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The Use of 'Vocscape' in Vocabulary Acquisition Among Year 2 Pupils in Sarawak

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Abstract

Learning English through games is one of the most preferred strategies in the 21st Century classroom. However, limited digital portability, connectivity, and flexibility throughout Sarawak posed a milestone for teachers to utilize educational games in their classrooms. This research focuses on how the educational game VocScape can be used to facilitate vocabulary acquisition and retention among pupils in Sarawak primary ESL classroom. The action research is therefore conducted in 4 different schools with 100 participants of Year 2 pupils. To seek the capacity VocScape holds in vocabulary acquisition and retention among Year 2 pupils, pre and post-tests are used in this study. Observation checklist and questionnaire are used to determine participants' perceptions of the educational game. Most students show significant interest and motivation in using the application while others become demotivated due to unfamiliarity and time-constraints of the challenges in the game. Hence, the findings suggest that VocScape is effective to be used in Sarawak primary ESL classroom. It can function as both learning and assessment tools. Therefore, the new application paves an exciting possibility for Sarawak educational settings.

Keywords: educational game, English language learning, vocabulary, 21st century learning, primary school

Introduction

Rapid growth of technology has been paving way for more learning opportunities and maximise 21st century learning worldwide. Hassan et al. (2016) define that the main role of educational technology is to provide additional strategies that can be used to address the seriousness of educational challenges. Although learning English has become more convenient these days, the integration of technology is often ill-implemented in classroom around the world. Some people are still struggling to be proficient in the language.

Vocabulary acquisition plays a major role in shaping users' basic proficiency. Francis and Simpson (2009) prioritizes vocabulary learning because words are the building blocks of language. There are many emerging and innovative apps that would accommodate to vocabulary learning such as 'Vocabulary Builder' in one of the Ipad application (Clark 2013). The result of the experimental study by Clark (2013) concluded that visual and audio exposure through the app boosts the vocabulary acquisition of the learners. Once basic proficiency is established, most vocabulary is learned incidentally through reading and digital apps. Likewise, a study by Goodwin and Ahn (2010) suggested that students learn vocabulary faster when they can generalise morphological knowledge to

get the meaning of new words. Alqahtani (2015) affirms that learning of vocabulary is an important part in foreign language learning as the meanings of new words are very often highlighted, whether in books or in classrooms. Therefore, the use of digital application is an effective way to introduce new words which learners can retain.

In Malaysia, the integration of ICT in teaching vocabulary is nearly impossible in primary schools especially in the rural area in Sarawak (Bayuiong, Ajop, Legak, & Yunus, 2019). A research had been conducted in response to the assumption that digital application and tools replaced technology's use in the classroom will benefit English language learners in their acquisition and retention of vocabulary. Yunus, et al. (2013) also stated that ICT could help learners improve their vocabulary and let them to get the meaning of the words that they read in the texts. Therefore, this paper aims to seek the potentiality of VocScape in vocabulary acquisition and retention among Year 2 pupils in a suburban school and three rural schools in Sarawak.

Literature Review

Fourth Industrial Revolution (Industry 4.0) became the impetus to Education 4.0, in which the very core of it is technology (World Economic Forum, 2019). It highlights the integration of technology in teaching and learning to "provide for the needs of society in the innovative era" (Hariharasudan & Kot 2018). It transforms the education landscape in many areas, from its primary ideologies to pedagogical approaches to the expanding medium of instructional practices. The focus is no longer on just basic reading, writing and arithmetic skills. It, instead, provides a platform for learners to be equipped with the knowledge, skills and competencies to thrive in the future world. As stated in Hariharasudan and Kot (2018), Puncreobutr (2016), and Krpálek and Krelová (2016) suggested that Education 4.0 offers "21st century life coping skills namely leadership, collaboration, creative, digital literacy, effective communication, emotional intelligence, entrepreneurship, global citizen, problem-solving and teamwork, critical thinking, creativity and innovation, cross cultural understanding, information and media literacy, and career and learning skills." These entail the complex yet fundamental qualities that our learners should discover and grasp in their schooling years. World Economic Forum (2015) outlined the three categories of 21st century skills required by the learners including foundational literacies, competencies and character qualities. These three categories imply that the learners gain not only knowledge and skills, but they should be able to identify sources for the knowledge and skills (Fisk 2017, in Hussin 2018). This illustrates the role of technology in the world of education now and in the years to come as a key tool for information sourcing.

