The Experience of Year 5 Students Integrating WOW Online Games in Vocabulary Learning

Syafiqah Hasram, Maslawati Mohamad, M. Khalid M. Nasir, Fatin Kamilia Md Arif

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Abstract: This paper is on empirical research on vocabulary learning by using an online game as its platform. A qualitative case study was conducted to investigate Year 5 students' experience of integrating WOW online games in vocabulary learning. The study also aimed to view the difference in learning experience gained by students of diverse race, socioeconomic status, and familiarity with mobile devices. The data was collected via classroom observations, document analysis and a semi-structured focus group interview. 20 Year 5 students were selected from a suburban school in a district in Malaysia. The findings revealed that the students had positive experience in integrating online games (it is called WOW), which were discussed in 4 themes; able to experience fun learning, personalised learning, attractive features, and enjoyable positive reinforcement. A clear difference of experience of integrating online games in vocabulary learning is evident among students from different races, socioeconomic status and levels of familiarity with mobile devices. The findings indicated that a majority of Malay and Indian participants, as well as those from Top and Middle socioeconomic class and have high or moderate level of mobile device familiarity, enjoyed utilising WOW due to the ease of accessing WOW in portable devices and in their own time. However, a number of underprivileged groups, such as students of low socioeconomic status, the *Orang Asal* (Indigenous) and students with low level of mobile device familiarity, had an unsatisfying experience and faced multiple challenges throughout integrating WOW online game in vocabulary learning. The outcome of this study could provide pertinent knowledge on ESL students' experience in integrating online educational games. Based on the findings, it is recommended for primary school teachers to integrate online games in expanding students' vocabulary repertoire through fun learning.

Keywords: mobile devices, online games, race, socioeconomic status, vocabulary learning

1. Introduction

The technological changes following the following the 4.0 Industrial Revolution (4IR) suggest that similar evolvement should happen in education to keep up to date with the growing demands of 21st-century learning. Education 4.0 is the optimal learning approach that is aligned with the emerging fourth industrial revolution. The industrial revolution as a new era are characterized by digitalization, information transparency, connectivity and automatism [1]. Education 4.0 exploits the potentials of technology and reshaped the education system by emphasizing personalized and innovative learning for the digital native generation [2]. Educational innovation empowers students to become lifelong students who are agents of change, problem solvers and creative thinkers. It has become a priority for many developed countries to integrate technology as part of the education curriculum, modify and update learning method and utilize technology to enhance the learning experience [1].

The global use of the English language is prominent in many areas of life especially education. In Malaysia, being an incredibly diverse and multicultural country, English is regarded as a second language as it is used in formal instructions and workplace. Vocabulary mastery in a language is central for one to comprehend spoken or written statements. Chen, Liu and Huang [3] stated that successful second language learning includes a strong grasp of the lexical component. Possessing an adequate range of vocabulary helps students to progress in other second language skills. Without sufficient vocabulary repertoire, it imposes a challenge for individuals to express themselves effectively [4]**.** ESL students rely heavily on their vocabulary knowledge rather than grammar. Without following grammar rules, students are still able to communicate and get their message across. However, without vocabulary, few information can be conveyed [5]**.** With regard to its importance, language teachers and practitioners have been consistent in developing students' vocabulary from a young age. However, the declining proficiency of English language ability among Malaysian students and the weak grasp of English vocabulary have

been a matter of concern to linguists, educationists, and policymakers alike. Kee and Ting [6] observed that the primary school students, especially the students living in rural areas, possessed low level of vocabulary knowledge. Wang and Hamidah [7] supported similar findings, in which Malaysian primary students have low English vocabulary level specifically in three vocabulary groups: nouns, verbs, and adjectives.

Vocabulary learning in schools tends to take a backseat in ESL teaching priorities [8]**.** Previous studies highlight that the long and tedious vocabulary pedagogical approaches or methods such as drilling are still regularly used in teaching and learning of vocabulary [9] [10]**.** The recognized conventional teaching methods of vocabulary currently employed in most schools are less interesting, ineffective, and less motivating [11]**.** Conventional vocabulary learning often requires students to memorize unfamiliar words with their definitions [12] and paired translations [13]**.** There is a lack of theoretical support for this conventional approach because it only encourages memorizing the target language word lists. Similarly, the students in the population of the study struggle with uninteresting lessons of vocabulary in English language which impede their learning of the target language. The lack of lexical competence delays the students from comprehending reading materials efficiently. This leads to them feeling inferior, demotivated and uninterested in English vocabulary lessons. Some teachers opt to depend on the suggested textbook activities such as matching words to their meanings and 'text completion activities in vocabulary lessons. However, such methods are less favorable among the students because it is heavily dependent on memorization and lack active involvement with words [14]. ESL students who relied much on rote learning and memorization have poor memory retention skills and do not have much interest in learning vocabulary.

Rote learning in vocabulary is not entirely ineffective. However, it is more likely a futile effort to be implemented among the digital natives, who were born with technology constantly present in their lives. Digital natives generally comprehend the technology more than the educator and value interactive learning methods such as simulation and e-learning [15]. Cilliers [16] illustrated in her study that Generation Z's complex visual imagery resulted from their brains responding to external conditions. Their visual skills are significantly more advanced, making the visual form of learning more effective. The technology inclination generates a preference for an interactive experience, group-coordinated projects, and learning competition. The exploitation of technology potentials in education is to reshape the system and change the learning definition for the future generation. The saying 'do not put new wine into old bottles' means students are now the driver of their lessons, and conventional teaching and learning methods are less appreciated. Educators need to embrace the technology-immersed classroom and incorporate new learning methods, which enable students to be active participants in their educational process.

There is clear pedagogic evidence in integrating mobile technologies to improve students' learning experience in language classrooms [17]. The Malaysian government facilitates the integration of mobile learning through several initiatives to improve the required potentials in education fields, which is in line with Malaysia Education Blueprint (MEB) 2013-2025 [18]**.** MEB established 11 shifts to achieve the vision of raising the level of the education system into the 21st century with the thrusts of the new economy: knowledge, innovation, technology, and creativity. Under MEB, Shift 7 has consolidated Information Communication Technology (ICT) to scale up quality learning across Malaysia. The concept of being physically present in a classroom is no longer the only learning option as students have access to quality education regardless of time and place through access to a computer [19]. In the 10-years strategic plan of MEB, the goal is to restructure education as future-proof [20]. Under these shifts, the education environment should be focused on the offers of current technologies and innovations for the future of learning.

With regard to mobile learning, a rapid advancement in English educational online games focuses on catering to targeted students for their learning purposes [21]. However, Sweeney and Moore [19] stated that many existing game applications are not pedagogical friendly. The implementation of games in learning should be accompanied by adequate pedagogical knowledge [22]. These applications are not practical to be used in teaching and learning sessions due to the possible knowledge gap between the application developers and language teachers. In tandem with the expansion of technology in education in Malaysia, there is a need to provide appropriate educational applications aligned with the relevant educational context to be employed in teaching and learning.

