepal During Covid-19 Pandemic

Nirmala Sharma¹, Prof.(Dr.) Sandeep Kautish²

¹PG Scholar, Lord Buddha Education Foundation, Kathmandu, Nepal

²Director(Academics), Lord Buddha Education Foundation, Kathmandu, Nepal

Abstract

The main purpose of this research is to investigate the integration of digital games into the educational sector of Nepal during the COVID-19 scenario to bring positive effects on the learning attitudes of the students. Game-inspired learning awakens students' curiosity, competitiveness and creativity that enable them to construct concepts. This paper reflects on the ways in which the effective integration of digital gaming technology can be implemented into the education system of Nepal that would result in effective, interactive, engaging and motivational learning activities amidst the COVID-2019 pandemic. This study shows that adoption of digital games in educational activities may result in several positive changes with innovative ideas. Digital Games, with their attractive features of interactive online environments would help in effective learning during the online classes amidst the COVID-19 pandemic in the country. This study involves mixed-methods approach in which qualitative information was collected with exploratory methods of literature reviews and quantitative data was collected from students and teachers through online questionnaires. The results of the study show that students had a positive perception towards digital games and were willing to use this learning system. As COVID-19 continued to spread, digital game-based learning reflects to be an effective tool for combating the pandemic. In the context of Nepal, lack of enough IT awareness among the students and teachers, lack of technical resources, network connectivity and internet bandwidths may be the challenges and limitations for integration of Digital Game-based activities in online education. From pedagogical perspective, including digital games into educational processes can help motivate students and keep them engaged during classes ultimately enhancement in learning process.

Key words: *Digital Games, Gamification, Motivation, Engagement, Positive Effect, Technology.*

1. Introduction

Global pandemic of COVID-19 has introduced great transformations in the educational sectors with various innovative and technical skills bringing a revolutionary change in the process of learning in the context of Nepal. During this pandemic, these days' modern students have constantly handled the digital information or data that gets influenced into some of the modern digital era significantly (Subedi, 2020) Education system has relatively used the methods for learning conventional; nowadays students are getting more attracted towards the interactive, engaging, interesting and motivating digital game based learning experience which is full of fun. In today's condition, due to this COVID-19 digital gaming has taken a serious platform on the one hand, or commercial gaming with educational guidance that provides some of the high positive influence on the lessons in the classroom, after school for care or other activities (Barata, 2017)

Digital games that must be integrated into educational sectors and optimized for the formation of strong beliefs and the optimal utilization of learning habits will assist students in demonstrating persistence, risk-taking skills, and drawing attention to details to improve problem-solving skills. Basic skills and behaviors will be nurtured in schools in education through this type of basic skills and behaviors (Dawadi, 2020). With integration of digital games, it will be an easier to conduct various learning activities in the online classes in very short term of time. Gamification model can be utilized for

advancement of brain activity, retention of memory knowledge as well as to increase motivation and interest in subjects. They are also used as a tool that provide feedback, may encourage interaction between learners and educators (Laudari, 2021).

Digital games that can be integrated into educational sectors and optimized for the formation of interactive learning process that results in positive changes and cultivation of innovative ideas and will assist students in skills like persistence, risk-taking, seeking attention and problem-solving skills. Basic skills and behaviors will be nurtured in schools in education.

1.1. Problem Statement

The global pandemic of COVID-9 erupted in the entire world which raised to the implementation of various preventive measures like lockdown and social separation in Nepal. These measures created a negative impact on educational activities across the country. The Government of Nepal and the Ministry of Education have implemented many strategic measures to continue the educational activities through various media services and channels such as radio programs, television channels, and online classes using mobile phones and digital gadgets.

Due to various challenging factors in the country like limitations of digital resources, limitations of IT experience and sufficient training for teachers, lack of technology awareness in many students, technology adoption and network connectivity issues due to a lack of internet service providers in the country's outlying areas, the education ministry's programs and services did not prove to be very effective. It was extremely difficult to elicit student participation, keep them involved during online sessions, and motivate them to learn, analyze, and evaluate. Technical concerns, device issues, connectivity issues, and problems with technology adoption were all used as excuses by both teachers and students.

