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ACQUISITION OF VOCABULARY IN PRIMARY SCHOOLS VIA GOPIC WITH QR CODE

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ABSTRACT

Vocabulary acquisition is paramount in English language education yet becomes challenging especially for primary school students in Malaysia. Prior to this, the advancement and integration of information and communication technology (ICT) in 21st-century learning is crucial in teachers' pedagogical skills and students' knowledge resulting in student-centered strategies. However, students are still lacking in vocabulary skills as they are learning through traditional methods. This action research conducted in two cycles using GoPic with QR Code investigates the importance of improving students' language experiences in their acquisition of vocabulary. The first cycle of the intervention was carried out through group approach. The second cycle was carried out using individual approach. The term 'GoPic with QR Code' is generated from the blending concept of using 'BINGO' word game with picture cards to complement the words (concrete nouns) being applied and assessed for the intervention. The respondents comprise of a total of 64 low proficiency primary school students, that is, 58 Year 1 students from Selangor and 6 Year 5 students from Sabah. Pre and post-test, survey questionnaire and field notes were instruments used in the data collection. The findings concluded that by using GoPic with QR Code, students revealed increment in their English language vocabulary. It also reflected positive implications on the teachers, students and school administrators.

Contribution/ Originality: This study contributes in the existing literature on ESL vocabulary strategy. It examines the use of *GoPic* with QR Code by the students in ESL classrooms in primary schools and the effectiveness of this strategy in improving students' vocabulary acquisition.

1. INTRODUCTION

Generally, primary school students have difficulty to learn and remember vocabulary. Prior to this, Gordon (2007) suggested that teachers should find a solution to assist them to overcome the problem; developing new schemata and establish connections between them. The inception of the concept of century learning is thrusting educators to diversify their teaching pedagogies in the classroom since technology can change the attitude of millennial and Gen Z students (Muralidhar, 2019). In fact, Thornbury (2002) once said, "without grammar very little can be conveyed, without vocabulary nothing can be conveyed."

Correspondingly, 21st century learning should allow students to learn in technological contexts and adhere to the aspiration of the National Philosophy of Education to produce holistic individuals propounded by the Ministry of Education Malaysia (2013). Additionally, with the progression of the 4th Industrial Revolution (4IR) in education, cybergogy encourages teaching and learning practices in a virtual environment. Throughout the years, the Ministry of Education in Malaysia had not only proposed and implemented various alterations in curriculum development but also introduced a handful of programmes in hopes that it will shed some lights into the ongoing problems of English language acquisition starting from primary school students.

However, Hussin, Nimehchisalem, Kalajahi, and Yunus (2016) revealed in their studies that learners in Malaysia struggled in acquiring language skills because of limited knowledge in vocabulary. Likewise, Yunus, Kiing, and Salehi (2013) discovered that time, skill constraints and participation from the learners are limitations required to be handled by teachers in boosting learners' vocabulary. In line with that, Mashhadia and Jamalifar (2015) stated that vocabulary is a major component of language proficiency as it provided a solid foundation for how well learners speak, listen, read and write. Most primary schools' students have low vocabulary acquisition despite years of learning the language during their early education schoolings.

Various factors have been discovered through numerous previous studies done by many researchers such as traditional teaching approach, family background, socio-economic background, limited exposure to English environment, lack of interesting and conducive media (learning materials and tools), low motivation and interest as well as students' perceptions and attitudes toward the learning process (Kusuma, Adnyani, & Taharyanti, 2017; Mashhadia & Jamalifar, 2015; Yunus. & Abdullah, 2011). The main objective of this study is to determine the effectiveness and respondents' perception of *GoPic* with QR Code for the acquisition of vocabulary for primary school students. The research questions are as follows:

1. What are the respondents' acquisition of vocabulary before and after using *GoPic* with QR Code?
2. What are the respondents' perceptions of *GoPic* with QR Code for the acquisition of vocabulary?

