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A Study on Technology Embedded English Classes Using QR Codes

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ABSTRACT

The development of information and technology has brought plenty of changes to the educational environment. The prevalence of smart phones is particularly playing a huge role in shaping learning methods. Smart phones provide the opportunity to scan QR codes, which can greatly ease access to information. Due to a high recognition speed, recognition rate, and restoration rate, they can be useful tools for English teachers to use in their class. In this study, we suggest using QR codes for writing and picture descriptions. Based on this study, more research should invest in Technology Embedded English teaching models to create better English classes for students.

Key words*: QR Code, Technology Embedded English Class, SMART Learning, English Teaching and Learning Method, EBSe.*

1. INTRODUCTION

As we enter a highly developed information society, smart learning is realized on the basis of wireless internet technology combined with smart phone and tablet technology. The development of smart technology has also incurred various changes in the English education environments. English education contents and teaching and learning models using smart technology have been actively developed. Also, the effects of English education using smart devices have been frequently studied. However, it was not easy to find a suitable research about Technology Embedded teaching models which teachers can use in their English class with smart-devices.

In this study, we selected a QR code as a main technology which students can get motivation and interest from technology embedded class. Since the distribution of smart phones, QR codes have been used in many fields such as marketing and PR. In the case of advertisements, specific information could be added and delivered through QR codes which were previously excluded due to limited space.

Although the smart phone is often regarded as a bad influence on young students, it can be turned into an effective teaching and learning tool when it is used appropriately. Then, the question is how can smart phones be used for English Language Teaching (ELT) and what is the ideal teaching and learning model which makes use of advantages of smart learning and technology? In order to achieve the aims of smart education, it is important to provide learners with the technology and lessons that can provoke learners' interest and motivation. In this regard, this paper will examine the Technology Embedded English teaching model using QR codes which enable learners to use smart phone to participate in class with a high level of motivation and interest in the new technology.

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2. RELATED WORK

2.1 Smartphone Applications Developed for English Learning

To examine smart phone applications developed for English learning which are currently distributed, Kim investigated the applications by analyzing and categorizing the top 100 applications with the keyword ‘English’ in the Korean Apple App Store [1]. The finding of his research shows that vocabulary applications made up 38 out of the 100 apps found and conversation applications numbered 28. These two categories of apps made up over half of the 100 applications apps found in total. The total 100 applications in Kim’s research have been categorized in [Table 1].

Table 1. Categorization of English Education Applications

Vocabulary	Conversion	Dictionary	Others	Total
38 (38%)	28 (28%)	14 (14%)	20 (20%)	100 (100%)

Firstly, vocabulary applications are the most popular type because learning vocabulary takes a relatively short time and vocabulary applications development is relatively easier than other categories. Conversation applications are also considered to be popular because there are many smart phone users in their twenties and thirties who want to improve English conversation skills. Another reason for the popularity of conversation applications is that many people downloaded existing

conversational contents by popular instructors which they have already downloaded on their computers. Some dictionary applications are those that previously existed as hardcopy paper versions and there are also dictionary applications based on web-based online dictionaries. Lastly, there are other applications targeting specific English skills such as listening and writing and also some applications based on games or quizzes for learning. In addition, a notable type of application is an English vocabulary application which Kim and Kim developed, utilizing an English learning program focusing on oral English in accordance with primary school students' developmental stages and enabling them to learn appropriate vocabulary [2].

2.2 Studies about the Effects of English Education combined with smart devices

Since 2012, there have been studies investigating the effects of English education combined with smart technology. Kang and Lee examined the participant satisfaction of a smart learning English language program and the impact of the participant satisfaction on their reliability of English education, their preference on English immersion education and their intention to retake the program. Although it was revealed that there was not a significant correlation between the participant satisfaction and the positive intention to retake the program, it has been found out that there are significant correlations between the participants' satisfaction and the participants' reliability of English education and their preference of English immersion class using smart technology [3].

Also, Kim and Song investigated the effects of mobile writing activities using smart devices and web-based technology on university students' writing skill improvements. Their findings showed that mobile writing groups that use smart devices for writing activities improved in overall writing tests except for countable noun and subject-verb matching test, which shows a significant difference on test scores between pre-test and post-test. Their study demonstrated the potential of smart education on English composition skills using a smart device [4].

Finally, Jang, Won and Jeong found out that smartphone social network users are the heaviest users of vocabulary inferencing strategies in vocabulary learning among the smart phone social network groups, the computer messenger service group, and the offline group, and explained that the result is related with students' preference and the mobility of the device [5].