Malaysia is on the right track in preparing our young for the demands of the Industry 4.0. In 2011, Kurikulum Standard Sekolah Rendah (KSSR) or Primary School Standards-Based Curriculum was introduced and established starting with Year 1. Kurikulum Standard Sekolah Rendah (KSSR) exhibited parallel elements in response to Industry 4.0, whereby the Standards-Based English Language Curriculum (SBELC) particularly promotes "critical and creative thinking skills as well as reasoning skills that are incorporated in the learning standards to enable pupils to solve simple problems, make decisions and express themselves creatively in simple language" (Curriculum Development Division 2011, as stated in Sulaiman et. al. 2017). Just after two years, the Ministry of Education launched the Malaysia Education Blueprint 2013 – 2025 (MEB) which reviews the education reform that will be taking place. The MEB proposed six key attributes to cultivate globally competitive students and they are (i) knowledge, (ii) thinking skills, (iii) leadership skills, (iv) bilingual proficiency, (v) ethics and spirituality and last but not least (vi) national identity (Ministry of Education 2012). The attributes are directly in relation to the skills of 21st century generation outlined in the Education 4.0.

In the 2013 – 2025 Malaysia Education Blueprint, Ministry of Education (2012) conveyed that in comparison to Bahasa Malaysia, operational proficiency of English language is lower. This led to foundation of Shift 2, which stated that every child is proficient in Bahasa Malaysia and English Language and is encouraged to learn an additional language (Ministry of Education 2012). While Bahasa

Malaysia is declared as the country's national language and depicts the identity of Malaysians, English is conversely acknowledged as "the language of trade, commerce, communication, politics, science and technology" (Chan & Abdullah 2015). English is widely accepted as a global language and Malaysia is aware of its (English) stand across nationalities. In the education context, English is the language of knowledge as access to educational resources and materials are extensively available in the language. As reported by Hariharasudan & Kot (2018), in the wake of the digital era, the language of choice is English. Most technological applications or digital tools use English language. Hence, this highlights the need to further develop our learners' command of English language in order for them to sustain and prosper in the contemporary world.

Hence, in regard to this matter, technology integration in the English language classrooms needs to be explored in order for the instructions to be effective and successful. Razak et. al. (2018) proposed that technology supports learning and knowledge discovery in a constructive and active manner, leading to powerful learning environments. The incorporation of IT in the teaching and learning processes offers teachers numerous learning opportunities (Yunus & Suliman, 2014) and the use of ICT has permanently diversified teaching strategies adapted in language learning (Yunus, 2018). Hashmi (2016) also mentioned that learners will have self-confidence, motivation and enthusiasm when technology is incorporated in the learning process (Razak et. al. 2018). This is in line with the basis of Shift 7, which is intended for Information, Communication and Technology (ICT) leverage to foster quality learning across Malaysia regardless of student skills and location (Ministry of Education 2012). This indicates that technology has a solid stand in the field, and that it contributes to altering of the nature of education. Education has become "more personalized, hyper, interactive, mobile, global and virtual" (Apandi, 2019). As a whole, technology brings positive outcomes when it is used fitting to the objectives of the teaching and learning. It is discovered that technology is beneficial as it arouses students' interest in learning and helps them to be more flexible, which in turn encourage them to be independent learners (Mafuraga & Moremi 2017) and somehow bring in interactive learning climate into the classroom paradigm (Wong, et. al., 2019).

