Implementing Quick Response (QR) Codes in Teaching Reading

Suci Hapsari[1); Yulia Nur Ekawati[2*) Nur Laila Molla[3)

[1,2,3)English Education Department, Faculty of Teacher Training and Education,
Universitas Pancasakti Tegal
[2*) Corresponding author: Email: yulianurekawati.ups@gmail.com

ABSTRACT

The purposes of this research were to describe the implementation of Quick Response (QR) Codes in teaching reading, to find out the significant difference between students who are taught with and without using QR Codes, and to know the students' responses from using QR Codes in teaching reading of English explanation texts to Class XI in MAN Kota Tegal in the academic year of 2018/2019. This research used a type of experimental study with pretest-posttest control design. The results of the study described the QR Codes could be implemented in teaching reading as a teaching medium. The steps of applying this medium were (1) asking students to make groups, (2) scanning the QR Code to get reading text and worksheet of assignment, (3) doing the activities stated in QR codes, and lastly (4) discussing the result. Moreover, t-test result showed higher than t-table (4.372 > 2.011). It means that there was significant difference from experimental and control group. In accordance with students' responses result, it revealed that students felt enthusiastic, motivated, and discovered new things during teaching learning process through QR Codes. Therefore, it was suggested to English teacher using QR Codes in teaching reading.

Keywords: Quick Response (QR) Codes, Teaching Reading

INTRODUCTION

Teaching is a process that requires careful and systematic planning. Conventional teaching in school usually takes time for the teacher to explain and for students to listen and to take notes. However, the learning process in the classroom is limited by time, so it is common when the material has not finished yet but the lesson time is over. Moreover, lately, students are more likely in favor of technology-related learning than conventional learning. It causes a decrease in students' learning motivation so that it impacts on their achievement.

In the era of globalization, the learning way is changing. Nowadays, the advances and developments of technology have influenced various changes in the learning environment. One of them is the application of mobile learning. Mobile learning emerges by utilizing mobile technology as a learning tool, supporting media, and promoting a new learning style. Through mobile technology, learning materials are no longer limited to textbooks (Shih et al., 2011). Rikala & Kankaanranta (2012) added that mobile learning

can also be very personalized, situated and authentic as well as bridge formal and informal learning, make learning more student-centered and encourage creativity and innovation.

QR Code which stands for Quick Response Code, is a form of two-dimensional barcodes consisting of black module on a white background, that is released in 1994 by Denso Wave, a Japanese automatic data capture equipment company. Lee et al., (2011) describe that these square pattern codes can contain information such as text, URL link, or other data that can direct users to sources for more information about a particular place of subject. QR Codes can support learning when learners move in the field, for example field activities. It enables students to obtain contextual or location-aware information from environment (Osawa et al., 2007). Moreover, (De Pietro & Frontera, 2012) state that QR Codes also allow the application of innovative systems according to the paradigm of just-in-time learning and collaborative learning. It is possible to connect digital resources to printed text. This implies the potential way to enrich paper-based learning materials. Teacher can provide enriched learning materials which serve and motivate students with different learning needs (Chen et al., 2010).

In educational context, Rikala & Kankaanranta (2012) explain five ways of using QR Codes. They are trail activities or treasure hunts, outdoor or field activities, paper-based task, learner generated content and working instruction. Trail activities or treasure hunts make learners explore their communities and solve problems that they found. In this activity, learners can work in a team or collaboration. The second way is outdoor or field activities which mean that the learners can explore life science subject. In paper-based task, QR Codes can contain links to multimedia resources audio materials or video clips in the case of listening exercises and reading text. Moreover, in learner-generated content, learners can produce reports or other materials online and share their work to other friends with QR Codes. The last way is working instruction, which the teacher can provide directions, guidance and information to learners on how to complete their assignments.

QR Codes can also support learning and encourage students to be more active in learning in the class. Not only can be used as a learning support media, but QR Codes also can help implement of Curriculum of 2013 which one of the principles is student-centered learning, solving problem, and doing some projects to investigate some issues.The use of QR Codes technology can be applied to English learning, particularly in teaching reading. According to Grabe & Stoller (2013, p. 14), the process of the reading is done by a rapid, efficient, interactive, comprehensive, strategic, flexible, purposeful, evaluative, learning, and linguistic process. Based on the syllabus of English for senior high school, in the

second semester, the eleventh-grade students learn about a genre text. The genre text that is taught in the second semester is the explanation text. According to Knapp & Watkins (2005, p. 125), the genre of explanation is a fundamental language function for understanding the world and how it operates. It is used to logically sequence the way we and our environment physically function, understanding and interpreting why cultural and intellectual ideas and concepts prevail.