Since incorporating digital games as an educational tool can lead to positive learning outcomes based on psychological features, it can also lead to positive behavioral changes in students' attitudes during pandemic conditions in Nepal. As a result, the integration of digital games in educational settings might be one of the best alternatives for addressing the stated challenges for continuation of educational activities amidst the COVID -19 pandemic scenario in Nepal by keeping in mind the critical factors that includes technology adoption, connectivity, technical resources, and IT experience.

Moreover, the absence of research papers on digital games for learning has a significant research gap as they have not been addressed in any of previous research papers in Nepal especially during COVID-19 scenario where we can see wide utilization of digital gaming activities in learning process. This encourages the researcher to solve these problems associated in digital learning in COVID 19 scenario and highlight the importance in integrating digital learning during COVID-19 scenario.

1.2. Objectives of the research

- To study the positive effect of integration of digital games in studies for gaining student's involvement and engagement due to its creative and interactive nature.
- To evaluate the influences of technology, device availability and connectivity to integrate digital games in learning activities in the context of Nepal during the pandemic.
- To determine the impacts of digital game-based learning activities on the psychological well-being of students amidst the pandemic situation to develop a conceptual framework that will aid for the effective integration of digital games into educational sectors.

1.3. Research questions

- Do integrating digital games in educational activities have positive influence on student's involvement in studies and can retain them engaged'?
- Does accessibility of technology, digital devices and the availability of connectivity have

relationship with the effectiveness of digital games in learning activities in Nepal'?

- Is there any conceptual framework that helps to effectively integrate various digital game-based learning activities in the education system of Nepal amidst the COVID-19 global pandemic?

1.4. Scope of the research

The main scope of this study can be best described by the following points:

- To create and develop creativity in learning during the pandemic periods.
- To provide better opportunities for deeper ideas, reflections and innovations.
- To create enhanced communications and collaboration environment.
- Helps to improve the problem-solving skills, decisions making skills and critical thinking.
- Initial growth in digital literacy and Intellectual growth.
- To demonstrate the benefits and issues related to various factors impacting the integration of digital game-based activities in the process of studying and teaching.

1.5. Significance of the research

This study mainly focuses on the effectiveness of integration of Digital Games (DGs) and gamification of Learning activities in the education system of Nepal. This research work may prove supportive to the people related to schools and educational institutions including the school managements, students, teachers, the government officials in educational sectors. This may be useful to the entire educational system of Nepal to analyze the challenges in continuation of learning activities amidst the pandemic of COVID-19. It provides suggestions for effective integration of DGs in learning activities to make studies more interactive and motivational. This also puts light on student's involvement and engagement during the online classes by utilizing digital technologies, resources and connectivity.

2. LITERATURE REVIEW

During the COVID-19 pandemic scenario, most of the nations limited the numbers of people from gathering in public places. Such measures lead to the cause of disrupted school, university and other institutional functions. This collection of online studying resources aimed at students, teachers and parents aims to help governments and other educator's research and assess different ways of continuing education during the COVID-19 pandemic (Bubb & Jones, 2020).

Digital games for educational purpose are referred to simply as "electronic games" and are designed for the purpose of entertainment and education using interactive and multimedia technologies (Zhao, 2020). Furthermore, to participate in a digital gaming activity infers that one or more players can be engaged in gameplay at any given time with exposure to essential gaming fundamentals like game goals, rules and regulations, assets, gameplay spaces, gaming mechanics, rewards and scoring systems.