Now, the question is, how do we combine the best of both worlds, merging technology and education, or more precisely in English vocabulary learning? Uniting the two components must be in proportion to the demands of the Industry 4.0. With the overwhelming expectations and pressure we are placing on our young, this study intends to explore the use of gamification in primary ESL classroom and its worth in the classroom setting. It seeks to identify the implications gamification has on teachers and also the learners. Gamification in education is still a fresh concept, although it has been successfully used for business, training and motivational purposes (Flores 2015; Yunus & Azman, 2019). Studies on gamification in education is progressively rising in number (Yolageldili & Arikan, 2011; Luu & Nguyen, 2010; Chua & Zuraidah, 2013; Alsawaier, 2017; Kennedy, Deshler & Lloyd, 2013; Murati & Ceka, 2017; Lee & Hammer, 2011; Bayoung, et. al., 2019; Yunus, et. al., 2013), however none were specific to the application of gamification in teaching and learning of English in a primary classroom, principally in distinguishing its suitability with primary level learners. Thus, it is aspired to discover the extent of employability of gamification in English vocabulary instruction with primary school learners and hopefully bridge the gap of technology present in the rural classroom environment.

Methodology

Research Approach

This study had employed a mixed-method approach in which the integration of both quantitative and qualitative data analysis was performed, as data was gathered through both quantitative and qualitative means.

Samples

Purposive sampling that involved the process of identifying and selecting individuals or groups of individuals that are exceptionally knowledgeable about or experienced with a phenomenon of interests

(Cresswell and Plano Clark, 2011, in Palinkas, et al., 2013) was done on 100 Year 2 pupils with low to average English proficiency levels were selected. The proficiency levels were determined through the Classroom-Based Assessment (CBA) in their first semester. Pupils who acquired Band 1 to Band 3 particularly were chosen for this study.

Pre and Post Tests

To obtain quantitative data for this current study, pre and post-tests had been utilized for quantitative data analysis. The instrument used for pre and post tests were constructed and developed by adapting the questions obtained from Superminds Students' Workbooks which are highly relevant for Year 2 pupils as the workbook is used and operated daily in school. Participants were familiar with the format of questions as they had been using the book since they were in Year 1, as highlighted in the Scheme of Work provided by the Ministry of Education. Ergo, the test used was presumably valid and reliable in the sense that the contents are relevant to the participants' knowledge, and the materials are in line with the existing curriculum. The full score of the test adapted is 30 marks with 12 items being posed and inserted into the instrument. Descriptive data analysis, which referred to the mean scores of both pre and post tests were calculated and analyzed. Mean scores for both tests were compared to come up with a suitable inference establishing the efficiency and productivity of the intervention used, and the mean scores were calculated using the IBM SPSS Statistics Version 23.

Observation Notes

As for qualitative data for this current study, observation notes had been utilized. Researchers had developed a critical qualitative measurement of critical observations notes, used to observe certain qualities and themes to triangulate the data. The observation notes were comprised of ten items, followed by written remarks by the observers, derived from three underlying themes for this research, namely interests, participation and performances. The Cohen's Kappa coefficient – statistic used to measure the reliability of qualitative items (Warrens, 2015), was used to determine the reliability of the notes, and it has .80 reading of Kappa value, indicating a strong level of agreement, which can be deciphered as a reliable instrument (McHugh, 2012). Below is the interpretation of Cohen's Kappa reading, as provided by McHugh (2012).

Table 1: Interpretation of Cohen's Kappa coefficient based on McHugh (2012)

Value of Kappa	Level of Agreement	% of Data that are Reliable
0 - .20	None	0 – 4%
.21 - .39	Minimal	4 – 15%
.40 - .59	Weak	15 – 35%
.60 - .79	Moderate	36 – 63%
.80 - .90	Strong	64 – 81%
Above .90	Almost Perfect	– 100%

VocScape

VocScape is an offline educational game-based application, which is the result of gamification and e-learning theories that are believed to be effective in enhancing pupils' learning motivation, participation and performances in language learning. It is as well believed is intervention will assist the young learners in acquiring intended language proficiency. It is also aimed to help participants vocabulary acquisition and retention through interactive and fun learning. It is hoped that this application provides a healthy and non-threatening learning environment to assist pupils' education.

This intervention is adapting the 'Escape Room' concept, in which all participants are required to pass every level before proceeding to the next stage or phase. This is intended to detect and determine the participants' performances and their ability to complete a task within an allocated time frame. This

game has three levels that are represented by the doors. Each door covers different topics in Year 2 syllabus, which are, Door 1- Unit 6 The Old House, Door 2- Unit 7 Get Dressed and Door 3 – Unit 8 The Robot. The application is developed with an interactive and bright interface to attract participants to learn.