2. LITERATURE REVIEW

2.1. Vocabulary

According to Brown (2000) vocabulary is crucial in language learning because it serves as the foundation of any language. As such, students fundamentally need to have an adequate amount of vocabularies or lexical knowledge to ensure good acquisition of the four language skills namely listening, speaking, reading and writing (Febriyansyah, 2015; Khalidiyah, 2017; Noviyanti, Bahri, & Nasir, 2019). Due to its importance especially in the second language, vocabulary learning should be emphasized in the classroom.

Regretfully, Kusuma et al. (2017) commented that most teachers have very limited strategies to support teaching as they rely heavily on the textbook as the only source of teaching material. For this reason, learners become bored and demotivated with the passive learning style. Undeniably, the primary school students often have short term memory resulting in a disappointing, poor outcome, although the teachers have drilled them throughout the lessons. Likewise, the result of students' lack of motivation to acquire the language is often due to their repetitive failures experiences in acquiring the language (Yunus. & Abdullah, 2011).

2.2. Technology in Education

The Information and Communication Technology (ICT) is a powerful learning tool due to the wide usage of utilizing new technology not only to communicate but also to share ideas (Asnadi, Ratminingsih, & Myartawan, 2018; Yunus.., Salehi, & Nordin, 2012; Yunus, Nordin, Salehi, Sun, & Embi, 2013). It plays an essential role in education development; allowing changes to take place and enabling sharing of innovative ideas to shape the education field especially in the teaching and learning of English as a second language. Unsurprisingly, the trend of using ICT in education in the 21st century evolve rapidly with the advanced development and innovation of digital mobile technology and

smartphones. Additionally, the mobile devices possess characteristics like portability, functionality, ubiquity, utility and connectivity. It is also discovered that the use of ubiquitous mobile technology (ubiquitous learning) has a positive effect of increasing the idea of innovation and learner involvement, participation and interaction (Huah & Jarrett, 2014; Leone & Leo, 2011). Based on her study, Yunus (2018) reflected that there are various technologies available that is useful and varied to be used in language teaching and learning which currently had become vital to language practice. Hence, educators must be equipped with the latest knowledge and skills in technology to accommodate the growing needs of learners. This is supported by Leone and Leo (2011) as the combination of traditional with digital learning material to promote innovation, fostering student-centred approach and accommodate learners' personalization of learning.

QR or Quick Response code is notably a form of 2D (two-dimensional) bar codes that can be read by a scanner and capable of storing and encoding a variety of content such as texts, URLs, automatic messages, pictures, audios, videos and communication information (Jeon, 2015). It has distinguished features such as high recognition speed, detailed storage of information, accessibility through mobile devices, user-friendly, minimal costing and portability. In addition, Huah and Jarrett (2014) revealed that the QR code is versatile in terms of generating a guided learning environment and yet still allow learners to immerse in the learning process. This freedom provides learners with the autonomy to navigate learning within their own pace. QR codes are used to connect the analogue to the digital world parallel with the ubiquitous learning environment to cater for the different needs and learning styles of the 21st century learners.

2.3. Previous Researches on BINGO Game, Pictures and QR Code

Undoubtedly, games are known to promote competition and cooperation which can motivate students to play the game and unconsciously help them to learn the language in a fun environment (Kusuma et al., 2017). It plays a central role in a child-centered lesson allowing the element of repetition, thus giving opportunities for lexical learning. Richardson et al. (2009) quoted in Febriyansyah (2015) appraised that by playing BINGO game, it will encourage students to learn and memorize the vocabularies. This game is flexible and can accommodate learning objectives based on the topics learnt and relatively easy for teachers to use for thematic syllabus accordingly to create meaningful real-life context, creating fun and relaxing atmosphere for learning and active participation. According to Asnadi et al. (2018) and Noviyanti et al. (2019) it is used as a supplementary teaching media to teach vocabulary because it allows students to use language through communication and cooperation in teamwork, enhance motivation, self-confidence, enthusiasm, engagement and concentration, develops positive perceptions towards language learning as well as cultivate students' retention of vocabulary. Interestingly, the researchers selected using the Bingo game as enrichment and lesson reviews; enabling students to work individually, in pairs or groups to help students in their acquisition of vocabulary. Based on previous findings, there were positive impacts on students' vocabulary after the intervention.