2.1 Game Based Learning and Concept of Games

Different studies on game-based learning have provided different definitions of games in education. Game-based learning doesn't literally mean playing games. It is a system for teaching people governed by rules and quantified outcomes (Maksom & Zakaria, 2019). A game is a constructed activity that uses gamification (the application of game mechanics) to create an experience that is not necessarily a game. Furthermore, technological devices and software apps prove supportive to the concept of gamification, which presents the idea of integrating digital games for various activities in learning. Likewise, game-inspired learning awakens students' curiosity, competitiveness and creativity that enable them to construct concepts. Game-based learning (GBL) has already been shown to be effective in mathematics, which could also be applied to English and other subjects. The secret ingredient is how the instructors use creative teaching methods to design games that fit the level and interests their students. Besides the risks involved in face-to-face instruction, the traditional way of teaching is not as effective at

motivating students to learn (Kostolny, 2017). Furthermore, game-inspired education is already practiced in universities that stimulate the teaching and learning process. It allows for state-of-the-art teaching methods that help the students enrich the learning experience. To use games as an educational tool however, it is important to develop models to create high-quality games. They can ensure educational value, good game play, and appropriate content for the target students. Schools should train their teachers and future teachers in game design and facilitation techniques, by doing so, students can develop assessments and design their own strategies based on game content.

2.2 Digital Games (DGs) and Students Involvement

There is some previous research regarding the effective practice of online tools and digital games in educational sectors, but research studies using game-based strategy during the COVID19 pandemic are very less and is limited. A variety of informational sources and publications that describe research projects, protocols, or expert opinion concerning the implementation and use of digital tools in educational activities; however, there aren't any publications that address the specific topic of this question. Due to the sudden development of COVID 19, researchers have been unable to conduct empirical studies that evaluate the effectiveness of gamified interventions. Most educators have been trying to move their classes from an in-person classroom environment to online lectures via video conferencing tools, but they haven't been successful at doing so yet. In the educational sector, DGs are a sort of game where a software program has features of some computer-based games that are used for educational experiences with the purpose of accomplishing for certain learning objectives. Some of the basic characteristics or component/s of a basic digital game involve the players in the game, rules, goals, challenges, game environment, interactions and competitiveness (Barata, 2017)

Online research was performed for terms related to Effective integration of DGs (Digital Games) in Learning during COVID-19. Only investigation articles, conferences papers and research documents relating a gamified learning experience have been included. Studies involving gamified practices were only considered in this review. This paper reviewed studies that corresponded to following subjective areas of academics: Biology, Chemistry, IT, Business Studies, Computing, and Medicine.

Fontana developed an activity based on ChemDraw, a molecular visualization program to help students learn to use this tool for learning Organic Chemistry (Fontana, 2020). The students engaged with their peers and learned from them. Advanced rounds of the competition involved students competing to correctly draw increasingly complex molecular structures. Playing ChemDraw helped students feel better about themselves and their schoolwork with enthusiasm (He, 2022). Researchers studied the effect of gamified versus non-gamified learning methods for an ERP course to motivate students to engage and participate when they were working from home. Two different versions of an e-Learning Platform were developed: one with game elements and another one without them. Furthermore, in their research, the authors considered students' personality traits (extraversion, neuroticism, conscientiousness, agreeableness, and imagination/openness) (Rasti-Behbahani, 2021). Research persons have addressed the concept of Emergency Remote Teaching, (ERT) as a short-term shift of teaching involving full-remote teaching solutions in crisis situations (Lelli, 2020). The authors described a method for integration of digital games in two computer science courses by using Classcraft, an educational platform provided by Google for free. This platform allows teachers to assign tasks to their students and enable them to use both asynchronous (forums, videos, etc.) and synchronous tools (chat rooms, etc.).

Biology teaching is particularly challenging if the student has no access to laboratory facilities for observations and restrictions of lockdown. Researchers used an online tool called Quovidio to help them create a treasure hunt game for Biology students for teaching and learning the biology vocabulary and for surrounding observations (Lobet, 2021)

3 Research Methodology

3.1 Research Design

This research design is used to do preliminary investigation into parts of the research study that are relatively unknown. With indeterminate problem statements, this form of exploratory research method is frequently versatile. This exploratory research is directed by a developing theoretical framework rather than a well-established theory. This approach necessitates a modest sample size. Repeated interviews and observations of the same occurrences or the people engaged in the sampling are required for the most effective exploratory design.