Figure 1 shows some sections of activities that can be selected to be part of the learning process. Songs have been inserted to be part of the application as it would help the participants to recapitulate vocabulary learned. Songs would as well benefit pupils in vocabulary retention and enhance their motivation in vocabulary learning (Dzanic & Pejic, 2016). The songs attached as the internal part of the application were all attained and extracted from Superminds Workbooks.

Figure 1: VocScape was developed with interesting interface to attract young learners

Figure 2 below demonstrates samples of questions that must be answered by the participants in Door 1. Each door consists of four questions, ranging from easy to hard in difficulty level. The formats of questions were developed based on the activities typically conducted in the classroom, and the formats and compositions are kept similar in all doors. For instance, the third question in all doors adapted the format of a bubble map, in which participants need to choose one correct picture to describe the situation correctly.

Figure 2: Each door comprises of four questions of different levels of difficulty, ranging from easy to difficult.

Procedures

The first step of this study was to assemble numerical data from pre-test, which was later used to compare the results obtained with post-test, in which, by extension, used in determining the participants' performances. This was then followed by the execution of VocScape application in

instructional processes, which was done gradually and progressively in two phases. Firstly, the use of songs inserted in the VocScape, enabling pupils to enrich and recapitulate some meaningful vocabulary learnt, which includes configuration of letters, spellings and definitions. At this phase, researchers should assist participants by strengthening participants' memorization of vocabulary through the use of various activities. Next stage was the assessment and enrichment phase in which participants were divided into groups and played VocScape game that had adapted the 'Escape Room'. At this phase, participants were not given marks for any correct answers, but chances to get the right answers, as they need to pass every level to allow them to complete the game, as what the concept of the Escape Room game implies. It is axiomatic for the participants to be able to transfer and transmit the knowledge they learnt into the games. They would be given chances to apply the knowledge they had gained within the allocated time. During these two phases, researchers had supervised observations on participants' interests, participation and performances. Finally, post-test was done to collect numerical data and compared the results with pre-test results.

Data Analysis

Mean scores from every schools were collected and extracted from the pre and post-tests. The data collected were tabulated. Mean scores for both tests were then compared to determine and spot any differences in scores. These data were as well obtained and calculated via the IBM SPSS Statistics Version 23 application. Data triangulation was later done based on observation notes which had adapted thematic analysis. Themes involved for this particular study were performances, interests and participations.

Result

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Quantitative data analysis was attained by comparing the results obtained via the execution of pre and post tests on 100 participants involved. This descriptive analysis was used as an indicator of participants' performances which slightly signified the capacity VocScape held in catering participants' performances in vocabulary acquisition. Table 2 below shows the mean scores derived from the IBM SPSS Statistics Version 23.

Table 2: Participants' mean scores between pre and post-tests based on schools

Schools	Pre-Test ($\bar{x}_1$)	Post-Test ($\bar{x}_2$)	Increment Value ($x_2 - x_1$)
A	11.7	22.7	+11.0
B	12.0	22.8	+10.8
C	12.1	24.3	+12.2
D	11.7	25.1	+13.4

Based on the quantitative data illustrated above in Table 2, participants involved were showing meaningful improvements in their performances, specifically in vocabulary retention and acquisition. Participants from School A had shown improvements of 11.0 in the mean score. As for participants from School B, participants were able to show improvements of 10.8 in the mean score. For School C, an increment of about 12.2 in the mean score had been achieved by the participants involved. While in School D, participants were able to show improvements of about 13.4 in the mean score.

Table 3: Participants' mean scores between pre and post-tests from all four schools.

Pre-Test (μ_1)	Post-Test (μ_2)	Increment Value ($\mu_2 - \mu_1$)
11.9	23.7	+11.8

Meanwhile, Table 3 above has shown the mean values obtained from four schools involved as a whole. One hundred participants were able to show a meaningful development, which can be seen through the increment of the mean score by 11.8. Through the data analysed, it implies that this intervention particularly is effective in enhancing vocabulary retention among participants in all four schools involved.

