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EXPLORING STUDENTS' PREFERENCES BETWEEN ONLINE CORRECTIVE FEEDBACK AND DIRECT CORRECTIVE FEEDBACK(FACE-TO-FACE) IN WRITING CLASS IN TERTIARY EDUCATION

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Abstract

Feedback is crucial to be provided in students' learning process especially in writing skill. Nevertheless, the method of providing feedback is valued differently by students. This study sought to explore the students' preferences at tertiary education between the online corrective feedback and direct corrective feedback (face-to-face) in writing class. The study used a qualitative research design which was participated in by 67 participants from a technical university. Data from an open-ended survey questionnaire on student's preferences of obtaining feedback were collected from the participants who were pursuing an English academic course at the tertiary level. The most preferred feedback strategy was direct corrective feedback (face-to-face) which facilitated the students to enhance their writing skills. Thus, the results indicated that direct corrective feedback (face-to-face) was crucial and effective to assist the students in their writing. The results of this study have important implications for tertiary level students and instructors. The students' expectations and preferences must be acknowledged to support them in language teaching and learning.

Keywords: Feedback, direct corrective feedback & online corrective feedback.

INTRODUCTION

Creating an effective English writing class is of paramount importance within the realm of English teaching and learning (Widyaningsih, 2018). The development of writing skills holds a central position within the broader spectrum of communication abilities (Graham, 2018). The attainment of proficiency in this domain hinges on educators providing appropriate guidance and instructions. Effective instructions are contingent upon the provision of meaningful feedback. Educators can facilitate their students' learning by offering various forms of constructive corrective feedback, including indirect, direct, unfocused, and focused criticism (Bitchener & Ferris, 2012). In accordance with Nawaz et al. (2023), the way an instructor cultivates the classroom environment for writing significantly impacts students' writing proficiency. As demonstrated by

Widyaningsih (2018), among numerous factors influencing the teaching and learning of writing, one key element is the feedback provided by instructors on students' written work. Feedback plays a pivotal role in the instruction and learning of writing, as emphasised by Hyland and Hyland (2006). This feedback can exert a potent influence on the learning process, particularly in the context of writing, as highlighted by Norcini (2010). For second language learners, feedback has consistently been acknowledged as a crucial component in the development of writing skills. Its significance extends beyond its potential for learning, encompassing its motivational impact on students, as articulated by Hyland and Hyland (2006).

In this study, we are concerned with two primary forms of corrective feedback: online corrective feedback and face-to-face corrective feedback. Online corrective feedback pertains to feedback provided through digital platforms, while face-to-face corrective feedback is delivered in person. Nezami (2012) demonstrated the advantages of online corrective feedback, particularly through methods like recasts and metalinguistic feedback, for language learners. Many second language (L2) writers have noted the positive influence of electronic feedback on their writing processes. L2 writers have indicated that receiving electronic feedback from multiple sources assists them in identifying the strengths and weaknesses in their writing. This exposure to various electronic feedback sources motivates students to reconsider and revise their written work (Tuzi, 2004). Additionally, it has been observed that students in computer-mediated writing classes make fewer mistakes compared to those in traditional classrooms (Tafazoli et al., 2014). These findings hold significant implications for the development of effective task-based email activities aimed at enhancing second language writing skills. Widyaningsih (2018) emphasises that when utilising online platforms to enhance second language writing instruction, it is imperative to design online writing tasks that are not only engaging but also meaningful and aligned with the objectives and content of the writing course. In the integration of email activities into second language writing instruction, educators should leverage the online communication channel provided by computer networks to stimulate interaction among students, promote communication, and encourage collaborative writing (Li, 2000).

ESL (English as a Second Language) learners have shown a favourable response to online corrective feedback in contrast to traditional pen-and-paper feedback. This is not surprising, given that modern students are highly drawn to digital devices like computers, smartphones, and tablets, all of which offer online connectivity. This technology allows them to access their written assignments anytime and anywhere, offering them the convenience of addressing comments and seeking clarification when needed. As noted by Li and Li (2012), students who appreciate corrective feedback tend to display strong motivation for learning, and their writing skills have shown improvement without the need for simplified vocabulary and sentence structure. According to Van Beuningen et al. (2012), both direct and indirect corrective feedback contribute to sustained linguistic accuracy in academic writing. Overall, research on the effectiveness of corrective feedback has yielded generally positive results (Lyster & Ranta, 2013). However, the question of whether corrective feedback truly enhances writing skills remains a

contentious issue. Ferris (2004), as cited in Guenette, 2007) has expressed doubts about the efficacy of error correction. Guenette (2007) points out that ESL instructors have been grappling with the dilemma of whether to correct grammar in their students' essays, given conflicting evidence regarding the effectiveness of this practice (Yoke et al., 2013).