3.1.1 Data Collection

Research is based on primary data sources such as online research, and participants also use secondary data sources such as previous research, literature reviews, articles and journals.

3.1.2 Data Collection Method

Due to the prevailing COVID-19 global pandemic situations in Nepal, the data collection is conducted by adopting Online survey methods as well as distribution of printed survey questionnaires whereas the interviews taken would be online interview with the participants as face-to-face interview methods could not be applied because of COVID-19 pandemic scenario.

3.1.3 Research Sample Size

The sample size is the appropriate number of participants selected to provide observations of the survey to draw conclusions. Sample sizes with less than 30 participants are considered small samples, and n with 30 or more participants are considered large samples. The sample size must be determined prior to data collection. The sample size for this research is 321 student samples and 52 teacher samples with a total of 373 samples.

3.2 Online Questionnaire

As Internet access increases around the world, the use of online surveys for data collection is increasing. This approach is useful for both quantitative and qualitative data collection processes. Online survey methods can provide access to a dispersed population in different geographic areas. When designing an online survey, researchers should consider the simplicity, feasibility, neutrality, integrity, target audience selection, suitability, ethical issues, pilot tools, and research of user-friendly layouts and designs. There are several factors to consider, such as data management for success (Regmi, 2021) four factors that are included in the online questionnaires for demographic analysis are Likert type questions, single type question and open-ended questions.

4 Data Analysis

4.1 Mode of Analysis

In all the stages of research, data analysis stage is regarded as the most skilled work. It is the process of gathering raw data and converting it into useful information for the researcher to use in making decisions or drawing conclusions. This method is used to answer the research issues using statistical and logical methodologies. The researcher's knowledge and judgment are crucial in data analysis. The goal of this procedure is to find useful information, provide recommendations, and aid decision-making in the research study. (Abdul BasitZubair, 2020).

4.1.1 Online Questionnaires

Questionnaires has been used with Likert scale for analysis by the help of google forms to collect data between the respondents.

4.2 Demographical Analysis

Demographical analysis is used to determine the distribution of the sample population based on different demographical parameters as age, sex, marital status, nationality, education and income level of the respondents (Abdul BasitZubair, 2020).

4.2.1 Quantitative Data Analysis

Numeric data that can be quantified is referred to as quantitative data. Quantitative data analysis is a type of data analysis that employs statistical and mathematical models for measurement and analysis. This method of data processing is generally considered to be the most effective one for scientific research study. (Abdul BasitZubair, 2020)

4.1.1. Qualitative data Analysis

Data that cannot be measured but can only be observed is referred to as qualitative data. It's non-numeric information. The collection of qualitative data and their analysis in order to examine concepts, experiences, and opinions is referred to as qualitative data analysis. Observations, interviews, group discussions, case study analysis, and other methods can be used to collect qualitative data (Abdul BasitZubair, 2020). The statistical package SPSS is used to evaluate the data's normality, linear regression, statistical dependency, and reliability, as well as to interpret the study's findings. The data is analyzed using SPSS version 26.0 by sorting the values in ascending order on a Likert scale ranging from 1 to 5 points in upscale ratio and visualizing them in an SPSS spread sheet (ABU-BADER, 2011).

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 Demographical analysis in students' sample:

Effect of digital games in the students:

Do you think digital games have a positive or negative effect on your grades?

Among the 321 respondents, when asked about the effect of digital games while learning on their grades increment, reported positive effect with majority of 212 respondents, followed by negative effects with 69 respondents as shown in table above. 40 respondents were neutral as digital games consisted of both positive and negative feedbacks.

As demonstrated in the above more than 200 respondents with 66% (212 respondents) of total 321 respondents marked for positive effect of digital games, followed by 21.5% (69 respondents) referring negative impact of digital games in education. 12.5% (40 respondents) chose to be neutral with the effects as it consists of both positive and negative effects. 10.6% respondents preferred chess, 11.2% respondents preferred Sudoku and 12.5 % preferred other game- based learning approaches as shown in bar chart above.