Observation Notes

Data obtained from observation notes were presented and tabulated as provided in Table 4, based on themes set for this particular research.

Table 4: Data collected from triangulated critical observation notes

Theme	Item	School	Remarks
Interests	Participants show great enthusiasm to complete the assigned tasks	A	Most participants were showing high enthusiasm as they appeared to be excited and truly eager to answer questions posed in the intervention
		B	Most of the participants were enthusiastic and participated actively throughout the activity. They were eager to answer the questions, which do not normally happen especially with low proficient pupils.
		C	Most of the participants instantly hooked on the tasks as they were highly motivated to answer the question given.
		D	A big number of the participants were provided with a fun and non-threatening learning experience through VocScape whereby they were given opportunity to reattempt the tasks. They were deeply engaged in playing VocScape as the game provided series of increasing difficulty of tasks.
Participations	Participants show a sign of predominantly interactive communication and engagement during the implementation of VocScape	A	Majority of the participants communicated with each other in the process of learning. Effective communication did occur in which participants were actually discussing to identify the correct answers.
		B	Most participants interacted with one another during the lesson at a higher degree. They were keen to help one another to ensure that their friends answer the questions correctly.
		C	Most participants were able to discuss with each other throughout the session.

Performances	Participants were able to complete the assigned tasks within the allocated time frame without struggling	D	Majority of participants were actively engaged in discussing the answers with their peers. This indicates peer learning is happening.
		A	Most of the participants were trying hard to answer within allocated times and they were able to accomplish the aim.
		B	Majority participants showed no signs of delaying the task, in which they immediately worked on the task on hand. They also understood what they had to do to complete the task successfully.
		C	Most of the participants managed to answer all assigned questions within the allocated time frame and they comprehended the tasks completely.
		D	Most of the participants were answering the assigned tasks immediately.

The observation notes had been triangulated amongst four schools to derive meaningful qualitative data in the themes of interests, participation and achievements. In the theme of interests, as can be seen on some essential points prepared in the observation notes above, tabulated in Table 4, participants were very enthusiastic and keen in completing the assigned tasks prepared in the intervention. It had been noted and recorded that most participants involved were deeply engaged in doing the activities provided by this intervention. Traits like enthusiasm was as well observed from the participants. This had inferred that the participants' motivations had been boosted up through the use of VocScape. They appeared to be excited in doing the activities. They participated actively throughout the sessions, which rarely observed to be happening in normal lessons. This circumstance had as well provided an information that VocScape held a great capacity in affording a non-threatening and healthy learning ambience to pupils.

As for participations, the participants were all able to increase their interpersonal skills through the intervention, in which the participants were able to convey effective communication that was meaningfully vital in participants' learning process. Besides that, participants had engaged actively during the implementation of the intervention. They were also observed to be keen on helping one another to provide a more meaningful learning ambience. Based on the situations portrayed and recorded before, it was clear that VocScape did underpin communicative learning approach in its dependability to becoming a great tool of learning. Effective communication is vital and essential in developing pupils' interpersonal skills, together with their cognitive development in language learning.

As for the last theme, which was performances, pupils were able to accomplish the intended objectives in which they had succeeded to complete the assigned tasks within the allocated time. Plus, they also had no signs of delaying in answering the assigned tasks, in which they understood the tasks given to them. This circumstance had proven once again that VocScape did hold a great capacity and opportunity to provide a meaningful mean of language learning. The emerging of the application of Information Technology (IT) in the process of learning is essec Ergo, it is noteworthy to say that this intervention had risen participants motivations in learning, and by extension, enhanced their academic performances.

Discussion

Performance

Data presented in the above chapter had signalled an increment in pupils' achievements, motivations and participation in language learning. Based on the quantitative data obtained and tabulated in Table 2 and Table 3, mean scores obtained by the participants had revealed an increment of +11.8 for all 100 participants involved this study. Based on the tables, pupils have been affected positively in the aspect of performance in vocabulary learning specifically. The same things had occurred when observations were made. All schools had shown similar scenarios in which all participants had demonstrated positive responses in answering the questions within the allocated time frame and no signs of delaying the tasks were shown. Participants were seen to be able to complete their tasks in the allotted time frame, indicating pupils' positive influences in the theme of achievements that allow them to do so.