It is important for teachers to see that technology can be used as an enabler. One of the forms of utilizing technology is the use of Quick Response (QR) Codes. Although QR Codes is not designed as media in teaching practice, the present of it has changed the way of teaching. As Wahyudi (2018, p. 431) states, the development of QR Codes in teaching practice is branch of ICT (Internet Communication and Technology), since QR Codes can be inserted into links to multimedia resources such as audio, video, note as teaching practice. Moreover, QR Codes media can guide self-assessment of students as they can easily access material at unlimited places and times. The aim is to promote learning that is more student-centered since the mobile devices that students used can provide additional information related to the material and are obtained quickly and practically. It is possible to connect the digital resources to the printed text. Hence, it shows the potential to enrich the paper-based English learning materials. Based on the explanation above, the writers are interested in implementing the QR Codes in teaching reading and decided to conduct experimental research entitled "Implementing QR Codes in Teaching Reading".

RESEARCH METHOD

The type of this research is experimental with pretest-posttest control group design. The population of this research was the Class XI students of MAN Kota Tegal in the academic year 2018/2019. The number of Class XI students was 298 that consist of 10 classes. The writers took random sampling to take two groups as a sample. The first group was the experimental group which has been given treatment using QR Codes and the second group was control group which was given a different treatment. Both of the groups were taught the same materials about explanation text.

The writers collected the data by conducting a reading test and questionnaires as the instrument of this research. Firstly, before the writers gave pretest to the sample, the writers conducted a try-out test to the students who did not belong to the sample to see the validity and reliability of the test. The reading test was 50 questions in multiple choice form with five options answer of A, B, C, D, and E. The time allocation for doing the test

was 90 minutes. Then, the validity and reliability of the test were measured. There were 40 valid numbers and 10 numbers were not valid. Next, the 40 valid numbers were chosen for pre-test and post-test. Then, the writers gave pre-test to both of sample groups to see the normality and homogeneity. After the treatment process ended, the writers gave a post-test to both experimental and control groups.

According to Rivers (2009), students' responses about implementation of QR Codes in the classroom can be known through questionnaires. In this research, the writers adopted the questions from Rivers (2009) and Durak et al., (2016) about the experience of using QR Codes in the learning English. The total questions of the questionnaires were 18 numbers with various answer options such as Yes, No, Strongly Agree, Agree, Disagree, and Strongly Disagree.

RESULTS AND DISCUSSION

The purpose of pre-test was to measure students' reading ability before given the treatment.

Table 1. The Difference of Pre-Test Result of Experimental Group and Control Group

Sample	Total Students	Score		
		Minimum Score	Maximum Score	Mean Score
Experimental Group	25	65	85	74
Control Group	25	60	80	71,7

From the table above, it can be shown that the mean score of experimental group is 74 and the control group's is 71,7.

Normality Test

Table 2. Result of Normality Test

Result		Shapiro-Wilk		
		Statistic	Df	Sig.
Pretest	1	.941	25	.154
	2	.942	25	.162

Because the sample of this research was under 50 numbers, the result of normality test used was from Shapiro-Wilk calculation. The result shows that the value test of experimental group is 0.154, which is higher than the significance level 0.05 (0.154 >

0.05). Meanwhile, the value test of control group is 0.162, which is higher than the significance level 0.05 (0.162 > 0.05). Therefore, it can be concluded that both groups have the normal distribution.

Homogeneity Test

Table 3. Result of Homogeneity Variance

	Levene Statistic	df1	df2	Sig.
Pretest Based on Mean	.043	1	48	.836

Table 3 shows the result that the significance is 0.836, and it is higher than 0.05 (0.836 > 0.05). Therefore, both groups have homogeneity distribution.

After the treatment finished, the writers gave post-test to both of groups to find out the significant difference between students who were taught with and without using QR Codes.

Hypothesis Testing

Based on the hypotheses of this research stated that there is a significant difference between students who are taught with and without using QR Codes, therefore, the hypotheses testing was calculated through Independent Sample T-Test. The result can be stated systematically as follow:

Table 4. The Difference of Post-test Result of Experimental Group and Control Group

Sample	Total Students	Score		
		Minimum Score	Maximum Score	Mean Score
Experimental Group	25	72,5	100	83
Control Group	25	70	87,5	74,1

Table 5. Hypothesis Testing Result

Data	t-test	t-table	Criteria
Post-test	4.372	2.011	There is a significant difference

Test criteria: H_a will be accepted if t_0 is greater than t_{table}. It shows that t-test is 4.372, and the t-table for degree freedom (df) 48 at level significance 5%, t-table is 2.011. From the statement, it can be concluded that t-test is greater than t-table (4.372 > 2.011). Hence, it could be interpreted as there was a significant difference between students who were taught using with and without using QR Codes at the Class XI of MAN Kota Tegal.

In this research, the writers designed a lesson plan that involving the QR Codes. The QR Codes link the students to reading texts, web site, pictures or assignment related to the subject to be taught. The writers integrated the QR Code within printed learning materials, alternate games, and an online form of reading assessment.