5.2 Demographic analysis in teacher's sample:

Age based demographics for teachers:

In demographical analysis based on age amongst the collective 52 teachers as respondent's it was found majority of respondents fall under age group of 45 or above comprising 55.8% of total respondents with 29 respondents. The age based demographical diagram of teachers as respondents by age factor with majority of respondents falling under 45 years and above with 55.8% (29 respondents) in a total of 52 respondents. In a grand total of 52 respondents 43 males and 9 females teachers are included

Descriptive statistics:

Table 1: Descriptive analysis of Demographic questionnaires (for student)

		Statistics						
		What is your age?	What is your gender ?	What type of devices do you use to play digital games?	Do you think digital games have a positive or negative effect on your grades?	Do you think Digital game-based learning must be encouraged in our education system in Nepal?	Do you use digital games for learning in your online classes during the pandemic?	What type of educational digital games do you use for digital game-based learning in classes?
N	Valid	321	321	321	321	321	321	321
	Missing	0	0	0	0	0	0	0
Mean		1.9533	1.2928	1.8193	1.4642	1.2586	1.5483	2.2804
Std. Error of Mean		.06101	.02544	.05732	.03945	.02448	.04157	.07947
Std. Deviation		1.09302	.45577	1.02701	.70675	.43853	.74478	1.42387
Skewness		.930	.915	.978	1.196	1.108	.952	.977
Std. Error of Skewness		.136	.136	.136	.136	.136	.136	.136
Kurtosis		.176	.171	.124	.010	.177	.161	.199
Std. Error of Kurtosis		.271	.271	.271	.271	.271	.271	.271

The following observations were obtained in descriptive analysis:

- The first row describes the mean value in the findings of analysis of demographic variables used in the study where age, gender, devices, effects, encouragement and type of digital games have been studied for the integration of digital games in learning. The third row describes the standard deviation of demographic variables values from the mean value which is seen highest in type of digital games with 1.42 and lowest in effect of digital games with 0.44 approximately.
- Fourth and sixth column represents skewness and kurtosis values which as is positive represents symmetry and heaviness in the demographic variable.

Table 2: Descriptive statistics (for teachers)

		Statistics		
		What is your age? (teacher)	What is your gender? (teacher)	How many years of teaching experience do you have?
N	Valid	52	52	52
	Missing	0	0	0
Mean		1.7308	1.1731	1.9038
Std. Error of Mean		.13763	.05297	.12052
Std. Deviation		.99243	.38200	.86907
Skewness		1.201	1.780	1.564
Std. Error of Skewness		.330	.330	.330
Kurtosis		.314	1.214	.562
Std. Error of Kurtosis		.650	.650	.650

The following observations were obtained in descriptive analysis:

- The first row describes the mean value in the findings of analysis of demographic variables used in the study where age, gender, teaching experience have been studied for the integration of digital games in learning.
- The third row describes the standard deviation of demographic variables values from the mean value which is seen highest in age-based demographics with 0.99 and lowest in gender with 0.38 approximately.
- Fourth and six column represents skewness and kurtosis values which as is positive represents symmetry and heaviness in the demographic variable.
 - Table 3: Pearson correlation descriptive statistics (for student sample)

Descriptive Statistics			
	Mean	Std. Deviation	N
Effective integration of digital games in Learning in Nepal	2.1646	.90657	321
Student engagement	1.8456	.56220	321
IT awareness and influence	2.1583	.83314	321
Perceived motivation	2.0623	.74911	321
Perceived positive change	1.9964	.89854	321

The descriptive statistics of the variables used in the study of student sample shows following

outcomes:

- With a total respondent size of 321 students a mean value of 2.16 is obtained in the dependent variable, with standard deviation of 0.9 for effective integration of digital games in learning in Nepal.
- With a total respondent size of 321 students a mean value of 1.84 is obtained in the independent variable, with standard deviation of 0.56 for student engagement.
- With a total respondent size of 321 students a mean value of 2.15 is obtained in the independent variable, with standard deviation of 0.83 for IT awareness and influence.
- With a total respondent size of 321 students a mean value of 2.06 is obtained in the dependent variable, with standard deviation of 0.74 for perceived motivation.
- With a total respondent size of 321 students a mean value of 1.99 is obtained in the dependent variable, with standard deviation of 0.89 for perceived positive change.