World of Words (WOW) Vocabulary Learning Game

World of Words (WOW) is a series of online games developed in WordWall platform to aid and enrich ESL students' vocabulary learning experience and enhance their vocabulary mastery. A set of vocabularies for each unit were introduced to the students during English lessons in school. The researcher developed WOW online games as supplementary materials which encourage students to practice the newly learned vocabulary in independent, out-of-class learning. The game playing in WOW is an extension of the students' learning in formal in-class learning. WOW provides a fun and engaging learning which enhances the students' vocabulary mastery through their continuous participation in the online games. The players learned up to 200 words and played various games as part of the vocabulary practice. The two main elements in the development of WOW are vocabularies and pictures. The games were designed to help students associate the vocabulary with images. This empowered the students' word comprehension and strengthened their spelling ability [23].

The series of online games are designed based on six units of the Year 5 Textbook [24]. WOW is developed while adhering to the national syllabus documented in the Standard Curriculum for Primary Schools (DSKP). Similarly, the vocabularies chosen are based on the textbook. They are parallel to the specific target mastery set to be achieved by Year 5 students by the end of the schooling year. According to Purgina et al. [25] state that educational applications must have a pedagogical focus for it to be practical to learning. As to optimize the benefits of the online games, the words incorporated into the games are high-frequency words.

Parallel to the objectives of mobile learning in education, it is eminent to investigate students' experiences to ensure the effectiveness and successful implementation of online games in education. There is a wide range of studies on the evaluation, effectiveness, and perceptions of users towards integrating mobile applications in learning with the majority of the focus on tertiary education institutions. However, there is a prominent research lacuna as there are minimal studies involving younger students. Therefore, there is a need to investigate the experience of primary school ESL students to contribute to the body of knowledge. Earlier studies have looked into several factors that influenced students in their experiences of adapting online games, such as social surrounding, attitude, enjoyment, performance expectations, availability of mobile devices, and knowledge and experience in mobile technology [26] [27] [28]. Thus far, there are limited studies that investigated the influence of the students' race, family's socioeconomic status and students' familiarity with mobile devices in their experience of integrating online games in vocabulary learning.

The research is sought to answers the following research questions:

1. What is the experience of the Year 5 students in integrating WOW online games in vocabulary learning?
2. How do Year 5 students' experiences of integrating WOW online games differ in terms of race, socioeconomic status and mobile device familiarity?

2. Literature Review

2.1 Mobile Learning

Following the revolution of Education 4.0, the integration of mobile learning is increasingly popular in supporting the 21st-century learning process through smartphones and downloadable mobile applications. The emergence of mobile learning is an advance to language experience facilitated and improved with the use of mobile devices [29]. Mobile learning is known to optimize the potential of mobile devices as learning tools in language learning environments [30]. With its increasing functionality, Shuler [31] coined mobile technology as the 'pockets of educational potential' which refers to the potential of mobile learning to break down barriers and enable access to information irrespective of time and location. As one of the crucial methods of Education 4.0, along with artificial intelligence, mobile learning is recognized as the future of learning as it empowers personalised learning experience. The approach offers new and innovative perspectives for language teaching and learning, especially vocabulary learning [32]. Klimova [33] also supported that mobile learning is especially effective in vocabulary learning as vocabulary can be conveniently divided into smaller segments, appropriate for content design in mobile devices.

The findings reported in international studies are concurrent with the findings from local studies in Malaysia. Govindasamy, Yunus and Hashim [34] explored the efficacy of utilizing mobile phone to search for the definition of a word over using a printed dictionary. In comparison to using a paper dictionary, the findings indicated that employing mobile phones enhances students' abilities in acquiring and understanding the meaning of words. Concurrently, another study examined the students' acceptance of multiple existing mobile applications for vocabulary learning. The accounts given by the participants indicated positive acceptance. The games element was also discovered to be the most preferred feature for vocabulary acquisition. However, the effectiveness of mobile learning at the primary school level is still at a teething stage of research. Therefore, the researchers intend to reduce the research gap by integrating online games at the primary school level. Our intention is to promote the integration of online games into vocabulary learning.

2.2 Benefits and Challenges of Online Games

2.2.1 Benefits

The selection of online game as a vocabulary learning platform is parallel with the idea that online game offers fun and engaging learning compared to the conventional vocabulary learning methods, which are tedious and mundane, which are mostly less relevant for the young students (Generation Z). The idea of mobile technology is synonymous with devices' portability, convenience and flexibility. The demand for mobile learning continues to rise due to its capability to reach global audiences [35], spreading educational contents to those with restricted access [36] as well as its convenient accessibility and flexibility with regard to time and place [37].

The evidence of the previous study by Hensley [38] suggests that students experience more gratification in learning English vocabulary with online games. Online game utilizes attractive functions and features which promote fun and meaningful learning. Diversity in game missions, themes, and challenges creates an interactive and motivating learning environment that engages students and accommodates natural vocabulary acquisition [39]**.** Online games learning created an anxiety-free learning process and reduced learning anxiety among students from different age groups [40]**.** Gamified learning increases positive emotional engagement and enhances the students' self-confidence in language classrooms by creating a fun, attractive, and motivating learning environment [41] [42]. Additionally, integrating online games in learning can facilitate 21st-century learning skills such as competition among players in an enjoyable environment [43].

The regular design of online games provides points, ranks, and a leaderboard to visualize the players' achievement after completing tasks. These elements provide a sense of achievement [44] and satisfaction, especially when the players overcome challenges created in the games [45]**.** Students with greater motivation and engagement in learning may obtain effective and meaningful language learning experiences [46]**.** The blending of media such as audio and attractive visual aids creates a user-friendly interface, especially for younger students known to be digital-savvy. Andreani and Ying [47] discovered that the application of online games in vocabulary learning leads to positive outcomes in learning as students agreed that online game personalised their learning [48] and encouraged students' autonomy [49] [11]. Adams and Dormans [50] described the students acknowledged that fun learning, attractive features and positive reinforcement offered in online games amplified their intrinsic motivation. Thus, it drives students to continue benefiting from its application.

2.2.2 Challenges

Although mobile learning contributes significantly to students' learning environment, it presents some challenges that should be considered. Previous scholars point to some common issues in mobile learning: the equity of access to mobile devices [51]. The integration of online games in learning may be challenging, especially for young students who, in the majority, do not own a personal mobile device yet [52]. Belay [53] underlined the unequal accessibility of mobile devices between students living in urban and rural areas. Other than that, students who integrate mobile devices in learning may experience technical and usability issues with the devices. Some usability concerns are summarized in Sarfoah [54] as follows: a) low quality of mobile devices, b) content and software application constraints and; c) network speed and reliability.

While education technology advances rapidly, the Internet infrastructure, mostly in suburban and rural regions, gets overburdened when accessed a large number of devices at once [55]. As most of the work in mobile learning is done through connectivity, an unstable or slow connection may present to be challenging. Students

may encounter connectivity issues while accessing the materials online due to weak or non-existent mobile network connections [56] There may also be a scarcity of Internet networks in many areas. Similarly, previous studies revealed that unreliable Internet connectivity posed as an inhibiting factor in mobile learning, as devices got frozen at a critical point while learning is ongoing [54] [57].

The cost of mobile devices is another burden for primary school students, especially those with low socioeconomic status [58]. Mobile learning necessitates technological gadgets that enable students to customize their learning experience to meet their own educational needs. As a result, an individual may feel driven to purchase a device that he or she cannot afford. In addition, there are typical monthly charges for data usage. For example, if someone requires a large and smooth Internet connection, it may require a high cost [59].