LITERATURE REVIEW

Direct Corrective Feedback

Corrective feedback, according to Seiffedin and El-Sakka (2017), draws on Schmidt's (1990) noticing hypothesis, emphasising the role of grammar and conscious form attention in language acquisition. Schmidt (2001) asserts that learners' recognition of differences between their target language and interlanguage, termed "noticing," is fundamental, aligning with the significance of error correction like grammar correction or written corrective feedback in guiding learners' attention to language structure (Ji, 2015). In the context of writing classes, corrective feedback encompasses a range of strategies employed by instructors to address instances where students' written work deviates from the standard conventions of the target language (Nguyen & Pham, 2021). As Seiffedin and El-Sakka (2017) further assert, numerous researchers and theorists have identified two main types of corrective feedback: direct corrective feedback and indirect corrective feedback. Direct feedback, which is the focus of the current study, occurs when the teacher identifies and corrects specific errors in the students' writing. In contrast, indirect feedback is given when the teacher underlines errors and assigns them codes, such as ‘gr’ for grammatical errors or ‘sp’ for spelling errors, without offering the corresponding corrections (Ferris & Roberts, 2001). In the realm of conventional writing instruction, it is a common practice to provide corrective feedback during the writing process using pen and paper. This traditional approach has been shown to be more effective and meaningful compared to feedback that is given after the completion of the writing task (Ferris, 2003).

Online Corrective Feedback

The incorporation of digital technologies into educational methodologies has led to the growing significance of online platforms in providing electronic feedback to students in ESL/EFL writing classes (Lv et al., 2021; Seiffedin & El-Sakka, 2017). This concept of “online corrective feedback” represents a dynamic pedagogical approach that harnesses digital tools and platforms to offer students feedback within the digital environment. According to Nguyen and Pham (2021), based on their analysis of related past studies, online corrective feedback refers to the delivery of corrective feedback through computer-mediated platforms or text-based communication facilitated by the Internet. This mode of corrective feedback distinguishes itself from the traditional method of providing feedback using pen and paper in face-to-face educational settings. Considering the prevalence of electronically mediated instruction in higher education, instructors, especially those teaching writing, are increasingly using various online platforms such as electronic files, chat applications, wikis, and blogs to provide feedback (Elola & Oskoz, 2017; Gharehbagh et al. 2019; Hyland & Hyland, 2019). Furthermore,

past studies have shown that unlike traditional methods of feedback delivery, the use of 'online corrective feedback' entails seamless integration of digital interfaces, allowing students to receive real-time guidance, corrections, and suggestions (Deiniatur, 2021; Sarré et al., 2019; Yoke, 2023). To illustrate, Deiniatur (2021) and Yoke (2023) used the various features of Google Classroom, such as highlight, track changes, comment and online chatting, to provide feedback on students' essay writing during and outside of class time, while Sarré et al. (2019) using Moodle, provided feedback via automated computer-generated feedback and human tutors via annotated versions of students' Word documents. This innovative approach represents a paradigm shift in the development and refinement of writing skills within tertiary education, embracing technology to provide personalised assistance and promote autonomous learning (Delante, 2017).

Perceptions about OCF and DCF

Understanding how learners perceive and engage with both online and direct corrective feedback modes has become increasingly crucial as the educational landscape continues to evolve with technology integration. A significant amount of research has examined the role and impact of online corrective feedback in digital learning environments. Research into this practice has not only shed light on its effectiveness in improving ESL/EFL writing skills but also revealed its impact on students' motivation and attitudes. For example, Deiniatur (2021) examined the use of Google Classroom and found that students positively perceived it in essay writing classes, as they considered it helpful for improving their writing skills and preparing them for autonomous learning. This is mainly due to its implementation that followed a flipped classroom model, allowing students to receive guidance from their teacher and collaborate with peers at school, while also fostering self-directed learning at home. Similarly, Rozi, Arifin, and Susianti (2022) found that in digital learning through the use of Google Classroom, corrective feedback benefits students by improving writing skills, providing assignment guidance, identifying writing strengths and weaknesses, fostering academic essay habits, and enhancing grammar understanding. However, challenges, as identified in their study and echoed by researchers like Nguyen and Pham (2021), encompass issues such as difficulty in understanding general comments, long feedback durations, unequal distribution, limited communication with instructors, unclear feedback content, a lack of essay examples, and limited access to feedback information. Additionally, there have been differing opinions on whether online or offline corrective feedback offers a more effective approach or is more preferable among learners (Fu & Li, 2020).

These conflicting views are demonstrated in studies that have delved into the comparative analysis of online and traditional corrective feedback methods within educational settings. Chong (2019), for instance, investigated ESL learners' perceptions of the e-feedback provided via Google Docs and discovered that the learners preferred e-feedback to written comments on paper. In a similar vein, Iksan and Halim (2018), in their experimental study, compared the impact of traditional face-to-face written corrective feedback with electronic feedback via a wiki on students' anxiety levels in L2 writing. The results revealed that employing web-based tools like wikis for electronic feedback significantly reduced students'