2.3 QR codes

A QR code is a 2-dimensional barcode invented by Japanese firm Denso Wave in 1994. It is an acronym for Quick Response code and the most distinguished feature is its quick recognition rate and mass storage of information. QR codes can store up to 7,089 numerics, 4,296 alpha-numerics and 2,953 binary codes. It can also store Kanji or Korean characters up to 1,817 characters. QR codes can contain detailed information and can be easily presented anywhere so through QR code students can readily obtain detailed information.

QR codes can be also used to deliver information in a residential area or school bulletin board. Recently, QR codes can be found on school bulletin boards and installments. Previous notices were posted in the form of a single page of images and brief explanations which did not always deliver information sufficiently to students. QR codes can be used in posts and installments where detailed explanations could not be contained previously because of space limitations.

In this study, two activities utilizing QR codes are introduced. The first is a writing activity using QR code. The second is an activity of writing description of photos using QR codes and this activity was included in one of the model classes broadcast in a famous educational TV program. Finally, I will suggest a model procedure of a class utilizing any smart devices including QR code.

3. RESEARCH AND FINDINGS

3.1 Writing Activity Using QR codes

The purpose of this activity is to make sentences in English and insert them in a QR code. The first step is selecting the data type at '1. DATA TYPE' in the left-hand side of the screen. Then, in the box of '2. CONTENT', type sentences to be inserted in the QR code. Here, the teacher can decide on the theme of sentences that students write; in [Fig. 1], 'greeting' is selected for an example theme of sentences. If a student wants to link a homepage or blog, he/she can simply copy the website's address and paste it in the box of '2 CONTENT'. After selecting the color of the QR code in '3. FOREGROUND COLOUR', a QR code is created automatically and it can then be simply downloaded and used. As such, various writing assignments can be done through QR code generating website. Any writing tasks can be easily submitted to the teacher by printing a QR code on paper or tasks can be shared between students by sending QR codes to each other through e-mail, social networks, or text messages.

Fig. 1. Website 'QR stuff' for Generating QR Codes

After the above steps, the QR code will appear on the receiver's screen shown in the left-hand side of [Fig. 2]. Then, the receiver can run the QR code reading program 'I-nigma' so that the smart phone camera scans the QR code. As soon as the QR code is sensed by the camera in student's smart phone, the sentences encrypted in the QR code pop up on the screen.

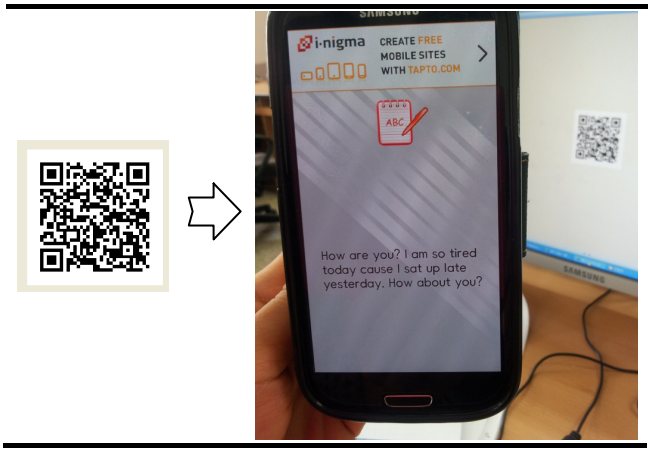


Fig. 2. Reading a QR Code Using Smart Phone

3.2 Activity of Describing Pictures Using a QR Code

3.2.1 Model Class Using a QR Code

This section will examine an example class utilizing an activity of describing a picture and sharing the description using a QR code. This class was introduced as a model class on EBSe, one of the biggest educational TV programs in Korea. From August 2011 to August 2012, EBSe recorded 52 English teachers' classes who were recommended from all over the country and created 52 episodes of 'The Best English Teacher' program. The program started with a professional panel's brief introduction of the class and then it broadcasted one of the teachers' classes. Then the program ended with the professional panels' analysis of the class. 'The Best English Teacher' program was broadcast every Wednesday night at 10:40 pm for 40 minutes and it can be still watched at the following website 'ebs.co.kr', or by searching 'the best English teacher' in the internet engine and portal site 'Naver' for free of charge and without a log into the website. All 52 episodes contained in the program were also published in a book to help Korean English teachers improve their teaching skills [6].