Alternatively, academicians have always considered the use of pictures and words in teaching the second language since there are multiple advantages of using pictures to aid vocabulary acquisition (Choo & Wahab, 2013). Yunus, Salehi and John (2013) added that pictorial technique assists learners to read texts with interest. Following, Vasiljevic (2015) related that research in cognitive semantics finds that images aids to a powerful mnemonic effect and dual coding of input. Researchers discovered that students undergoing picture-based methods performed better than word-based in terms of vocabulary acquisition. This is because pictorial cues can integrate vocabulary items into students' previous knowledge to create long-lasting mental image memory for instant retrieval of words, making better predictions and decode words. The usage of QR code in education is new and despite its high potential as technology embedded classroom tool, very few researches had been done to acknowledge its added value in facilitating the learning of the English language. Nonetheless, some of the studies that initiate QR code usage suggest a combination of online digital and printed materials through two-dimensional barcodes where it resulted

in students' improvement in language skills including vocabulary knowledge (Abeywardena, 2017; Yahya, Abas, & Ramli, 2015).

3. METHODOLOGY

3.1. Research Design

The researchers decided to adopt the action research method using Kemmis & McTaggart model to reflect on the problem faced by their students in the selected respective schools through two cycles. The first cycle of the intervention was carried out through group approach. The second cycle was carried out using individual approach. It is a spiral design comprising of four steps: planning, acting, observing and reflecting.

A. Plan

The researchers (teachers) planned the teaching and learning intervention to solve the respondents' problem in English language vocabulary. These included preparation before teaching and learning process such as teaching materials (creating GoPic with QR Code) and instruments (pre and post-test, field notes, survey questionnaire) for data collection.

B. Act

Process of implementation of planning:-

The BINGO board comprises of vocabulary words pairing with individual QR Codes with separate picture cards. This first cycle of the intervention was carried out through group approach twice over thirty minutes on the day of the lesson. During the second cycle, the whole intervention was repeated and conducted using the individual approach on the following week.

C. Observe

The researchers observed the respondents' activities in the teaching and learning process in the classroom before, during and after the intervention using GoPic with QR Code. The researchers then determined their progress of vocabulary acquisition.

D. Reflect

The researchers discussed the results of respondents' achievements before and after the intervention based on the pre and post-test scores, field notes and survey questionnaire. The data is then analyzed and reflected.

3.2. Samples

This study comprised of thirty and twenty-eight low proficiency students from Year 1 classes from two different primary schools in Selangor respectively and six Year 5 low proficiency students from primary school in Sabah. They were selected through purposive sampling. Enclosed herewith detailed information of the samples in Table 1.

Table-1. Samples

School	Respondents			
	Age	Gender		Number of respondents
		Boy(s)	Girl(s)	
Sub-urban school 1, Selangor	7	16	14	30
Sub-urban school 2, Selangor	7	11	17	28
Rural school, Sabah	11	4	2	6
Total				64

3.3. Procedures

Firstly, the researchers did traditional teaching by exposing the respondents to concrete nouns. Next, a pre-test was carried out to test on the comprehension of the respondents' knowledge. Following, we conducted the intervention process in two cycles. In the first cycle, the intervention was conducted twice in groups.

The entire intervention process is repeated again in the second cycle which would be conducted using an individual approach. After completing the two cycles, post-test was carried out on the respondents to test and compare their achievements against the pre-test.