anxiety levels in comparison to traditional correction methods. In contrast, using Edmodo as the online platform, the findings of Ferdian and Purnawan's (2020) study demonstrated that students preferred their teachers' use of face-to-face corrective feedback in learning English over online corrective feedback because it can increase learning effectiveness, learning accuracy, and learning experiences. Similarly, Cahyono and Imelda (2023) discovered that while students agreed with and had a positive attitude towards the use of Internet platforms, namely Instagram and Tumblr in the teaching of EFL writing, they stated their preference for face-to-face written corrective feedback over online written corrective feedback. Furthermore, while students generally prefer face-to-face corrective feedback, as demonstrated by Ferdian and Purnawan's (2020) study and Cahyono and Imelda's (2023) findings regarding EFL writing, Sarré et al. (2019) underscored the significance of learner preference in determining the effectiveness of various online corrective feedback approaches in L2 writing classes. They found that tailoring the feedback approach to meet the individual needs and preferences of students can greatly enhance its effectiveness. Likewise, Nguyen and Pham's (2021) study on three online corrective feedback forms supports the notion that learners' preference for personalised text-based feedback via Google Docs significantly influences the effectiveness of feedback methods, with this approach being the most favoured among participants. In light of these findings, it is evident that incorporating online and direct corrective feedback effectively into L2 writing instruction necessitates a careful consideration of students' preferences and attitudes.

Research Questions

1. How do students perceive online and direct corrective feedback?
2. What type of feedback do students prefer in writing classrooms?

METHODOLOGY

This study employed a qualitative methodology and explored the students' perceptions and preferences about direct corrective feedback and online corrective feedback in enhancing their writing abilities. The current study had collected data through an open-ended survey consisting of eight questions about students' preferences and perceptions about online and direct corrective feedback. The data was analysed manually by the researchers. Thematic analysis was used to analyse the data by the researchers.

Sampling Size

The participants for this study were selected from two academic writing classes by using a convenient sampling. All participants were exposed to the online corrective feedback and direct corrective feedback (face-to-face) within 14 weeks in the semester. The participants consisted of mixed races; Malay, Chinese and Indian students. Their age is in the range of 20 to 22 years old.

MAIN RESULTS

47 out of 67 participants preferred direct corrective feedback (face-to-face) because it is easier to understand by students and they can ask the questions right away to the lecturers. One participant responded that it is easier to interpret the information through body language. Meanwhile, one respondent clarified that by applying direct corrective feedback (face-to-face), if there were any misunderstandings or mistakes, they could directly correct them. On the other hand, one of the participants stated that he preferred online corrective feedback because it is widely used nowadays and found it easy to access. In addition, one of them clarified that they could respond to online corrective feedback anytime, and could do it privately without others knowing their mistakes. Moreover, another respondent stated that online corrective feedback could be analysed by the system so it will be more convenient and time saving for the survey. Next, one of the respondents clarified that online corrective feedback gave freedom to both sides to talk and argue. Lastly, there was only one participant that had neutral opinion about both, direct corrective feedback and online corrective feedback. One of them said that online corrective feedback was effective but not as effective as direct corrective feedback. Next, one respondent clarified that he/she preferred both types of feedback because some topics of studies can be easy and some are not, so both methods could be used to gain effective results.

DISCUSSION

The results of the current study indicated that the participants preferred direct corrective feedback in their learning. This is in line with the other studies such as Ferdian and Purnawan's (2020) study which demonstrated that students preferred their teachers' use of face-to-face corrective feedback in learning English over online corrective feedback because it can increase learning effectiveness, learning accuracy, and learning experiences. Similarly, Cahyono and Imelda (2023) discovered that while students agreed with and had a positive attitude towards the use of Internet platforms, namely Instagram and Tumblr in the teaching of EFL writing, they stated their preference for face-to-face written corrective feedback over online written corrective feedback. Furthermore, while students generally prefer face-to-face corrective feedback, as demonstrated by Ferdian and Purnawan's (2020) study and Cahyono and Imelda's (2023) findings regarding EFL writing, Sarré et al. (2019) underscored the significance of learner preference in determining the effectiveness of various online corrective feedback approaches in L2 writing classes. They found that tailoring the feedback approach to meet the individual needs and preferences of students can greatly enhance its effectiveness.

Nevertheless, there were a few students who preferred online corrective feedback compared to direct corrective feedback (face-to-face). It can be related to the study conducted by Iksan and Halim (2018), in their experimental study, compared the impact of traditional face-to-face written corrective feedback with electronic feedback via a wiki on students' anxiety levels in L2 writing. The results revealed that employing web-based tools like wikis for electronic feedback

significantly reduced students' anxiety levels in comparison to traditional correction methods.

CONCLUSION

In a nutshell, this study is only preliminary as the sample size for this study is rather small. Therefore, it is recommended that in future studies a larger sample size is applied to the study perhaps in different levels of education. The study also found that implementing the direct corrective feedback provided a positive impact to the participants. In future studies, it is recommended that direct corrective feedback is utilised widely to the other students in enhancing the academic writing classroom in every level of education.

REFERENCES

Cahyono, B. Y., & Imelda, I. (2023). Online versus face-to-face written corrective feedback: EFL students' perception and preference. *Indonesian Journal of Teaching English as a Foreign Language*, *1*(1), 1-10.