2.3 Factors that affect students' experience in integrating WOW as a vocabulary learning tool

2.3.1 Race (*Malay, Indian and Indigenous*)

Race is the variable in the present study's purpose to investigate the students' experience as there is an irregularity in how each race regards the English language and its status. For Malay students, the English language is commonly their second language. Some Indian students use English as their primary medium of communication at home and school, while others may use English only as their second or third language. The Indigenous students mainly communicate in their native language (Semelai dan Temoq) among themselves, speak Malay to Malay friends and teachers at school, and only learn the English language as a third language or foreign language. Thus, this study is interested in investigating how students of different races adapt to the integration of online games to enhance vocabulary learning. The study is also focused on the Indigenous community of Malaysia; the Indigenous students' experience of integrating mobile devices in their learning. A previous study reported that the Indigenous students were left behind in education as compared to the other non-indigenous local communities [60]. The students lacked awareness and concern of their education performance. They were accustomed to a single source of information delivered via face-to-face and conventional spoon-feed teaching. Thus, they were hesitant to participate in 21st-century class activities such as collaboration projects, critical and creative thinking, as well as problem-solving activities that required them to seek out knowledge and information using the Internet as a medium of learning. They faced difficulties in solving tasks that require them to manipulate technological devices because they perceived they were not good at it. They were less receptive to the new pedagogical approach.

2.3.2 Socioeconomic status (*T20, M40, B40*)

Socioeconomic status is a measurement of an individual's income, education and occupation, which accounts for an individual's integration background, economic and societal rank in relation to others [61]. Participants in the study are of various socioeconomic backgrounds. For the study, participants were selected from the three income groups, which are B40, M40 and T20. The term B40 represents the percentage of the country's population of the Bottom 40% who earn RM3,000. M40 is the middle 40, whose median household is at least RM 6,625, while T20 is the class of citizens with a median household income of at least RM13,148. Findings from Tang [62] indicated that family income was highly correlated with smartphone ownership and more access to the apps in mobile phones. Students from higher-income families spent more money and time on their mobile phones. On the contrary, students with low SES have more inferior educational success than students of high socioeconomic backgrounds; and are more likely to drop out of school [63]. Akram and Ghani [64]) supported by reporting that students from lower SES (socioeconomic status) are more anxious than those from higher SES due to several factors: lacking necessary learning devices, inadequate guidance, and motivation. Hamid and Khalidi [58] emphasised that the disabled, underprivileged and underperforming students must be prioritised while the current initiatives of a globally connective education are ongoing. The scholar added that low-income households are more likely to be under pressure following the economic downturn during the Covid-19 pandemic.

In contrast, a previous study upheld that open access equalizes educational opportunity [65]. Mobile learning devices offer limitless access to knowledge, thus effectively supplementing education to schools in rural areas.

Socioeconomic status is an essential factor that may differentiate students' experience in integrating mobile learning.

2.3.3 Levels of familiarity with mobile devices (*High, Moderate and Low*)

Mobile device is generally known as the technological tools that contribute to users' ease of use [27]. These devices include laptops, LCD Projector, Bluetooth speakers, portable hard drives, monitors, smartphones and tablets. Mobile device familiarity is about understanding how devices work and using and exploiting devices for learning [27]. Fagan [27] further states that high familiarity with mobile devices indicates that students often use mobile devices, have had access to them since young, are comfortable in handling and manipulating the devices, and have been using them for both learning and playing games. Alzaza and Yaakub [66] also reported that students' awareness of mobile learning provides strong evidence of their readiness to accept and use mobile learning in education positively. The consistent correlation between mobile learning readiness and technology readiness means students with better technology literacy will be more likely to embrace mobile learning in education readily. Uppal, Zahid and Ali [67] highlight that students in higher education widely welcome mobile learning. One of the key findings in the study is that the students are more likely to regard mobile learning positively if they are familiar with mobile devices and are competent in operating computer applications such as online games. This study investigates whether this variable contributes to the students' experience in integrating online games as vocabulary learning tool. The factor is not limited to the use of devices in schools.

3. Methodology

3.1 The participants

The qualitative study employed 20 Year 5 students, drawn from a population of 40 students who have had experience integrating WOW online games in their vocabulary learning. The Year 5 students were selected from a national primary school in a local district. The study employed a stratified sampling technique to gather the 20 participants from subgroups based on three races; Malay, Indian and Indigenous; socioeconomic status (T20, M40 and B40) and levels of familiarity with mobile devices (high, moderate and low).

3.2 The setting

The participants were introduced up to 20 vocabularies for each topic. There are 6 units in total. The vocabularies were introduced to the students throughout one week of formal lessons. By the end of each week, the participants were given access to the series of WOW online games in the WordWall platform. They were given a week to complete 3-5 games for each unit.

3.3 Research Instruments

Three research instruments were being employed in this study. They are close-ended and open-ended questionnaires, a semi-structured interview and field notes.

A close-ended questionnaire was utilized during the classroom observation, which was conducted to gather the preliminary data. The researchers asked Yes/No general questions regarding their experience based on their races, socioeconomic status and levels of familiarity with mobile devices. Students answered the questions verbally.

Next, a set of open-ended questions was distributed in a written questionnaire among the 20 participants. Participants answered the questions with regard to themselves and their opinions. The participants' answers were analysed and used to construct further questions for the focus group interview.

Lastly, a semi-structured focus group interview was conducted as the last data collection procedure. 9 participants were selected following their responses during the Question and Answer session and the open-ended questionnaire. The chosen participants were representatives of each subgroup, which are races (Malay, Indian and Indigenous); socioeconomic status (T20, M40, B40) and levels of familiarity with mobile devices (High, moderate and low).

3.4 Research Procedure

The researchers made field notes of the participants' responses throughout the study, specifically during classroom observations. Document analysis was conducted to analysed the participants' responses in their written interview. The items for the written questionnaire and semi-structured focus group interview were submitted to be reviewed by a senior language teacher in the school to ensure the language is accurately translated. The items were also validated by two senior lecturers from the Department of Innovation in Teaching and Learning, Universiti Kebangsaan Malaysia. The experts validated the items in terms of the content and face validity

4. Findings and Discussion

4.1 Students' experience integrating WOW online games in vocabulary learning

The data collected to answer RQ1 were analysed and categorised into 4 themes. The participants recalled their experience of integrating WOW in vocabulary learning to be highly positive. Their responses are grouped into;

(a) able to experience fun learning

(b) personalised learning

(c) attractive functions and features of games

(d) enjoyable positive reinforcement.

Table 4.1 Themes of the participants' experiences.