		Effective integration of digital games in Learning in Nepal	Student engagement	IT awareness and influence	Perceived motivation	Perceived positive change
Effective integration of digital games in Learning in Nepal	Pearson Correlation	1	.157**	.110*	.255**	.591**
	Sig. (2-tailed)		.005	.049	.000	.000
	N	321	321	321	321	321
Student engagement	Pearson Correlation	.157**	1	.523**	.188**	.188**
	Sig. (2-tailed)	.005		.000	.001	.001
	N	321	321	321	321	321
IT awareness and influence	Pearson Correlation	.110*	.523**	1	.201**	.141**
	Sig. (2-tailed)	.049	.000		.000	.050
	N	321	321	321	321	321
Perceived motivation	Pearson Correlation	.255**	.188**	.201**	1	.209**
	Sig. (2-tailed)	.000	.001	.000		.000
	N	321	321	321	321	321
Perceived positive change	Pearson Correlation	.591**	.188**	.141**	.209**	1

Sig. (2-tailed)	.000	.001	.050	.000	
-----------------	------	------	------	------	--

N	321	321	321	321	321
---	-----	-----	-----	-----	-----

Table 4: Pearson correlation (for student sample) Correlations

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Interpretation of Pearson correlation (for teacher sample):

The following interpretation can be made based under the above table 4:

- In the above sample the Pearson coefficient between the dependent variable ‘effective integration of digital games in Nepal’ and independent variable ‘teacher engagement’ is found to be 0.157 with p value significance of 0.005 i.e. less than 0.05 hence the significance is two tailed showing a positive value between the variables implementing positive correlation between these variables. This sample consists of 321 respondents.
- In the above sample the Pearson coefficient between the dependent variable ‘effective integration of digital games in Nepal’ and independent variable ‘IT awareness and influence’ is found to be 0.110 with p value significance of 0.049 i.e. less than 0.05 hence the significance is two tailed showing a positive value between the variables implementing positive correlation between these variables. This sample consists of 321 respondents.
- In the above sample the Pearson coefficient between the dependent variable ‘effective integration of digital games in Nepal’ and independent variable ‘perceived motivation’ is found to be 0.255 with p value significance of 0.001 i.e. less than 0.05 hence the significance is two tailed showing a positive value between the variables implementing positive correlation between these variables. This sample consists of 52 respondents.
- In the above sample the Pearson coefficient between the dependent variable ‘effective integration of digital games in Nepal’ and independent variable ‘perceived positive change’ is found to be 0.591 with p value significance of approximately 0.000 i.e. less than 0.05 hence the significance is two tailed showing a positive value between the variables implementing positive correlation between these variables. This sample consists of 321 respondents.

REFERENCES

- Bagshaw, E. (2016). The reality is that technology is doing more harm than good in our schools’ says education chief. Sydney Morning Herald
- Bediou, B., Adams, D. M., Mayer, R. E., Tipton, E., Green, C. S., & Bavelier, D. (2018). Meta-analysis of action video game impact on perceptual, attentional, and cognitive skills. *Psychological bulletin*, 144(1), 77.
- Bubb, S., & Jones, M. A. (2020). Learning from the COVID-19 home-schooling experience: Listening to pupils, parents/carers and teachers. *Improving schools*, 23(3), 209-222.
- Regmi, P. R., van Teijlingen, E. R., Adhikari, S. D., van Teijlingen, A., Aryal, N., & Panday, S. (2021). Publishing, identifiers & metrics: Playing the numbers game. *Health Prospect*, 20(1), 18-21.
- Cardoso, T., Sousa, J., & Barata, J. (2017). Digital Games’ Development Model. EAI Endorsed
- Abdul BasitAbdul BasitZubair HassanZubair HassanNisa OmarNisa OmarShow all 5 authorsNoor