Chong, S. W. (2019). College students' perception of e-feedback: A grounded theory perspective. *Assessment & Evaluation in Higher Education, 44*(7), 1090–1105. doi:10.1080/ 02602938.2019.1572067

Deiniatur, M. (2021). Students perception on the use of Google Classroom in essay writing class. *INCARE, International Journal of Educational Resources*, *1*(6), 496-507.

Delante, N. L. (2017). Perceived impact of online written feedback on students' writing and learning: A reflection. *Reflective Practice, 18*(6), 772-804.

Elola, I., & Oskoz, A. (2017). Writing with 21st century social tools in the L2 classroom: New literacies, genres, and writing practices. *Journal of Second Language Writing, 36*, 52–60. https://doi.org/10.1016/j.jslw.2017.04.002

Ferris, D. R. (2003). *Response to student writing: Implications for second language students*. Routledge.

Ferdian, N. R. & Purnawan N. N. (2020). ESP students' preferences in learning English: Face to face corrective feedback vs online corrective feedback. *JETAL: Journal of English Teaching & Applied Linguistic*, *1*(2), 74-81.

Ferris, D., & Roberts, B. (2001). Error feedback in L2 writing classes. How explicit does it need to be? *Journal of Second Language Writing*, 10, 161–184.

Fu, M., & Li, S. (2020). The Effects of Immediate and Delayed Corrective Feedback on L2 Development. *Studies in Second Language Acquisition,44*(1*)* 2-34.

Gharehbagh, M. J., Stapa, S. H., & Darus, S. (2019). The Effects of Written Corrective Feedback Using Wikis among ESL Learners. *3L: Southeast Asian Journal of English Language Studies*, *25*(1).

Hyland, K., & Hyland, F. (2019). *Feedback in second language writing: Contexts and issues*. Cambridge University Press.

Iksan, H., & Halim, H. A. (2018). The Effect of E-Feedback Via Wikis on ESL

Students' L2 Writing Anxiety Level. *MOJES: Malaysian Online Journal of Educational Sciences*, *6*(3), 30-48.

Ji, X. (2015). Error correction in college EFL writing instruction: Students' expectations and correction effects. *The Journal of Asia TEFL, 12*(1), pp. 117-140.

Lv, X., Ren, W., & Xie, Y. (2021). The effects of online feedback on ESL/EFL writing: A meta-analysis. *The Asia-Pacific Education Researcher*, *30*(6), 643-653.

Nguyen, G., & Pham, T. (2021). The Students' Perspectives on Different Forms of Online Corrective Feedback. In *VietTESOL International Convention Proceedings*.

Rozi, F., Arifin, F., & Susianti, A. (2022). Corrective Feedback in the Digital Learning: The Use of Google Classroom. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 5(3), 21609-21619.

Sarré, C., Grosbois, M., & Brudermann, C. (2019). Fostering accuracy in L2 writing: impact of different types of corrective feedback in an experimental blended learning EFL course, *Computer Assisted Language Learning*, DOI: 10.1080/09588221.2019.1635164

Schmidt, R. (1990). The role of consciousness in second language learning. *Applied Linguistics, 11*(2), pp.129-58.

Schmidt, R. (2001). Attention. In P. Robinson (Ed.), *Cognition and second language instruction* (pp. 3-32). Cambridge University Press.

Seiffedin, A. H., & El-Sakka, S. M. F. (2017). The impact of direct-indirect corrective e-feedback on EFL students' writing accuracy. *Theory and Practice in Language Studies*, *7*(3), 166.

Yoke, S. K. (2023). The Significance of Online Verbal and Written Corrective Feedback in ESL Report Writing among Tertiary Students. *Malaysian Journal of ELT Research*, *20*(1).

A GAME-BASED LEARNING ON COMBATING VIRUSES FOR CHILDREN

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Abstract
The world has witnessed the COVID-19 pandemic caused by the SARS-CoV-2 virus which significantly impacts public health worldwide. Unlike adults, children are particularly vulnerable due to a lack of knowledge about the virus and its consequences. Therefore, this project attempted to harness the benefits of technology to convey the message and transfer the knowledge of the virus among children by developing a Game-Based Learning (GBL) application. The main objectives of this project are to design and develop a GBL for children to convey messages on viruses that could harm the human body system, and to evaluate the User Experience (UX) of the application. Rapid Application Development (RAD) is adopted as the development methodology for this project to ensure a systematic process to build the application. UX questionnaire is used as a data collection strategy to gain feedback from respondents. The result shows that user engagement (from UX evaluation) achieved an overall mean of 84.3%. Further enhancements in this project have been identified for future improvement, including interactive simulations that demonstrate the COVID-19 virus and create a mobile-friendly version of the game to make it more accessible to a wider range of devices.

Keywords: Virus; Coronavirus, COVID-19, game-based learning, learning.