Theme	Items	P1	P2	P3	P4	P5	P6	P7	P8	P9
1	I think learning while playing online games is a fun way to learn vocabulary.									
	i. integration of online games in technological devices		/	/		/	/			/
	ii. interesting medias	/	/		/	/		/	/	
2	I can access WOW in my own time and learn at my own pace.	/	/			/	/	/	/	/
3	The features and functions of WOW are exciting and motivating									
	i. appealing layout and themes	/			/	/	/	/	/	/
	ii. game challenges	/	/		/	/	/	/		/
4	I enjoy the positive reinforcement offered in the game.									
	i. rewards (scores, bonus points, extra chances)	/	/		/			/	/	/
	ii. the display of a leaderboard	/	/					/	/	

4.1.1 Able to experience fun learning

The participants described their learning experience as fun with the integration of online games in portable devices and the mixture of exciting media. Both factors significantly contributed to an engaging and fun learning experience. Based on their responses, integrating WOW in vocabulary learning made their learning experience more meaningful and increased their motivation. Indirectly, it encouraged the participants to continue participating in the games to enhance their vocabulary mastery. P2 stated he enjoyed integrating WOW as he is skilful in playing online games and manipulating mobile devices. P3 and P5 recalled that they rarely use technological devices at their school due to poor maintenance. P6 expressed his excitement about being able to experience the integration of handphones in vocabulary learning.

> *"I **prefer** online games because **it uses technology** and games, I **have many experience playing games.**"* (P2)

"….for me ***using technology makes learning feel more innovative****." (P3)*
"I like online games ***because we can use technological devices, at school we barely even use the computer lab****. (P5)*
"Learning with WOW ***gives me a new experience in learning using technology****."* (P9)
*"Studying has become more fun…****we can learn using handphone*** *now. It's* ***interesting****."* (P6)

The researchers observed and took notes of the participants' behaviour during classroom observations. The participants constantly expressed their excitement by talking about the games and asking for the access code before the end of the week. There were also instances where the participants asked if they could bring their devices to school to play together in class to replace the conventional English lessons. It was evident that the participants had positive responses towards the integration of technological devices as tools in language learning. However, since the school does not allow the students to bring any electronic devices due to disciplinary problems, their requests were denied. Unlike the usual pedagogy, the integration of WOW in vocabulary is an advanced technological element that fulfils the criteria of fun and engaging learning experience. WOW catered to the younger group of students who grew up surrounded by technology, and it is also relevant to the participants of the study who are identified as digital natives. The researchers also noted that most of the participants who responded positively had High familiarity with the mobile devices. According to Alzaza and Yaakub [66], the students' familiarity with mobile learning provides strong evidence of their readiness to positively accept and adapt mobile learning in education. Similarly, the participants with high familiarity with mobile devices instantly approved of WOW integration in vocabulary learning.

Online game is an attractive learning tool. The participants acknowledged that the application of WOW online game captivated their interest to learn English through the combination of eye-catching media such as bright and colourful visual graphics and sound. P4, P1 and P8 mentioned that the pictures incorporated into the games contributed to a fun learning experience. P4 and P1 could understand some of the vocabularies quicker through the pictures. P7 mentioned that the cheering and clapping sound in the background served as a good motivator for him to participate in the lesson continuously. P1, P5 and P8 described that they felt motivated, confident and were focused on answering correctly. While, P5, P8 and P2 described their experience of learning as 'playing games' due to the visual and kinaesthetic values of the online games.

"*For me* ***I like the pictures****...****suitable with the words****. If I don't know the words…it* ***helps me to understand quicker.****" (P4)*
"The ***games in WOW are attractive*** *than the usual learning...because of the* ***games and pictures****,* ***it makes me feel like I am playing games, not learning****." (P5)*
"There are also the sounds of ***clapping and cheering*** *when I got the answer correctly.* ***I feel good****…like my friends clap for me…****I want to get more correct answers.****" (P7)*
"In spelling game (Anagram), when we rearrange the letters correctly, ***it changes colours****. The correct arrangement of alphabets will turn into green colour...even when we only rearrange two alphabets...like it* ***gives me clues.*** *I* ***feel more confident*** *to try different alphabets. It* ***helps me get more correct answers****." (P1)*
"I enjoy playing the games…since I have to move/ tap/ drag the answers, it ***keeps me focus to get correct answer.*** *The* ***objects in the games are also very pretty*** *(may be childlike) but* ***I don't get bored easily*** *because I feel like we're only playing for fun." (P8)*
*"The games that I like are when we have to control something like shooting (the correct answers on) the balloons and control the airplane…****it's not boring*** *because I have to be quick." (P2)*

The responses were supported by evidence in the researchers' field notes where the participants were observed to recognize most of the pictures used in the games. When shown during lessons, some participants could quickly recall and name the vocabularies represented by the pictures. Other students needed extra clues to remember the vocabulary. The attractive visuals in WOW were not limited to only pictures in the games, but also how the colours pop to highlight the correct alphabet combination before they completed the spelling. The feature is

similar to 'clues' being given to guide students to the correct answers. It is rewarding to struggling players and directly enhances their confidence.

The participants perceived WOW as a fun, online game-based learning tool that provided a positive learning experience and supported effective vocabulary learning. This was comparable to previous studies which asserted that online game-based learning provides a fun learning environment with the integration of technology and games in learning [26] [68]. The fun factors in games amplify their motivation, enhance attention and increase their engagement with the language content.

4.1.2 Personalised learning

Seven participants expressed their experiences of having personalised learning space with online games. The participants claimed to appreciate the flexibility of online games which allow the participants to access the games on each student's time. P1, P6, P5 and P9 described their experience of accessing WOW in their leisure time. P2 and P8 talk about their experiences of having some independence in learning as they did not have to wait the others. The participants positively viewed their ability to learn at their own pace.

> *"I can play WOW* ***anytime****."* (P1)
> *"I try to play the games when I have* ***free time****."* (P6)
> *"I do it* ***when I have time and (the) mood****."* (P5)
> *"****I can play when I am resting****."* (P9)
> *"I* ***don't have to wait for my friends****…usually in class I have to wait for others, and it makes me bored."* (P2)
> *"I'm not confident to do it right away.* ***I will study first****…revise my book so I can remember better."* (P6)
> *"I* ***learn to be independent*** *and* ***answer questions on my own.****"* (P8)
> *"I usually have to* ***wait during free time****…I'm* ***nervous*** *to go first. I waited until other friends finished."* (P7).

Based on the researchers' observations, several participants consistently completed the games as soon as access to WOW was given. In contrast, some participants preferred to wait and need time to revise their notes before gaining enough confidence to answer the questions in WOW. Regardless of both contexts, both participants had the advantage to join WOW at their own time. It directly empowers personalised learning experience. The participants could assess their situations and decide on the options that suited them. In conventional classroom settings, the participants learn the same materials within the allocated period with similar learning methods. Many find themselves either ahead or behind others.

Consequently, it positively affects learning outcomes, especially for those who require more time to understand the materials. Online game learning in WOW extends the benefits of personalized learning as students learn individually at their own pace. The findings are in line with Wu [48], which reported considerable enthusiasm from the students to use online game applications due to the flexibilities of personalised learning.

The study noted that the flexibility of accessing WOW regardless of place and time allowed the participants to manage their learning schedules. The participants could learn at their own pace which made learning feel more personalised to them. The self-paced method in WOW is significant in providing autonomy in their learning. Several participants, such as P6 and P7, may need more time to recall vocabulary before completing the games. In contrast, others would want to play the online games immediately and review their scores later. Similar findings were found in Lin et al. [49], which highlighted that mobile learning could allow students to self-access their learning experience. The less-average students were able to take more time completing the quizzes and games one by one without feeling pressured. As for the above-average students, they were able to continue learning slightly at a faster pace without getting distracted or having to wait for the others [11].