The use of VocScape is clearly and unequivocally positive towards contributing enhancement in pupils' language learning. The evidences above reverberated with the trend set in our educational reform at global scale, in conjunction with the trending practice and application of gamification theory and technology in the process of learning among language learners in integrated manner (Chua & Zuraidah, 2013; Alsawaier, 2017; Kennedy, Deshler & Lloyd, 2013; Murati & Ceka, 2017; Lee & Hammer, 2011; Bayoung et al., 2019; Yunus et al., 2013). This circumstance is highly relevant to numerous studies, proposing that the use of gamification and integration of technology in teaching processes assisted the learning process.

Interests

Participants' interests were highly related to the motivations (Harackiewicz & Knogler, 2017) derived from the use of VocScape in the process of vocabulary learning. In this specific study, interests were seen and established through observations done. Based on the data obtained, similar to other educational applications, VocScape does hold a tremendous motivational and interactive value in assisting pupils' learning. This has shown that Vocscape does empower motivation in learning vocabulary, making learners competent in their learning. This is coherent to the study done by Yolageldili and Arikan (2011), in which 63.3 % teachers had used games in teaching of language item among young English language learners, and it was proven to be effective where 93.3 % said that games promoted encouragement, entertainment, at the same time, fluency or mastery could be achieved. This study also reverberates with the proposition that the teaching and learning experience can be enhanced through the use of gamification (Yunus & Azman, 2019). Through the layout and presentation of the data obtained, educators can grow a realization of how meaningful games and technology are on children's learning. It also supported a study done by Luu and Nguyen (2010) on 225 pupils that proved games had provided a dramatic improvement on pupils' language abilities.

Participations

The last theme observed in this study is participations. Based on Table 4, predominantly positive and interactive communication had been signalled and gesticulated. Various behaviours, for instance, effective communication with each other and helping out one another had been demonstrated by participants. It was an incumbent behavioural indicator that suggestively proved that VocScape promotes interpersonal and intrapersonal skills among participants. This apparently had confirmed that VocScape stored a high degree of influence in helping learners to be engaged actively in the process of learning. This is by extension, in line with the 21st-century learning as proposed by Hariharasudan and Kot (2018), Puncreobutr (2016), and Krpálek and Krelová (2016), in which Education 4.0 prepares and occupies learners with skills fitting the demands of 21st-century life. Hence, the use of VocScape as a part of Education 4.0 is useful in enhancing learners' participation in learning.

Conclusion

Based on the findings of this research, VocScape provides a fun, meaningful and engaging learning experience to the pupils. The results obtained in this research showed an important improvement in the pupils' acquisition of English language vocabulary as the participants showed active participation and gave extra efforts to compete and complete tasks in the game. VocScape presents opportunities for the

pupils to build up teamwork and engage in fun interaction with their teammates during their acquisition of the targeted vocabulary. With the availability of pupil-centered tasks in VocScape, critical thinking skills, self-esteem and cooperative learning among the pupils can be inculcated and fostered which are crucial in the era of twenty-first century learning.

With the emergence of classroom-based assessment in Malaysia, this innovation is suitable to be used by teachers as a mean of formative assessment after completing a unit in the student's book and in this research is Superminds Student's Book. The series of tasks in VocScape enables teachers to assess pupils' level of vocabulary acquisition whereby the game will reflect the pupils' progression according to the tasks that they are able to complete. The tasks in VocScape path the pupils' learning and usage of the targeted vocabulary in a progressive manner whereby the pupils attempted tasks which allow them to move a step ahead from their current level. It is hoped that the design of the tasks in this game can serve as an example of how game-based prototypes for vocabulary acquisition can be developed specifically to cater the needs of young ESL learners.

Nevertheless, the findings of this study should not be overgeneralized to the whole population as it is a small-scale research. It can be used as a springboard for extensive research as well as expand it into the other areas of language acquisition to further develop the four essential language skills which are listening skills, speaking skills, reading skills and writing skills. It is also recommended that future

research in this field to develop language game that permits successful implementation of zone of proximal development to achieve effective and optimum learning of the targeted language.

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