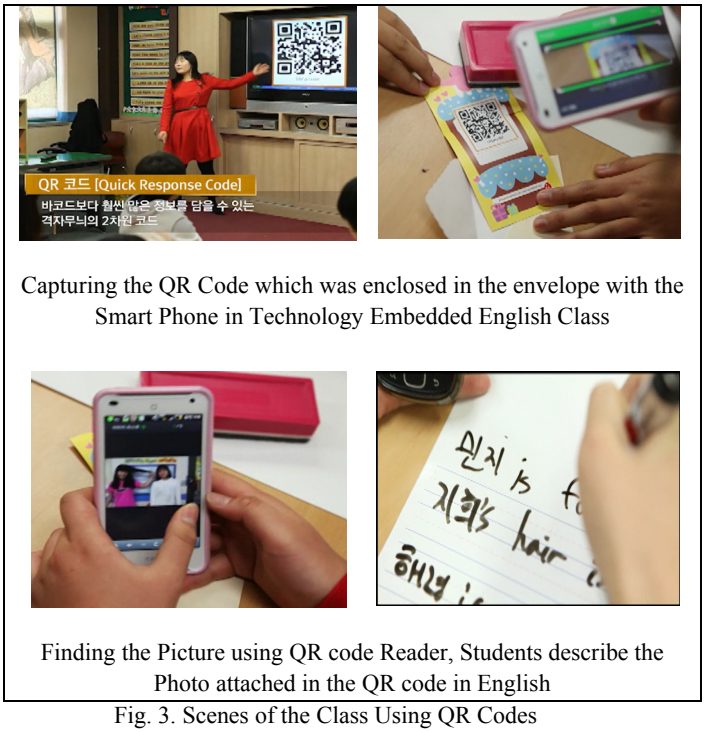
In the 17th episode of the program, teacher 'K' of 'O' primary school in province 'I', used a QR code to make a creative and fun English class. The present paper will examine the class as an example of a class utilizing QR codes. In the class, the teacher distributed a paper bag that has a QR code containing five photos to each group of students. Groups were firstly asked to find five photos by scanning the QR code with their smart phones and then to write about the pictures using sentences of comparative form. This type of task is based on teaching methods that focuses on the form of communication [7].

3.2.2 Procedure of the Class Using QR code

First, the teacher showed an enlarged QR code on a front screen to the class and excited the students' curiosity by saying they are going to do a treasure hunt using a QR code. Then the teacher distributed a paper bag to each group and said the treasure is in it as shown in the upper left-hand side in [Fig. 3]. Students took out the card from the paper bag to find a QR code attached on it then they scanned the QR code using a smart phone as shown upper right-hand side in [Fig. 3]. This class used the internet engine 'Naver' for a QR code reading program, and the 'Naver' reader showed five photos that the teacher linked to the QR code. In the lower left-hand side of [Fig. 3], it can be inferred that the picture described a student named Jihee has longer hair than the student next to her. As such, students got the information about a picture from the QR code and wrote a sentence for each photo using the comparative form which they had already learned in class. This is described in the lower right-hand side in [Fig. 3]: "Jihee's hair is longer than–."

The below is a part of what teacher said during the class.

T: Okay, let's start our second activity. 'Treasure Hunt'. Okay, do you like it?
Ss: Yes.
T: Yes, I like 'Treasure Hunt'. Everyone, look at the screen.
T: Yes, this is QR code. So, now I have something special. In this envelope, there are something special. You can get a treasure. So now I'll give this treasure to each group.
T: Okay, now you can get a marker.
T: You can get 5 pictures. Okay? So you can write the sentence of comparing sentence. Okay, let's start.



Capturing the QR Code which was enclosed in the envelope with the Smart Phone in Technology Embedded English Class

Finding the Picture using QR code Reader, Students describe the Photo attached in the QR code in English

Fig. 3. Scenes of the Class Using QR Codes

In the class, students looked at a smart phone screen to find photos attached in the QR code. As soon as they scanned the QR code with their smart phone, five hidden photos of their classmates appeared. Using comparative expressions they learned in class, members of each group cooperatively wrote comparative sentences that described each of five photos.

In the Model class, the teacher could easily draw students' attention to the task by using high-tech multimedia device such as smart phones. This class was a good example of a lesson that combined high-tech multimedia technology and ELT by

successfully making use of a QR code. In addition to the above activity of writing the description of photos, other activities that students participated include using QR codes and smart phones such as a vocabulary writing activity using smart phone's memo application and tasked based activity where students had to listen to teacher's recordings posted on social network websites or sent by the messenger app 'Kakao Talk' and completed the given task by following the teacher's instruction.