Similarly, the participants may replay the games in WOW to obtain better scores that could be done by answering correctly based on the feedback received. The self-paced method could mould the participants to be

better autonomous students. Lin et al. [49] further state that assigning students with autonomy encourages growth in confidence, reduces students' dependence on teachers and supports students to become lifelong students.

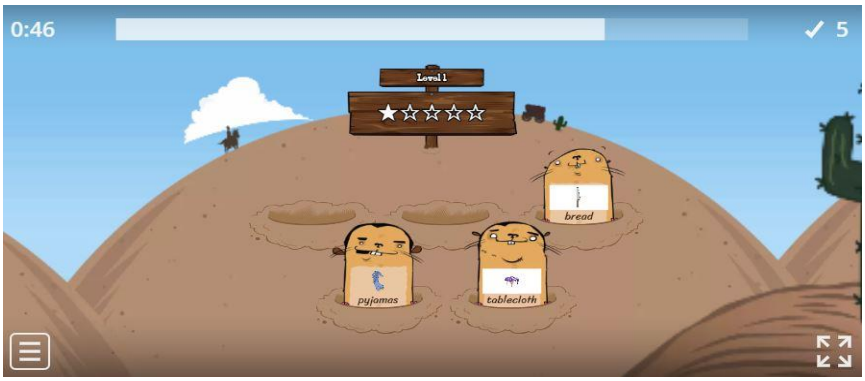
4.1.3 Attractive features and functions

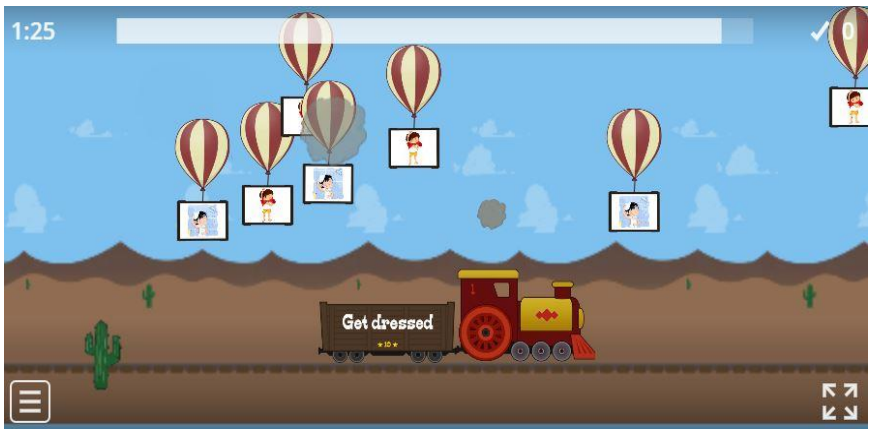
The responses on WOW integration in vocabulary learning demonstrated the participants' high level of motivation. One of the major factors that increased their motivation was WOW's attractive features and functions as an online vocabulary game. Seven participants provided positive feedback on its features and functions, which included appealing themes and game challenges. P1 and P7 expressed their excitement of playing WOW online games with themes that appeal to their interests. There are 15 themes available in WOW, such as *Newsroom, Jungle, TV Game Show, Wild West* and *Space*. P8, P4 and P7 agreed that the attractive features and functions, which were the various themes, had made the games and quizzes appeared more captivating and appealing. The feature presented was interesting as compared to conventional classroom lessons. P9 mentioned that the themes of online games helped her to 'get in the mood' of completing the games and quizzes. P5, P1 and P7 shared that the themes created a memorable learning experience. They specified their favourite game themes which were *Spooky, Wild West* and *Jungle*.

> *"**I like the game themes**…it makes the games livelier." (P8)*
> *"(The game themes) is interesting and makes learning **different than what we usually have in class**." (P6)*
> *"(The layout/theme) appears at the start of the games…it **gets me in the mood**." (P9)*
> *"Teacher gave us **different games with different themes**…I was **excited to play**." (P4)*
> *"The **spooky theme is my favourite**…like it **because the sound is scary**…suitable with the theme…and the **background is mysterious picture**." (P5)*
> *"It (each game) comes with its layout**…it's memorable for me**. For example, the **cowboy (Wild West) theme**…it starts with **cowboy background music**…when we answer correctly there is a **gunshot** sound." (P1)*
> *"The **music with the theme**s and layouts was also quite interesting…because it suits the game. We also have a **jungle theme**. In the background, we can **hear crickets and birds**…like in the jungle." (P7).*

Next, seven participants attributed positive experience in integrating WOW online games with regard to various game types in WOW. The participants provided positive responses to the game challenges in the online games. The researchers utilised 20 types of game templates which are suitable for vocabulary learning. Four of the most popular among the participants of the study were *Whack-A-Mole*, *Fly the Airplane, Balloon Pop* and *Maze Chase.* Each game template offers a different challenge for the players.

Figure 4.1 Example of game templates in WOW





Seven participants stated that the challenges could sustain their attention and boost the excitement of playing the online games while learning vocabulary. P1 said she was satisfied when she managed to overcome the challenges and obtain the correct answers. Scores were awarded upon overcoming the challenges in each game. P5 expressed his constant curiosity over the types of challenges that they would encounter in each game. P4, P6 and P2 mentioned that challenges in online games kept them focused and excited during learning. The participants described that competing with other participants actively engaged them in learning. P9 agreed that the challenges were exciting as he had to use different skills to overcome them. It served as a motivation for him to continue and complete the games. P7 found that the physical interaction in the games, which required him to control a certain flying object, drag or quickly tap on the correct answers was initially challenging to him, but he overcame it and enjoyed it.

> *"…it is* ***more fun to play games with challenges*** *than study in the* class *like usual…I* ***feel satisfied*** *when I solve the games."* (P1)
> *"… (the challenge) is like, something unexpected.* ***It keeps me wondering and curious*** *for other games".* (P5)
> *"Using the game is* ***more challenging****…it is* ***more exciting*** *than learning in class."* (P4)
> *"Some games are interesting, some are boring depends on the challenges in the game.* ***When the challenge of the game is fun, I became more focused****…not easily distracted."* (P6)
> *"****I like that we can compete with other friends****…****I don't feel boring****"* (P2)
> *"There are many games to play…****it has different challenges...****I can use* ***different skills*** *(to overcome the challenges) …****feel motivated*** *and* ***had fun*** *while playing****."*** (P9)
> *"There are games where we have to control the moving object to choose the correct answers…a bit challenging at first…but* ***enjoyed it****."* (P7)

The researchers observed that the participants enjoyed having quizzes during lessons. The entertaining and challenging nature of the quizzes contributed in active learning. It was observed that the class atmosphere would instantly become cheerful whenever the teacher announced that they would have quizzes after lessons. Thus, the participants agreed that the integration of WOW contributed to a positive vocabulary learning experience, for there were various types of game templates and challenges in WOW. The participants benefitted most in terms of focused attention when they participated in learning that test their capabilities of overcoming challenges. The various features and functions in WOW presented challenging and relevant activities that allowed the participants to feel confident and in control of their learning. As a result, it was apparent that the integration of WOW as a platform to learn vocabulary is effective.