3.4. Instruments

The triangulation method was used through multiple sources of data collection to avoid reliance on a single source to 'enhance corroboration of the findings' (Fraenkel, Wallen, & Hyun, 2015). In collecting the data, the instruments used were pre and post-test, field notes and survey questionnaire to see whether the methods implemented were effective and answered to the research questions.

The pre-test was to measure respondents' vocabulary knowledge performance before the intervention while the post- test after the intervention. Respondents' perceptions were also taken into account by field notes via pictures and researchers notes during the intervention. Survey questionnaire was used to determine respondents' perceptions after the intervention to get their feedback on the innovation and whether this action research helped them in their acquisition of vocabulary.

3.5. Data Collection

Formal approval was obtained from the headmasters of the schools concerned for the data collection procedure. The assessment for the respondents' achievement was based on the comparison of data collected from pre and post-test which were then analyzed and compared to see their progress. Their perceptions of *GoPic* with QR Code were evaluated based on the field notes and survey questionnaire. The finalized data would be the benchmark on whether the research objectives were achieved or not.

4. FINDINGS AND DISCUSSION

4.1. Pre and Post-Test

The result of the pre and post-test were calculated using SPSS and the mean score of the pre and post-test of the three schools were tabulated as follows. The data derived would be used to analyse whether the use *GoPic* with QR Code assisted the respondents in their acquisition of vocabulary. The quantitative data results indicated that the respondents' vocabulary performances were better as per findings in the post-test results which were discussed in three different settings in the three different schools using *GoPic* with QR codes for the acquisition of vocabulary.

The comparison of the results where the means and standard deviations (SD) presented in Table 2 showed that there were differences between the pre and the post-test vocabulary scores:-

Table-2. Paired samples statistics.

Test	Sub-urban primary school 1 in Selangor	Sub-urban primary school 2 in Selangor	Rural primary school in Sabah
N Valid	30	28	6
Missing	0	0	0
Pre-test mean	59.6667	59.5714	83.3333
Post-test mean	72.4000	81.7143	90.0000
Pre-test SD	18.90873	26.60747	16.47625
Post-test SD	23.43237	22.63864	11.79830

From Table 2, the score of the pre and post-test for the samples in the three respective primary schools showed that

there were differences in the mean value. The mean values for the post-test were higher (M= 72.400, 81.714 & 90.000, SD = 23.432, 22.639 & 11.798) compared to the pre-test (M= 59.667, 59.571 & 83.333, SD = 18.909, 26.607 & 16.476). The higher mean values from the post-test illustrated that the respondents performed better in the post-test. The SD value in sub-urban primary school 1 in Selangor in the post-test were more spread out with greater variations compared to the SD value of the post-test in the sub-urban primary school 2 in Selangor and the rural primary school in Sabah**.** The findings indicated that the respondents improved after using *GoPic* with QR Code in their acquisition of vocabulary.

Table-3. Paired sample test.

Test	Sub-urban primary School in Selangor 1	Sub-urban Primary school Selangor 2	Rural primary school in Sabah
Pair 1 Pre-test – Post-test Mean	-12.73333	-22.14286	-6.66667
Pair 1 Pre-test – Post-test SD	9.23984	22.82253	5.46504
SD Error Mean	1.68696	4.31305	2.23109
95% Confidence Interval of the Difference (Lower)	-16.18355	-30.99251	-12.40187
95% Confidence Interval of the Difference (Upper)	-9.28312	-13.29321	-.93146
Df	29	27	5
T	-7.548	-5.134	-2.988
Sig. (2-tailed)	.000	.000	.031

Based on the paired sample t-test, as shown in Table 3, there was significant differences between pre and post-test [t (29) = -7.548; p< .05], [t (27) = -5.134; p< .05] & [t (5) = -2.988; p<.05]. The positive increment in term of the mean of the pre-test and the post-test supported the proposed benefits of using *GoPic* with QR Codes in that it may be the benefits of using pictures to aid vocabulary acquisition' (Choo & Wahab, 2013). The use of the pictorial technique (Yunus... et al., 2013) assisted learners in reading words with interest. It also supported the discovery that respondents undergoing picture-based methods performed better than word-based methods in terms of vocabulary acquisition. This is because pictorial cues can integrate vocabulary items into respondents' previous knowledge to create long-lasting mental image memory for instant retrieval of words, making better predictions and decoding of words.