The steps of implementing QR Codes are as follow:

1. Students are grouped into small groups of four or five students.
2. Each student takes turn using their QR Code reader on mobile phones to uncover the clue.
3. Students scan the QR Code through their mobile phone cameras and find out the clues.
4. Students do the mission by reading the clues and discuss with their mate what does the text about.
5. Students scan other QR Code that contains of worksheet of assignment.
6. Students read the clue and think the answer, and ask them to send their answer to the form that teacher provided.
7. Students answer the questions and collect the assignment by submitting through Google Form.
8. When all clues have been done, the teacher evaluates the students' works and discusses the results.

There were some factors which make them improve in the class. When the writers applied QR Codes as a medium of teaching reading, students discovered something new from learning process. Most of them felt enthusiastic in scanning and generating many codes, getting the text that has been instructed, and completed the work on time.

However, there were students struggling with scanning the QR codes because of technical problems. Based on the observation, when some students had obstacles in scanning the codes, other students would directly help them to scan the code. During the lesson time, the writers also monitored students to keep scanning the code and using their

cell phone for learning purposes only, as well as occasionally reminding them not to access other sites that were not related to the explanation text material. Because the QR Codes were given a lot, indirectly students managed their time to read, scanned other codes, and worked on the problems within the codes.

Learning process became effective because students were aware of the limited time available to work on the entire material. Moreover, when they worked in groups and were given a game, alacrity among members could be seen as when students were assigned tasks to look for and scan the existing QR Codes. Then, when there were words or sentences that were difficult to translate, students immediately look up a dictionary or site to translate through their cell phones.

The most significant point that could be explained is students in experimental group worked with technology during the lesson. They might read the explanation text even they did not bring a book since the explanation text had been recorded and could be read throughout the cell phone. When the writers applied QR Codes as a medium for reading, students discovered something new in the learning process. They were enthusiastic when scanning a lot of codes, making their curiosity appeared and encouraging them to move around actively to find out what was inside the QR Codes. The cell phones they brought during lessons could be a fun medium because technology was involved in learning process. Lesson with no book-oriented became an interesting way for students.

Students had known the concept of studying with QR Codes so that they might prepare themselves to receive new materials and waited to go around the classroom to scan random QR Codes in every meeting. Because learning process became interesting and involved all the students in the class, the students' achievement in reading increased.

Table 5. The Result of Survey Questionnaires Part 1

To find out the students' responses toward the implementation of QR Codes in teaching reading, the writers distributed questionnaires consisting of 18 question numbers. The survey data gathered from 25 students are presented below along with the original questions.

Survey Questions	Yes	No
Do you take your cell phone to every class?	72%	28%
Do you ever use cell phone to learn English?	92%	8%
Do you think using a cell phone is a good way to study English?	96%	4%
Have you ever scanned a QR Codes to get some information?	96%	4%
Do you think QR Codes can be used to help language learning?	100%	-
Did you enjoy using QR Codes in the lesson?	100%	-
Did the QR Codes support lesson unit and have positive influence on your learning?	100%	-
Would you like to use QR Codes activities again?	100%	-

The result presented that among the 25 samples of Class XI MAN Kota Tegal students surveyed, 72% reported bringing their cell phones to their classes and 28% do not bring their phones to school. About 92% of sample reported that they used their cell phones to study English, particularly for using dictionary and accessing translation website, and 8% do not use any application since they often do not bring their phones in the classroom. About 96% believed that using cell phone is a good way to study English, because it simplifies students to find meaning of word and allows them to access any website related to lesson anytime and anywhere. This large number of specific responses indicates the language learning solutions. The option of studying with technology involved is highly desirable.

Focusing on the QR Code usage, among 96% of students had previously scanned a QR Code to acquire some kind of information. Most of the information was related to the products and no student had ever scanned for educational or language learning experience.

Across the sample of 25 students, 100% reported that they think QR Code can be used to help language learning, since the structure of explanation text clearly could be detected, and enjoyed the QR activity both individually and in groups. They agreed that QR activities support the unit lesson since they are not only book-oriented which is limited to reading and doing assignment only in books. Students also would like to do QR activities again in the further lesson.