INTRODUCTION

In 2019, people around the globe witnessed the COVID-19 pandemic caused by the SARS-CoV-2 virus which significantly impacted the public health worldwide. The COVID-19 pandemic, first detected in Wuhan, Hubei Province, China, has spread globally, infecting over 628.6 million people and causing 6.5 million deaths (WHO, 2020). The virus is primarily the cause of respiratory illness, with symptoms such as fever, coughing, and shortness of breath. It can also destroy organs like the heart or kidneys. COVID-19 is particularly severe in young people, teens, and children, making them susceptible to the virus (She et al., 2020). The adult can simply understand that viruses are dangerous. They can receive, gain, and understand information from any kind of source generally. Unlike adults, children are particularly vulnerable due to a lack of knowledge about the virus and its consequences.

Technology has made information easily accessible, and young children are increasingly dependent on technology in their daily lives. Auxier et al. (2020) found that over one-third of parents with a child under 12 reported that their children began interacting with a smartphone before the age of 5. Hence, this project aims to harness the benefits of technology to convey the COVID-19 message among children through a Game-Based Learning (GBL) application to convey the message and transfer the knowledge of the virus among children.

The COVID-19 pandemic has affected people of all ages, with children being particularly vulnerable due to a lack of knowledge about the virus and its consequences. Assessing children's current knowledge and suggesting solutions is crucial to prevent fear and poor mental health, particularly in young people (Berhe et al., 2022). False information spread through social media platforms, particularly among non-healthy students, further increases vulnerability (Berhe et al., 2022). It is crucial to ensure accurate information is provided to protect children and others from the virus.

Table 1 is the output of the analysis to identify a lack of GBL applications on the viruses for children. We narrow down the search to the specific effect caused by the popular virus recently - Severe Acute Respiratory Syndrome Coronavirus 2 (Sars Cov2) which resulted in the COVID-19. Three primary marketplaces were used to search for the result: Google Play, Apple App Store, and Huawei App Gallery. The search results revealed only two GBL applications focused on COVID-19 but not focusing on children. The search terms included "COVID-19 Game," "COVID-19 Game Virus," "Virus Corona 2020 Game," and "Pandemic 2020 Game."

Table 1. Results of information retrieval on COVID-19 games

No.	Study	Keyword	Hit	Result/ Name of Game
1.	Google Play Store	COVID-19 Game	0	None
		COVID-19 Game Virus	0	None
		Virus Corona 2020 Game	2	- Pandemic Isolation: Virus Quar (Wizards, 2020) - Antidote COVID-19 (psyongames.com, 2022)
2.	Apple App Store	COVID-19 Game	1	- Antidote COVID-19 (psyongames.com, 2022)
		Coronavirus 2020 Game	0	None
		Pandemic 2020 Game	0	None
3.	Huawei App Gallery	COVID-19 Game	0	None
		COVID-19 Virus Game	0	None
		Coronavirus Game	0	None

Literature is also analysed to investigate initiatives and research on GBL evidence on COVID-19 using WoS, Scopus, Science Direct, and IEEE database. It explores digital games, educational games, and online game content. The findings are summarised in Table 2.

Table 2. Summary of research articles about COVID-19 via GBL

No.	Study	Title	Genre	Game Environment
1.	Batha (2020)	Can You Save the World?	RPG	2D (Individual)
2.	Foo (2021)	The COVID-19 Game	RPG	2D (Individual)
3.	Margazine (2020)	#FightTheVirus	RPG	2D (Individual)
4.	Totilo (2020)	Plague Inc.	Adventure Game	3D (Individual)
5.	(Venigalla et al., 2022)	survivecovid-19	RPG	2D (Individual)

Based on these results, none of the applications focused on COVID-19 for children. This results in the lack of GBL on the subject matter and therefore, the proposed project is substantial to be developed.

METHODOLOGY

GBL has numerous benefits, such as encouraging social connections, increasing motivation and engagement, and building valuable 21st-century skills. It also encourages the desire to improve skills or master new information or talents. Digital game-based learning combines instructional information with games to attract learners' attention and improve learning effectiveness. This approach positively impacts students' perception of knowledge and education throughout their lives, as well as children's understanding of main concepts, happiness, and interest in learning.

The project will use Rapid Application Development (RAD) methodology for quick prototype development without affecting the final product. This approach is relatively inexpensive and better suited for shorter projects with low maintenance costs. RAD is better suited for User Interface (UI) and User Experience (UX) considerations.

The four key phases that comprise the RAD project contents requirement are planning, user design, construction phase, and implementation phase. Each RAD stage has its line of procedure for the project to progress in a way that results in the implementation such as discussed in the following item:

1. Requirement Planning Phase

Requirement analysis is crucial for identifying factors and aspects in the design and development process. It helps determine the right tools for developers to undertake tasks effectively, as failure to identify necessary tools may lead to obstacles and challenges that affect the timeline and project completion. Table 3 shows the hardware used for development in this project.