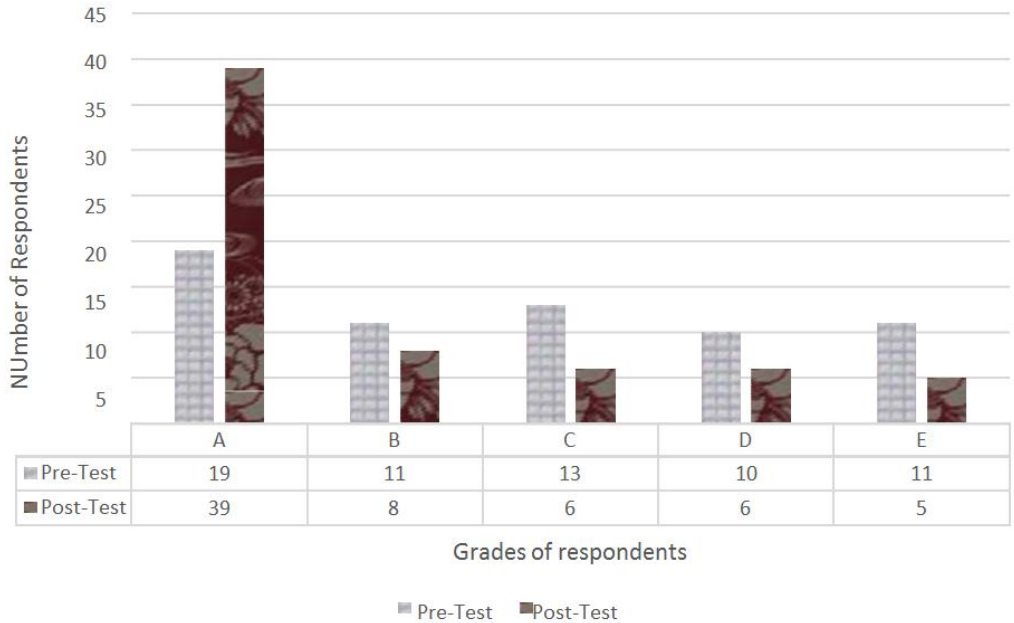

Figure-1. Pre-test and post-test grades of respondents.

The bar chart in Figure 1 illustrated the number of respondents who scored their respective grades in the pre

and post-test. Comparatively, there were only 19 respondents who scored grade A in their pre-test but increased significantly to 39 respondents in the post test. On the other hand, the number of respondents who obtained grades B (dropped from 11 to 8), C (dropped from 13 to 6), D (dropped from 10 to 6) and E (dropped from 11 to 5) were reduced when compared from the pre-test to post-test. This clearly indicated better grasp of vocabulary by the respondents after undergoing two cycles of *GoPic* with QR Code with the first cycle focusing on group approach and the second cycle emphasizing on individual approach.

4.2. Field Notes

Overall, the respondents demonstrated pleasant feelings and positive attitudes towards learning vocabulary using *GoPic* with QR Code as they could get immediate feedback from their peers without feeling intimidated. They seemed focused in learning the language and willing to participate in the game regardless of their proficiency levels. Respondents learned actively and remembered the words better as the competitive and supportive atmosphere in the classroom motivated them while enhancing their enthusiasm to be the winner. Undoubtedly, this game acts as a scaffolding element in the teaching and learning process. Similarly, Kyriacou (2001) asserted that for language learning to be effective, the activities must elicit and sustain respondents' attention, interest and motivation.