4.1.4 Enjoyed the positive reinforcement in the games

Positive reinforcements that elicited the most responses and discussion among the participants were the reward-based feature (scores, bonus points and extra chances) and the leaderboard. Five participants responded positively to the elements of scores and rewards in WOW. The reward-based feature was suitable to engage the participants in short-term activities. P1 was satisfied when he obtained scores as the rewards. P9 and P2 described their effort in ensuring that they scored full points while playing the games in WOW. P4 appreciated the extra chances given, and P8 positively responded to the bonus points offered when she scored three correct answers in a row. Extra chances and bonus points are part of the reward-based feature in WOW. Scores and points contribute to competitive learning among the participants. P7 suggested that it was important to him to win against his friends. P2 supported by saying that she often liked to ensure that her scores were higher than the others. P9 agreed that he liked to compete with other players and being one of the winners.

> *"I replay the games to make sure I got full points****…I want to get ranked high****." (P9)*
> *"****I like playing WOW because I can get scores in the games****. I like to get high scores…feel satisfied." (P1)*
> *"****I was given bonus marks when I got three corrects in a row****…I feel happy because I got more marks than my friend." (P8)*

*"I got the **extra time chance** once…I **appreciate** it. **I get to redo the questions** that I got wrong as there is still some time left." (P4)*
*"I like getting high ranking and **win against other friends**." (P7)*
*"I like to **make sure I have higher scores than my friends.**" (P2)*
*"I like being the winner too…**like to compete with my friends**." (P9)*

Engaging the participants in competitive learning, WOW provided a Top 10 players' ranking on a leaderboard that visualized each game's participants' achievement. Only ten players with the highest scores would have their names displayed on the leaderboard by the end of the game. The leaderboard was proven to be able to promote competition among the game players. Five of the participants elaborated on their positive experiences with the leaderboard. P12 and P7 revealed that getting their names on the leaderboard (Top 10) had become the main 'goal' that they looked forward to. P7 would go through the leaderboard to look for his name and felt satisfied when his name made the rank. P2 described that while she liked the leaderboard, some of her friends felt indifferent with their ranks in the leaderboard. P1 and P8 were excited about climbing up the rank and when their names were displayed on the leaderboard.

*"I can see the leaderboard…we can see our scores after we completed the game. **I often check my scores**. **When I got placed high, I feel good."*** (P12)
*"I like to look for **my name in the leaderboard** after every game."* (P7)
*"I think most of the times I got high scores, I can see my name on the leaderboard. **It makes me feel happy**."* (P1)
*"At the end of the game, it shows **our names and scores**. I can **easily check** others' scores too. I think others might like to see the leaderboard too…I think **some (of my friends) don't really mind of their scores.**"* (P2)
*"When more and more players are in the game, it reduced my chances to make it into the leaderboard…**I often got surprised and excited when I see my name in the high ranking** after I completed the game."* (P8)

The high determination showed by the five participants to obtain a high ranking in the leaderboard proved that there was competitive learning among the game players. High scores and rank in the leaderboard were the most highlighted rewards anticipated by the participants throughout their experience of integrating WOW in vocabulary learning. The rewards acted as positive reinforcements to engage the participants in competing with their peers and encouraged success on one's volition. The goal-oriented and competitive nature of WOW online games captivated the participants' attention for them to be immersed in vocabulary learning. When students are engaged in a game, they are more likely to absorb vocabulary subconsciously [46], thus obtained an effective and meaningful language learning experience. Zainuddin et al. [43] published similar results, who reported that the online gamified setting facilitates competition among players in an enjoyable environment. The participants were significantly more involved in the task and activity put forward to them. It could be inferred that high engagement with language content resulted in effective language acquisition. As students engaged in online games, they are prone to go through an unconscious process of absorbing the language, as there is a greater focus on playing games and accomplishing goals than learning the language. Interestingly, it was proven that there is a significant positive correlation between students' scores in educational mobile game applications with an increased grade in their learning performance [69]. Similarly, a previous study reported that the utilization of online gamification tools increased the students' vocabulary mastery [70] [71].

4.2 How do Year 5 students' experience of WOW online games differ in terms of their races, socioeconomic status and mobile device familiarity?

To answer RQ2, this section will elaborate on how the participants of diverse race, socioeconomic status and levels of familiarity with mobile devices, experience the integration of WOW online games in vocabulary learning differently. Overall, there is a prominent difference in experience among the Year 5 students of different races, socioeconomic statuses, and familiarity levels with mobile devices.

Table 4.2.1 Summary of different experiences faced by the students based on race, socioeconomic status and levels of familiarity with mobile devices.

Theme	Race			Socioeconomic status			Levels of familiarity with mobile devices		
	Malay	Indigenous	Indian	T20	M40	B40	High	Moderate	Low
Easy access to WOW	/		/	/	/		/	/	
Faced difficulties		/			/	/			/

a) Easy access to WOW

The groups of participants found their learning with the integration of WOW to be accessible through the portability of the mobile devices, convenience of access through a single device and flexibility of time and place. Six participants established that they experienced the ease of access to WOW through their mobile devices. Unlimited accessibility to appropriate mobile devices and a stable internet connection were the key factors to experiencing ease in accessing WOW when it was assigned as homework. P5 elaborated that she viewed WOW as a convenient platform for learning vocabulary as she could read and answer the questions on a single device. P2, P9, P8 and P10 stated that the flexibility to integrate WOW at any time and place was a crucial factor in completing WOW online games. P2 emphasised on the portability of mobile devices which allowed her to access WOW regardless of place conveniently. In addition to using only one device to access WOW, P18 acknowledged that he felt less pressured when answering the questions. It was convenient that he could try answering several times to get the correct answers.

> *"I **like WOW as homework**… it is better because we do not have to write…we can just answer in the game… it is **easy to use**." (P5, Malay, M40, high familiarity)*
> *"I have **my own phone**. It's easy because I can **just bring it everywhere** while completing the games…generally **I feel happy** when I answer the questions." (P2, Indian, T20, high familiarity)*
> *"For me it's **easy to study while using my phone**…I just clicked on the links…**I use Wi-Fi so usually it's okay**…not loading that much." (P9, Malay, T20, moderate familiarity)*
> *"Yes, I can **play it anytime**…I usually play it right before I sleep so I can play it while relaxing." (P8, Indian, M40, high familiarity)*
> *"I can **use my phone** to play all the games…." (P10, Malay, M40, high familiarity)*
> *"We can just complete the homework in WOW. **I don't feel nervous or frustrated** if I got wrong answers...I can just try to answer if I don't know…if I'm wrong I will **redo the questions**." (P18, Malay, M40, high familiarity)*

Overall, the participants from these groups expressed that it was easy to complete the games in WOW due to its portability of mobile devices, convenience and flexibility. Most of them admitted to having plenty of access to mobile devices. The responses were in line with the observation notes of their behaviour during the focus group interview. The participants were relaxed and honest in sharing their experience of integrating WOW in vocabulary learning. They could exchange opinions about which games that they liked the most and their highest achievements as they have completed all of them. The findings were also supported with the researchers' notes based on the game results and summary which listed the participants who completed the games. During the interview, the researchers asked several vocabulary questions (i.e., spelling, meaning) tested in the games. Overall, the participants were able to answer most of them correctly. It demonstrated the participants' earnestness in utilising WOW as a vocabulary learning tool.