Table 6. The Result of Survey Questionnaires Part 2

Survey Statements	Dominant Characteristic
I learned explanation text a little bit better and easier.	56% Agree
I did not learn anything because I already knew how to read and do the task of explanation text.	48% Strongly Disagree
QR activities waste more time than the traditional learning.	60% Disagree
Reading from mobile device's display was difficult.	72% Disagree
It was easy to read from mobile device's display.	76% Agree
My phone worked always as I wanted.	48% Agree
I needed help with QR Codes.	80% Agree
I learned a new thing with QR Codes.	64% Agree
QR Codes are simple and efficient to use.	64% Strongly Agree
Learning with QR Codes are motivating and interesting.	60% Agree

Those statements focus on the students' experience of QR Codes implementation. 56% of students agreed that they have learned explanation text a little bit better and easier. About 48% students strongly disagree that they did not learn anything because they already knew how to read and do the task of explanation text. Although it was a moderate number, but it represented that there were students who have not understood about explanation text, and through QR Codes, they understood about explanation text. 60% of students claimed that they disagree if QR activities were considered waste more time than the conventional one. The reason they disagree was because students were often faced with thick books and lots of writing, so they spent more time for reading a lot in the book. Regarding reading through cell phone, 76% of students agreed that reading cell phone's screen display was easy.

However, only 48% of students whose cell phones always worked well as they wanted and as 80% of students in the class needed help when scanning QR Codes. This could occur due to several factors such as technical error of system when generating the codes, lack of storage space in the cell phone so it could not work optimally, and also the

unstable internet network connection. On the other hand, when they were asked if they learned something new with QR Codes, 64% of students agreed with the statement.

Regarding to students' attitude towards QR Codes and language learning, 64% of students strongly agreed that codes were simple and efficient to use. Also, about 60% of the students agreed that learning with QR Codes were motivating and interesting. Some opinions orally delivered through informal talk by the students are: learning with QR Codes were the first time they had done, it was fun and not boring, it was like secret codes, and sometimes they needed to be fun to be motivated.

CONCLUSION

The conclusions and suggestions of this study are as follow: (1) QR Codes were implemented in teaching reading through some steps; (1) teacher asks students to make groups, (2) students scan the QR Code to get reading text and worksheet of assignment, (3) students do all activities stated in QR codes, and (4) teacher and students discuss the result. The quantitative data shows that there was a significant difference between students who are taught using QR Codes and who are taught without using QR Codes, since it has proven in the Independent Sample T-Test calculation result. The result of Sig. (2-tailed) is lower than 0.05 (0.000 < 0.05). It shows that t-test is 4.372, and the table for degree df freedom 48 at level significance 5%, t-table is 2.011. The t-test is higher than t-table (4.372 > 2.011). It can be concluded that H_1 is accepted and H_0 is rejected. Hence, it means that QR Codes gave significant differences when it was implemented in teaching reading explanation text. Based on the various positive responses from questionnaires, the writers can conclude that QR Codes provide motivating, interesting, and meaningful experiences to the students. Students are enthusiastic and curious towards the new style of reading that deviated from their routine exercises. Moreover, the appropriate way to utilize technology in the learning process had been applied well.

REFERENCES

Chen, N.-S., Teng, D. C.-E., & Lee, C.-H. (2010). Augmenting paper-based reading activities with mobile technology to enhance reading comprehension. *2010 6th IEEE International Conference on Wireless, Mobile, and Ubiquitous Technologies in Education*, 201–203. IEEE.

De Pietro, O., & Frontera, G. (2012). Mobile tutoring for situated learning and collaborative learning in AIML application using QR-Code. *2012 Sixth International Conference on Complex, Intelligent, and Software Intensive Systems*, 799–805. IEEE.

Durak, G., OZKESKIN, E. E., & Ataizi, M. (2016). QR codes in education and communication. *Turkish Online Journal of Distance Education*, *17*(2).

Grabe, W. P., & Stoller, F. L. (2013). *Teaching and researching: Reading*. Routledge.

Knapp, P., & Watkins, M. (2005). *Genre, text, grammar: Technologies for teaching and assessing writing*. UNSW Press.

Lee, J.-K., Lee, I.-S., & Kwon, Y.-J. (2011). Scan & learn! Use of quick response codes & smartphones in a biology field study. *The American Biology Teacher*, *73*(8), 485–492.

Osawa, N., Noda, K., Tsukagoshi, S., Noma, Y., Ando, A., Shibuya, T., & Kondo, K. (2007). Outdoor education support system with location awareness using RFID and symbology tags. *Journal of Educational Multimedia and Hypermedia*, *16*(4), 411–428.

Rikala, J., & Kankaanranta, M. (2012). The Use of Quick Response Codes in the Classroom. *MLearn*, 148–155.

Rivers, D. J. (2009). Utilizing the quick response (QR) code within a Japanese EFL environment. *The Jalt CALL Journal*, *5*(2), 15–28.

Shih, J., Chu, H., & Hwang, G. (2011). An investigation of attitudes of students and teachers about participating in a context- aware ubiquitous learning activity. *British Journal of Educational Technology*, *42*(3), 373–394.

Wahyudi, I. (2018). The Effect of Quick Response Code (QR Code) on Student Listening Ability: Experimental Study. *Proceedings: International Seminar on English Language Teaching and Research (ELTAR) 2018*, 429–443.