In the field notes taken, the respondents' attitude and comparison of the respondents' attitude and responses between the pre-use of *GoPic* with QR code and the post-use of *GoPic* with QR Code were compared. The results showed that there were improvements in terms of the respondents' acquisition of vocabulary. The respondents' feedback were observed and notes were taken down during the steps of intervention. The aspects that were analysed were the respondents' response through the field notes of the respondents' facial expression, their interest in the intervention and the ability to work in accordance with instruction.

Based on the findings of the field notes, the respondents showed interest and motivation in the use of *GoPic* with QR Code to acquire vocabulary. 'The use of ubiquitous mobile technology (ubiquitous learning) has amplified the spirit of novelty and learner involvement, participation and interaction' (Huah & Jarrett, 2014; Leone & Leo, 2011). This is also supported by Melor (2018) in her study that the range of technologies available for use in language teaching and learning is diverse and their usage in classrooms have become central to language practice. Thus, based on the data from the field notes, the findings support the claim that the use of *GoPic* with QR Code helped respondents in their motivation towards vocabulary acquisition.

4.3. Survey Questionnaire

Enclosed herewith a summary of the survey questionnaire and results as in Table 4 obtained from the three respective schools:-

Table-4. Questions and feedback.

No.	Questions	Yes		No	
		Number of Students	Percentage (%)	Number of Students	Percentage (%)
1	It was easy to learn vocabulary using *GoPic* with QR Code.	59	92.19	5	7.81
2	I can learn vocabulary at my own pace when using *GoPic* with QR Code.	64	100	0	0
3	I am motivated to learn English vocabulary after playing *GoPic* with QR Code.	62	98.88	2	3.13
4	I enjoyed playing *GoPic* with QR Code to improve my vocabulary.	64	100	0	0
5	I would love to play *GoPic* with QR Code again next time.	61	95.31	3	4.69

Based on Table 4, 92.19% of the respondents answered yes to the question "It was easy to learn vocabulary using *GoPic* with QR Code. Students discovered that using *GoPic* with QR Code in the learning of vocabulary in the English Language is relatively easy with simple instructions given by the teacher. 7.81% of the respondents who answered 'no' were the weaker students. However, they gradually participated actively and performed better during the second cycle of the game. 100% of the respondents agreed that by using *GoPic* with QR Code, they were able to learn leisurely at their own pace based on their proficiency level. They did not feel the pressure of completing the game within estimated time instead, they were encouraged to take their time to learn the words. This showed that respondents prefer learning in a non-pressurised environment and autonomous learning. Next, in the third question of the survey questionnaire, the respondents are seen motivated to learn English vocabulary after playing *GoPic* with QR Code as 98.88% of the respondents were motivated to learn vocabulary using *GoPic* with QR Code as they managed to succeed the game with a fair chance. They completed the game with the help of technology embedded QR code to guide them in getting the right answer. This boosted their self-esteem, confidence and sense of accomplishment as they were able to remember the words correctly. Those who answered 'no' did not feel motivated as it was less challenging for them since they were more proficient than the others.

All of the respondents (100%) agreed in Question 4 that they enjoyed playing *GoPic* with QR Code to improve their vocabulary. The respondents expressed that they enjoyed the game besides improving their vocabulary. They appraised that learning of vocabulary through *GoPic* with QR Code was better than the traditional method of translating and memorizing since they preferred active learning. Lastly, 95.31% of the respondents agreed that they would love to play *GoPic* with QR Code again next time. They would want to participate in this game again in their future English Language lessons as they enjoyed the game. They hoped that learning vocabulary will be fun whereby they would be motivated to learn and participate actively in the activities planned. 4.69% that answered 'no' for Question 5 were the advanced students; they enjoyed the game but did not want to play again with the same module because they already knew the answers very well. As such, the researchers need to suggest using another set of *GoPic* with QR Code module with different topics or words for the next lesson.