Table 3. Hardware requirement for development

No.	Features	Hardware Requirements
1.	Device	Laptop
2.	RAM	12.0 GB
3.	Storage	118 GB SSD
4.	Processor	Intel(R) Core (TM) i5-8300H CPU @ 2.30GHz

The game's design and development additionally involve requirements for the software. The software involves in the development process are Canva, ibisPaint X, and Unity.

2. User Design

During this stage, the project design will be based on the requirement planning. The gameplay will be designed using the storyboard. Then, proceed to the flowchart to have a better understanding of the general flow of how the game system functions. The game's flow starts with the main menu, offering four options: play game, load game, how to play, and quit. The story begins with a character contaminated with COVID-19, leading to levels 1 and 4. Each level has a different variant, with one variant, two, and four variants. If the player wins, the narrator will teach them about COVID-19 season care, social distancing, mask wear, and physical contact. Each level has a separate guide and guidelines for winning. The info button displays the strengths and weaknesses of the hero and enemies. The player can pause the game, restart it, or quit it. If the player loses a level, the game will automatically reset, allowing the player to try again.

3. Construction Phase

The requirement analysis method is used to determine the correct software and hardware to employ in the game's development, which can subsequently be developed. The game was built by the previously discussed game design. This section divides the game's progression into three major components: the environment, the characters, and the gameplay.

4. Implementation Phase

The finished product is launched during this stage of execution. It involves user training in addition to data conversion, testing, and the switchover to the new system. After the final prototype is completed and the user is satisfied, the project will launch.

MAIN RESULTS

Project Outcome

These are the results of the children's GBL project combatting the virus, which was developed successfully.

Scene 1: Main Menu

The main menu page of the game features four buttons: play, load game, how to play, and quit. Once the player clicks the start button, they will be taken directly to the lobby game. The game will be exited if the player clicks the quit button.

Figure 1. Main menu page.

Scene 2: How to Play Page.

This page is in the main page button, which is in the how to play button. This page explains how to play a game.

Figure 2. How to play page.

Scene 3: Storyline.
This page tells a storyline about a boy who is the main character of this game, and a girl as the narrator. Players can skip this storyline and continue pressing the level button to start the game at the first level.

Figure 3. Storyline page

Scene 4: Game Level.
At the game level, players will be guided on how to play on the resume button. After that, the player can create a hero formation according to the player's strategies. Enemies will come from random positions. Heroes can only be purchased if enough points are collected. points are collected by collecting peptides that appear around the game area. The game contains 3 levels based on difficulty easy, moderate, and hard.

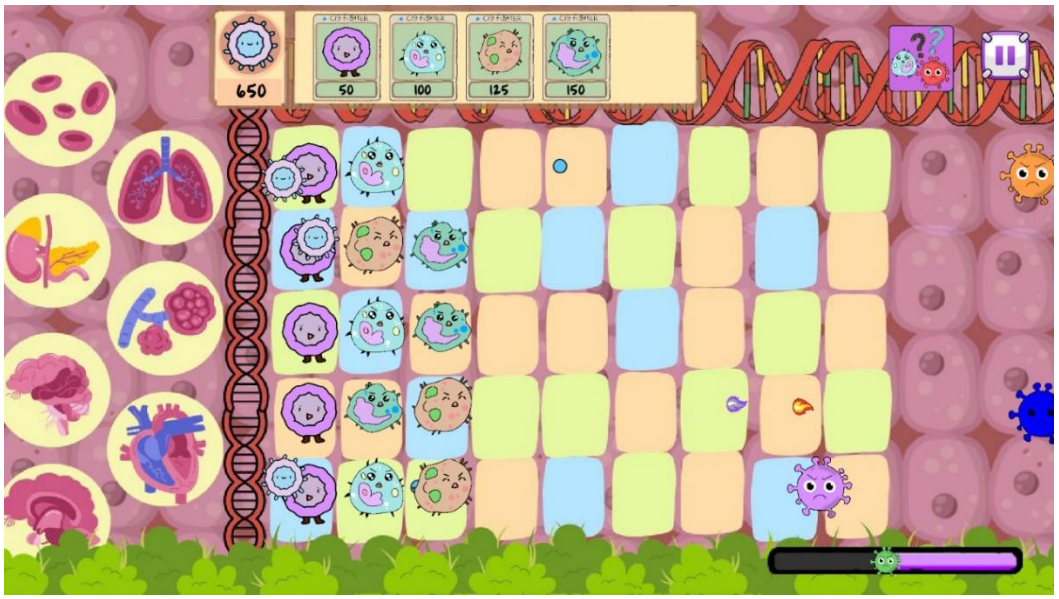

Figure 4. Game level page

Scene 5: Information Page.
If the player presses the info button, the player will go to the hero and enemy page, the player can choose whether to find out info about the hero or the enemy by pressing the heroes or enemies' selection button.