Mobile devices helped the participants access WOW at any time, any place, on any network, or any wireless device. The findings support Kumar and Raja [36], which state that integrating mobile learning allowed

education to be significantly more accessible than conventional delivery methods. Learning materials could become accessible to a larger audience through mobile applications, podcasts and e-books. Biswas et al. [37] reported that 69.2% of the study's participants responded that mobile devices provided them with the flexibility to learn anytime and anywhere. It demonstrates that mobile learning is a useful tool during the Covid-19 pandemic where students could still participate in class from wherever.

The researcher notes that most participants experiencing the ease of access to WOW are the more privileged groups. It is related to findings in Tang [62], which indicated that family income was substantially associated with smartphone ownership and greater access to the apps in mobile phones. Students in a better financial situation were more likely to invest money and effort to own a personal mobile device.

b) Face problems when accessing online games

On the contrary, many participants from the Indigenous group, B40 and low familiarity with mobile devices failed to complete all units in WOW. The findings were supported with data from classroom observations and written questionnaires. These groups of participants reported unsatisfactory and less positive experiences in integrating WOW as a vocabulary learning tool. The problems faced by the participants included incompetency in the English language, limited access to mobile devices and lack of stable internet connection.

Four participants admitted that they could only complete several 'easy' games in WOW, for instance, matching and quiz with answer choices. P3 described the difficulties completing more complex games that revolved around spelling, word meanings, and synonyms due to their incompetency in the English language. P6 and P4 tried several times but could not attempt the text completion and fill in the blanks questions due to their limited vocabulary repertoire. In addition, P7 and P3 reported the absence of more knowledgeable others and were unable to ask anybody when they faced difficulties with the language. The researchers noted in their field notes that most of the participants who struggled with the vocabulary online games were also remedial students who have yet to master basic English language skills such as reading, despite being in Year 5.

> *"I did not complete the difficult games…because* ***I cannot remember how to spell****…some* ***words are long****, it's difficult for me…****cannot ask anybody****" (P3, Indigenous)*
> *"I tried several games. In some games,* ***I don't understand the sentences****." (P6, Indigenous)*
> *"It's* ***difficult to understand many words*** *in English...especially* ***fill in the blanks with the sentences.*** *I don't know the meaning in Malay." (P4, B40)*
> *"There are a few games which are difficult for me to do.* ***I don't have anybody to ask for help****." (P7, low familiarity)*

The participants reported that they faced difficulties in completing WOW due to language incompetency. The findings are consistent with the researchers' field notes. During the study, the researchers identified the participants who had completed only a few online games in WOW. The researchers lent several mobile devices so they could access the games during school's time. The researchers observed that the participants struggled to complete sentence-based level games individually. They attempted to copy answers from each other. During formal lessons, the researchers noticed that some of the participants did not enjoy the vocabulary games or pop quiz as much as other participants. They would seem too nervous to answer, and some refused to participate in the sessions. Later, the participants admitted to feeling shy and afraid of getting the wrong answers. They faced difficulties as they attempted to recall the meaning of certain words and were easily overwhelmed with long sentences. The researchers proposed the integration of WOW online games to provide a comfortable alternative for shy participants; however, that was not the case.

On the contrary, Maslawati et al. [40] reported that 'Quizziz' as an online game-based learning tool employed in the study is believed to reduce learning anxiety and undesirable attitudes towards learning. The previous research also described that gamification is effective for increasing learning outcomes and decreasing anxiety among students [41] [42]. The contrast in the findings can be explained by the age and English language proficiency level of the participants employed in the current study compared to those in the prior studies. The

participants' young age may play a significant role in their inability to manage their worries and incompetence effectively.

In addition, the participants struggled to complete the online games in WOW due to having no one to refer to. The participants, who were mostly from the Indigenous and B40 groups were shy and reserved. It was difficult for them to adapt to the integration of WOW in vocabulary learning as the usual learning dynamic has transformed. The participants were accustomed to the conventional learning dynamic which is to rely on the teacher for guidance instead of being independent students. The findings are consistent with a previous study of the Indigenous students [60]. They discovered that the students were accustomed to a single source of information, thus still depend heavily on their teachers. In the same study, the Indigenous students were reported to face difficulties when required to complete tasks using technological devices due to their incompetency in manipulating such devices.

The participants from the less-privileged groups most frequently had a low-intermediate level of English proficiency. They needed constant guidance and were more comfortable asking for help from teachers or discussing the answers with their peers. However, the lack of supervision during home learning indirectly affected the participants as they received inadequate guidance, resulting in low self-confidence. The findings on the B40 group are concurrent with several previous studies. Hamid and Khalidi [58] discovered that students from lower-income families tend to lack in parental supervision during online learning. In the B40 communities, most parents did not have the luxury of time to guide their children as both parents were occupied with multiple jobs to make ends meet. Thus, they were unable to supervise their children during online learning. The lack of parental involvement had caused the students to have low interest and low confidence in learning. Other than that, the findings align with research conducted by Akram and Ghani [64]. Students with lower socioeconomic status were reportedly more anxious in learning than those from higher socioeconomic status, owing to various variables, including the lack of required learning devices, poor guidance, and motivation.

Other than that, the primary concern of using WOW in vocabulary learning among these groups of Year 5 students is accessibility. Based on the responses from the written interview, the participants disclosed that they were unable to access WOW due to two main reasons; 1) lack of access to mobile devices and 2) lack of access to a good internet connection. The researchers noted that the issue of limited access was shared among Indigenous participants, B40 and low familiarity with mobile device groups. Seven participants from these groups described their experience as unsatisfactory and average, as they had limited access to a mobile device. P6, P3, P5 and P7 did not own any personal mobile device and were dependent on their parents' mobile phones to access WOW. However, most of their parents were working during the day. Thus, the participants had to wait for their parents to come home before they could use the mobile phones. P7 and P4 stated that access to mobile phones was limited as one phone had to be shared with other siblings. P11 expressed demotivation when WOW took a significant amount of time to load due to the low-quality device.

> *“I don't have a phone.* ***I use my mother's phone*** *to study, but she came home late." (P6, Indigenous, B40, low familiarity)*
> *"I* ***have to borrow my father’s phone*** *so I have to wait until he is done using his phone for work." (P3, Indigenous, B40, low familiarity)*
> *“I don’t use WOW frequently because* ***I rarely use handphone*** *at home.” (P5, B40, low familiarity)*
> *“We have one phone so* ***I have to share with my siblings****. I cannot use it when they have class." (P7, B40, low familiarity)*
> *"****I share my mom’s phone*** *with my younger and older sister." (P4, B40, moderate familiarity)*
> *"Sometimes* ***my phone hanged when I was playing****, I don't like when that happen." (P11, B40, moderate familiarity)*

Not owning a personal mobile device restricted their access to WOW online games, indirectly discouraged the participants and repressed their initial enthusiasm. Most of the students from the B40 families were only able to access WOW from their parents' or guardians' mobile phones. The limited number of device(s) available per

family forced the students to share and take turns in using the devices for online learning. The findings are consistent with Ghavifekr et al. [51], which point to some common issues in mobile learning: cost and equity of access. The integration of online games in learning proved to be challenging to a younger group of students who did not own a personal mobile device. Belay [53] underlined that the urban-poor and rural students were more likely to be in a disadvantaged position, owing to the restricted access to learning devices. Moreover, the findings discovered that low-quality mobile devices might hamper the participants' motivation in learning. Comparatively, Sarfoah [54] reported that students might experience some technical and usability issues that yield their learning interest. The scholar further stated that 80% of her respondents confirmed that they had experiences with frozen devices' screens at crucial moments while learning was ongoing. This occurrence, according to general comments, makes learning ineffective.