Evidently, *GoPic* with QR Code has proven as a highly innovative and interesting potential media in teaching and learning vocabulary, reflecting improvement in their acquisition of vocabulary. The development of technology in education with mobile learning (m-learning) and ubiquitous learning (u-learning) allowed smartphones and devices to pave ways as powerful learning tools in place of computer, integral to English education. This is supported by Leone and Leo (2011) as the combination of traditional with digital learning material promote innovation, fostering student-centred approach and accommodate learners' personalization of learning. Correspondingly, *GoPic* with QR Code develops social interaction among the respondents providing them opportunities to participate in authentic communication, cooperate, build self-esteem and the willingness to engage in the activity (Taheri, 2014).

This research has further cemented the notion that using games allowed learners to improve their lexical word collection besides enhancing vocabulary acquisition for a longer period thus, promoting an enjoyable activity in a relaxing atmosphere as well as encouraging communication in a real-life context. Unsurprisingly, even the weak students were excited to be involved in the game because games bring elements of fun, reducing anxiety and give learners equal chances to win without depending solely on academic ability (Uberman, 1998). It is not uncommon that students tend to quickly forget new words since they seldom use them. Believingly, *GoPic* with QR Code enabled learners to encounter the vocabularies repetitively whereby they subconsciously attained the words into their long-term memory. Likewise, pictures as well as hands-on learning also aided the process of word-memorizing. Nevertheless, Nation (2001) and Uberman (1998) expressed that students should practice the learned materials to ensure its retention; word games are indeed useful for practicing and revising the new lexical words. Undoubtedly, game-based learning is a kind of task-based approach; hence students learn to build teamwork and cooperate to achieve the objectives allowing them to concentrate and pay attention during the language learning session. With QR Code infused technology, students can monitor their own learning and become autonomous learners in making a

decision. They become motivated and have confidence especially when they were able to recall the words learnt. *GoPic* with QR Code is certainly a highly innovative and exciting potential learning tool to develop students' acquisition of vocabulary based on all the positive outcomes in language learning.

5. CONCLUSION

It is undeniably a challenging task for educators to gear students to be well-equipped with vocabulary skills although many approaches have been taken by the policymakers, stakeholders and educators to produce holistic learners. As the nation is embracing 21st century learning, measures need to be taken to ensure students are geared with 21st century skills whereby it is beneficial for teachers to be able to use Information and Communication Technology (ICT) in their teaching and redefine the students' way of learning vocabulary. *GoPic* with QR code is undoubtedly a springboard for English Language teachers towards student-centered teaching and learning process. Overall, students in this study revealed resounding achievements using *GoPic* with QR Code in their acquisition of vocabulary.

The results of this study using *GoPic* with QR code reflected the implications on the teachers, students and school administrators. *GoPic* With QR Code could enhance the teacher's role as facilitator instead of sole provider of knowledge. As it is also user-friendly, it may help educators as a supplementary teaching tool for vocabulary instruction. Moreover, the blending of conventional and modern technology suite of powerful tools in the delivery of knowledge and active learning makes the classroom activities fun and engaging. The implication of *GoPic* with QR Code towards the students is that it could assist easy memorization and retention of vocabulary in the target language. It also stimulates students' interest, promoting teamwork and communication, ensuring meaningful learning in a real-life context and promote authentic learning by letting students learn at their own pace. Among the implications of *GoPic* with QR Code on school administrators are encouraging school environment whereby teachers work on research-based intervention adhering to students' needs in the acquisition of vocabulary and creates a working environment where there is a collaborative approach for the students' development in their learning and acquisition of vocabulary.

The researchers' recommendations for future studies include determining the effectiveness of *GoPic* with QR Code for secondary or tertiary level students for mastery of vocabulary. This is because the research here is limited to primary level students. Furthermore, since the focus of this research is only towards the mastery of vocabulary, other researchers may consider utilizing *GoPic* with QR code for developing other four primary English language skills namely, listening, speaking, reading and writing.

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