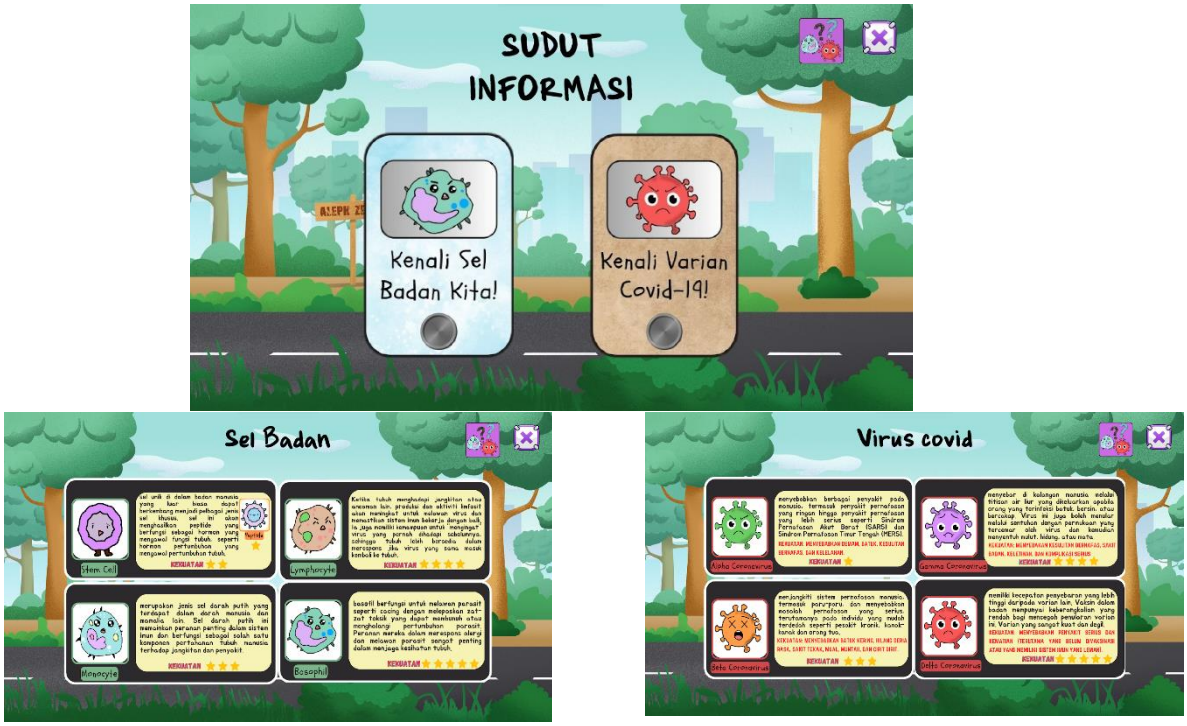

Figure 5. Information button

Scene 6: Game Completed.
Every time the player wins in the level they are playing; the player will go to the info page where the narrator will teach how to take care during covid-19 and there is the narration of how the victory affects the main character's body in each level.

Figure 6. Game completed page.

RESULT AND ANALYSIS

The project evaluated the UX of a GBL on combating the virus for children and the sample was taken from students at SK Sementa, Klang Selangor. Participants are currently in grades 1 to 6. The survey was used and conducted using Google Forms. The survey included background information and a questionnaire for UX. Results were divided into demographic and experiential findings. A total of 36 people participated in the experience testing. Demography data shows that most participants in the game project were male (66.7%) and female (33.3%). The majority were aged 12 years or older, with 38.9% of respondents aged 12 or older.

Table 4. Respondents' Demography

Question	Range	Frequency (n)	Percentage (%)
Gender	Male	24	66.7
	Female	12	33.3
Age	7	2	5.6
	8	6	16.7
	9	3	8.3
	10	5	13.9
	11	6	16.7
	12	14	38.9

The project used the User Experience Questionnaire (UEQ) to assess the effectiveness of a gaming application. The questionnaire was used to determine the application's effectiveness in providing a user-friendly gaming experience. The results were displayed in tabular format, with each outcome's value determined by standard score grading.

Table 5. User Experience Questionnaire (UEQ)

Code	Factor	Questions
E1	Enjoyment	This game is enjoyable
E2	Learning motivation	The content of the game is easy to learn
E3	UX	This game is understandable
E4	Enjoyment	This game is interesting
E5	Usability	This game is easy to use
E6	UX	The instruction for the game is clear
E7	Enjoyment	This game is good
E8	Learning motivation	The content of the game is attractive
E9	Immersion	This game is leading edge
E10	Usability	This game is efficient to use

The enjoyment factor evaluation of a game was conducted among 36 participants, with 21 participants (58.3%) highly agreeing that the game is enjoyable. The largest group (27.8%) enjoyed the game, while most people found it interesting. Most people found the game to be good, with a small percentage (30.6%) finding it somewhat good.

The learning motivation factor evaluation showed that most of the respondents found the content easy to learn, with a small percentage finding it not easy. The developers could improve accessibility by providing more tutorials and making instructions clearer. The content was also found to be attractive, with 23 (63.9%) of respondents strongly agreeing with it.

The user experience factor evaluation was based on the game's understandability and clear instructions. 20 (55.6%) of respondents agreed that the game was generally understandable, but there was room for improvement. Most respondents found the game to be clear, but a significant percentage found it to be not clear.