Next, there was a collective agreement among the Indigenous and B40 participants when the researchers raised the issue of an unstable internet connection limiting their access to WOW. Three Indigenous participants described their experience of accessing WOW as poor due to poor internet connection which caused a longer loading time.

> *"At my house, the Internet is slow…sometimes I have to wait and try a few times when the line is better. Many of us have the same problem with the Internet…our* ***neighbourhood is difficult to get access****." (P3, Indigenous, B40, low familiarity)*
> *"The internet at our housing area is quite poor, teacher…* ***multiple houses shared the same WIFI.****" (P6, Indigenous, B40, low familiarity)*
> *"The games* ***took some time to connect****…my father said that the connection at our area is terrible (P13, Indigenous, B40, low familiarity)*

The precise and similar responses from three of the Indigenous participants in the study indicated that limited internet access was due to the location that the Indigenous community resides at, specifically in areas that were relatively remote from the accessible basic facilities. The distance was estimated to be up to 20 kilometres. Insufficient bandwidth is an issue observed in many countries during online learning [57]. It caused delays and connection failures during lessons. More significantly, the distinctions between rural and urban areas are obvious. There were additional barriers to getting good Internet access for students residing in rural regions, in particular.

Four participants from the B40 group and two participants from the M40 group acknowledged the poor internet connection as part of the struggle in their experience. P6, P4 and P11 participants recalled feeling frustrated having to share the limited source of internet connectivity with other family members, which caused a slow connection. As a result, they felt demotivated to continue playing the online games in WOW. P11 elaborated that the phone's mobile data was insufficient because there were too many online games to be completed. Since the gameplay in WOW required a stable internet connection, P3 mentioned the likelihood for a stable internet connection to be achieved was during late nights. He attempted to access WOW at night when the internet connection was expected to be smooth, but his mother restricted it. P5 and P10 who were in M40 group and have low level familiarity of familiarity with mobile devices agreed with the B40 participants. They preferred to save the mobile data as it was costly for them to purchase.

> *" I can use my mother's phone, but the* ***internet is not very good****...we* ***have to share*** *so sometimes it slows down because* ***many people are using it****." (P6, B40, low familiarity)*
> *"...I was often* ***frustrated with the slow internet connection*** *as it causes the games to load for some time. It might be because we are* ***sharing our father's mobile data****...so it is slow." (P4, B40, moderate familiarity)*
> *"I did not often play because the* ***connection was barely available****, I need to* ***wait for it to load for a long time****. The connection might be better at night when it's not busy, but my* ***mother does not allow me to have the phone at night****." (P3, B40, low familiarity*
> *" There are a lot of games to play. I didn't do all…problem with no internet. Limited data because I'm using my parents' phone." (P11, B40, low familiarity)*
> *"The problem with using WOW is that it uses mobile data…****mobile data is expensive*** *to buy." (P10, M40, high familiarity)*

*"I like playing the games, but **I do not prefer it to use it**...**I want to save my internet (data)." (P5, M40, high familiarity)*

The gameplay in WOW required a stable internet connection. The researchers ran some tests and confirmed that an unstable internet connection caused interruption of the game playing in WOW. The screen would freeze and the participants could not tap or click on anything when it's in loading mode. However, the countdown of time in the game was not affected. In this context, the players would keep losing time while waiting for the game to load. It was unfair for the participants as the time set for each game was only between 5-8 minutes. The findings on challenges of Internet connectivity were similarly reported in Murshidi [56]. As most of the work in mobile learning is done through connectivity, an unstable or slow connection may present to be challenging. Students may encounter connectivity issues while accessing the materials online due to weak or non-existent mobile network connections.

The findings established that most of the participants of the Indigenous group, B40, and Low level of mobile device familiarity reported that it was difficult for them to access WOW due to the limited internet connection. Poor internet connection proved to hamper online learning motivation [51] [52]. In addition, the usage of internet data was an additional cost to the families of low-income households. Crescente and Lee [59] discovered that cost may be an inhabitable factor of mobile devices' integration in learning. Large and smooth Internet connection require the students to invest a sum of money which may be costly to them. Due to insufficient and unstable Internet connection, many participants had significant difficulties with online learning. The findings were in line with recent studies on the digital divide and unequal learning suffered mostly by families of the less privileged [58]. Thangiah et al. [55] described most students from the B40 community experienced a lack of motivation in online learning. Demotivation could be caused by a shortage of required devices, learning materials and internet access during online learning. Fernando et al. [57] acknowledged that technological challenges in online learning, primarily about the lack of Internet connectivity, affect many disadvantaged families. Digital inequality has been an issue more common than was usually expected. Restricted access to the required learning devices and poor internet connection proved to impede students' participation and online learning engagement, thus inhibiting positive learning experiences among students.

Other than that, students from the B40 families experienced poorer living conditions and less conducive learning environments. Belay [53] supported that many students living in rural areas do not have a comfortable and conducive environment to study. Most students live in low-cost housing areas with limited spaces for conducive learning to happen. The students were more likely to share rooms with their other siblings due to inadequate space in their households. Congested spaces caused noise interruption that affected their focus and caused them to feel stress. The possibility for the students to get distracted was high as they were required to complete house chores at home and felt the need to sacrifice their study time to help their parents. Thus, these disruptions had caused them to feel distracted, disinterested and demotivated in learning.

5. Conclusion

The undertaken study managed to explored Year 5 students' experience of integrating WOW in vocabulary learning and how their experiences differ in terms of race, socioeconomic status and mobile device familiarity. Findings revealed that Year 5 students had positive experience in utilising WOW as a vocabulary learning tool. They described several positive gains which included being able to experience fun learning, personalised learning, attractive functions and features, and enjoyable positive reinforcement. In addition, the study discovered that there was a significant difference in experience among students of diverse race, socioeconomic status and levels of familiarity with mobile devices. The findings indicated that a majority of Malay and Indian participants, as well as those from T20 and M40 socioeconomic class and have high or moderate levels of mobile device familiarity, enjoyed utilising WOW due to the ease of accessing WOW in portable devices and in their own time. However, some underprivileged groups, such as students of the B40 socioeconomic class, the Indigenous and students with low level of mobile device familiarity, had an unsatisfactory experience and faced multiple challenges throughout integrating WOW online game in vocabulary learning. These findings provide significant implications in understanding the practicality of online educational games through the lenses of ESL

students. The findings of this paper will be useful in recommending primary school teachers to use online games to help expand students' vocabulary repertoire through fun learning.

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