ZamanNoor Zaman, "Gamification: A Tool To Enhance Employee Engagement And Performance" July 2021 Turkish Online Journal of Qualitative Inquiry 12(5):3251-3269 Lab: Sharmila Sethu's Lab

Lobet, G., Descamps, C., Leveau, L., Guillet, A., & Rees, J. F. (2021). QuoVidi: An open- source web application for the organization of large-scale biological treasure hunts. *Ecology and evolution*, 11(8), 3516-3526.

Transactions on Game-Based Learning, 4(12), e2.

Carenys, J., & Moya, S. (2016). Digital game-based learning in accounting and business education. *Accounting Education*, 25(6), 598-651.

Chiarello, F. and Castellano, M. G. (2017), Board Games Creation as Motivating and Learning Tool for STEM, In: Pivec, M. and Gründler, J. (Eds), *Proceedings of the the 11th European Conference on Game-Based Learning ECGBL 2017*, Academic Conferences Publishing, 2017, p. 448-454

Fontana, M. T. (2020). Gamification of ChemDraw during the COVID-19 pandemic: investigating how a serious, educational-game tournament (molecule madness) impacts student wellness and organic chemistry skills while distance learning. *Journal of Chemical Education*, 97(9), 3358-3368.

Kostolny, J., & Bohacik, J. (2017, October). Digital games in education and their development. In *2017 15th International Conference on Emerging eLearning Technologies and Applications (ICETA)* (pp. 1-6). IEEE.

Laudari, S., Pradhan, S., & Lama, S. (2021). Remote Teaching in Nepalese Higher Education During COVID-19: Teachers' Perspectives. *Higher Learning Research Communications*, 11(2), 5.

Luce, C., & Kirnan, J. P. (2016). Using indirect vs. direct measures in the summative assessment of student learning in higher education. *Journal of the Scholarship of Teaching and Learning*, 16(4), 75-91.

Perini, S., Luglietti, R., Margoudi, M., Oliveira, M., & Taisch, M. (2018). Learning and motivational effects of digital game-based learning (DGBL) for manufacturing education– The Life Cycle Assessment (LCA) game. *Computers in Industry*, 102, 40-49.

Petri, G., & von Wangenheim, C. G. (2016). How to evaluate educational games: a systematic. *Journal of Universal Computer Science*, 22(7), 992-1021.

Qian, M., & Clark, K. R. (2016). Game-based Learning and 21st century skills: A review of recent research. *Computers in human behavior*, 63, 50-58.

Rehbein, F., Staudt, A., Hanslmaier, M., & Kliem, S. (2016). Video game playing in the general adult population of Germany: Can higher gaming time of males be explained by gender specific genre preferences?. *Computers in human behavior*, 55, 729-735.

Shrestha, S., Haque, S., Dawadi, S., & Giri, R. A. (2021). Preparations for and practices of online education during the Covid-19 pandemic: A study of Bangladesh and Nepal. *Education and information technologies*, 1-23.

Subedi, N. P. (2020). Corona Virus Diseases (COVID-19) and Online Class among Children in Pokhara. *Janapriya Journal of Interdisciplinary Studies*, 9(1), 88-99.

Zhao, Y. (2020). COVID-19 as a catalyst for educational change. *Prospects*, 49(1), 29-33.

He, S. (2022). Review of Digital games and language learning: Theory, development and implementation. *Language Learning & Technology*, 26(1), 1-4.

Rasti-Behbahani, A. (2021). Why Digital Games Can Be Advantageous in Vocabulary Learning. *Theory and Practice in Language Studies*, 11(2).

Petrolia, D. R., Interis, M. G., & Hwang, J. (2018). Single-choice, repeated-choice, and best-worst scaling elicitation formats: Do results differ and by how much? *Environmental and Resource Economics*, 69(2), 365-393.