The usability factor evaluation was based on the game's ease of use and efficiency. A total of 19 people (52.8% of respondents) strongly agreed that the game was easy to use, and most respondents strongly agreed that it was leading edge by 41.7%. The mean score and frequency for the UEQ were also analysed.

Table 6. Mean score and frequency for UEQ

Code	SD	D	N	A	SA	Mean
E1	3	0	2	10	21	4.27
E2	1	3	5	9	18	4.11
E3	0	3	4	9	20	4.27
E4	0	0	2	12	22	4.55
E5	2	0	3	12	19	4.27
E6	1	2	2	16	15	4.16
E7	0	3	1	11	21	4.38
E8	0	2	2	9	23	4.47
E9	2	2	7	10	15	3.94
E10	1	3	1	14	17	4.19
Total Mean						4.26

*SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

The cumulative mean shows the agreeability of each factor on a scale of 1 to 5. The User Experience Questionnaire survey value is shown in Table 5.3, which was computed using Microsoft Excel, a crucial mathematical application for data calculation and simulated data display. Figure 5.4 depicts the overall findings of this project.

Table 7. Total Overall Mean

Experience Category	Total Mean Average
Enjoyment	4.4
Learning Motivation	4.29
User Experience (UX)	4.215
Usability	4.23
Immersion	3.94
Overall Mean	4.215
Percentage (%)	84.3%

The findings demonstrate the programme's effectiveness in assessing user experience of COVID-19 Game-Based Learning for children. The User Experience Questionnaire was distributed to users after completing the gaming project, and the process involved respondents and participants. The findings provide insight into the effectiveness of the program in achieving its third objective.

CONCLUSION

Promoting education learning through games provides children with a one-of-a-kind opportunity to learn in a new way. This application is intended to design a GBL application about the danger of viruses for children. The project was successfully created to satisfy the project's objectives and to receive positive feedback from users who used it via the UEQ questionnaire. However, there are some limitations identified in this project to be addressed in the future. The content is limited resulting in the amount of detail carried into the game are not complex as desired due to time constraints related to the project due and cost-related issues. In conclusion, this GBL application shows a fun and educational learning experience for children. It has the potential to be a significant educational resource for enhancing virus-related awareness and prevention among young learners.

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REFERENCES

Auxier, B., Anderson, M., Perrin, A., & Turner, E. (2020). Children's engagement with digital devices, screen time. In: Pew Research center. https://www. pewresearch. org/internet/2020/07/28 ….

Batha, E. (2020). *COVID-19 computer game teaches children importance of social distancing*. weforum.org. https://www.weforum.org/agenda/2020/05/coronavirus-computer-game-teaches-children-social-distancing/

Berhe, N. M., Van de Velde, S., Rabiee-Khan, F., van der Heijde, C., Vonk, P., Buffel, V., Wouters, E., & Van Hal, G. (2022). Knowledge deficit and fear of COVID-19 among higher education students during the first wave of the pandemic and implications for public health: a multi-country cross-sectional survey. *BMC Public Health*, *22*(1), 1144. https://doi.org/10.1186/s12889-022-13511-3

Foo, W. (2021). *The Covid-19 Game*. Custom Automated Systems Pte Ltd. https://customautosys.com/products/games/the%20covid-19%20game

Margazine, M. (2020). *Sqkii creates Singapore's first educational online game*

combating COVID-19. marketingmagazine.com.my. https://marketingmagazine.com.my/sqkii-creates-singapores-first-educational-online-game-combating-covid-19/

psyongames.com. (2022). *Antidote COVID-19 (Version 1.2.1)[Mobile App]*. Google Play Store. https://psyongames.com/antidote-covid-19/

She, J., Liu, L., & Liu, W. (2020). COVID-19 epidemic: Disease characteristics in children [https://doi.org/10.1002/jmv.25807]. *Journal of Medical Virology*, *92*(7), 747-754. https://doi.org/https://doi.org/10.1002/jmv.25807

Totilo, S. (2020). *When a Gaming Fantasy Is Eerily Close to Reality*. nytimes.com. https://www.nytimes.com/2020/04/08/arts/plague-inc-video-game-gaming-coronavirus-covid-pandemic.html

Venigalla, A. S. M., Vagavolu, D., & Chimalakonda, S. (2022). SurviveCovid-19 - An Educational Game to Facilitate Habituation of Social Distancing and Other Health Measures for Covid-19 Pandemic. *International Journal of Human–Computer Interaction*, *38*(16), 1563-1575. https://doi.org/10.1080/10447318.2021.2009183

WHO. (2020). *Listings of WHO's response to COVID-19*. World Health Organization. https://www.who.int/news/item/29-06-2020-covidtimeline

Wizards, V. (2020). *Pandemic Isolation: Virus quar (Version 1.0.17)[Mobile App]*. Google Play Store. https://play.google.com/store/apps/details?id=io.cordova.plague_isolation_2&hl=en_AU&gl=US

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