3.3 Technology Embedded English Class Model using QR codes

In addition to the above writing activity using QR codes and describing hidden photos, various teaching methods which utilize smart phones to motivate learners have been introduced and relevant applications have been actively developed [8]-[11]. Since Technology Embedded English Class is also possible using various devices that can generate and read QR codes, this paper suggests technology embedded English class models which can be used with various smart devices and the model is summarized in [Table 2].

Table 2, Smart English Teaching-Learning Model: Using QR Code as an Example Teaching and Learning Material

Stage		Content	Devices Utilization
★Before-lesson		• Check learning objectives and learning steps • Select optimum equipment for smart class • Generate QR code to use in class	• Prepare smart devices and programs required for the class
Introduction		• Introduce main communicative function of class • Check main subject using QR code related video • Guess main subject and explain learning steps	• Introduction and Motivation - Search relevant communicative function - Use YouTube and QR code • Learning Activity - Search relevant video material - Search relevant visual material - Search text
Develop-ment	Pre-task activity	• Learn key vocabulary and expression (A teacher already prepared photos encoded into QR codes) - Learn key communicative function	
		• Information searching activity - Information searching activity on main subject 1 (Individual) - Information searching activity on main subject 2 (Group) • Integrating Online Offline activities - Exchange information obtained online - Individual activity using obtained data	material to use for learning outcome • Integrating Online Offline activities - Exchange information using social networks - Search data to problem-solve the task
	While-task activity	• Group task - Complete QR code task given by a teacher (Complete the mission by reading given QR code) - Students encode assignment into QR code • Share learning result - Check others' assignment using QR code	• Task activity - Produce individual work output - Share work output via e-mail or social network
	Post-task activity	• Review today's class • Organize existing knowledge and new knowledge gained today's class • Q&A on learning contents and methods	• Give feedback on work output attached to QR code to each other
Conclusion		• Wrap up learning content and process • Task on learning content • Suggest QR code assignment and introduce next lesson	• Save data using e-mail, blog, QR code and other materials

The model can be used for not only lessons of writing activities and describing photos but also lessons that use QR codes differently. In the before-lesson stage, the teacher checks smart devices and programs that will be used for the lesson, learning objectives and stages, and teaching and learning materials. As the class utilizes high-tech smart devices and ICT unlike other traditional lessons, the teacher should pay extra attention to the devices and technology so that the class will not be disturbed by the malfunction of devices and poor management of the equipment. To give sufficient preparation

time for the teacher, the stage 'before-lesson' was added before the main class procedure which consists of introduction, development, and conclusion stages.

The stage 'introduction' is mainly for motivating students and introducing learning objectives to them. During this stage, for example, an instructor can motivate students by suggesting a small task to ask students to scan a QR code attached with today's learning objectives and to send it to the teacher. The teacher can make it as a game by giving a prize to a student who sends today's learning objective to the teacher first.

Next stage is 'development' and it consists of three activities: pre-task activity, while task activity, post-task activity. First, the examples of pre-task activities are practicing main vocabularies and expressions, searching for task relevant information and integrating online and offline activities. In this state it is important to ask students to search individually at first then ask them to cooperate in the group to make sure that all the students participate in the activity. During this stage, it is possible to search information through not only smart devices but also books such as textbooks so that students can use more diverse materials.

After the pre-task activity, students are asked to complete the given task through group work. Two activities in the model class mentioned in the previous chapters are 'while-task activity' and 'post-task activity'. A task to write a description of photos in English using key expressions learned in 'pre-task activity' and a task to generate and read QR codes after a writing activity are considered as the 'while-task activity'. Encoding the work output from 'while-task activity' into QR codes and exchanging feedback with other students belongs to the 'post-task activity' stage.

In this stage, through visualizing task output students share their task result with other students through smart device using technology such as social networks and web clouds and share feedback on each other's work. One important advantage of using smart technology in class is that by making it possible to share individual's or group's task output with others through social network or e-mail, students can be motivated to actively present their task output and help each other organize and expand their learning outcome through immediate feedbacks from each other.

In the wrap up stage, students check what they have learned and conduct self-evaluation and peer-evaluation to review learning contents and procedure. When wrapping up, task output or other necessary data can be stored in the web using smart technology such as e-mail, blog, or QR codes. Also, it is possible for a teacher to utilize the internet to introduce the next lesson and assignment, so that students can prepare for the next class through ubiquitous web access.

This method of teaching is different from previous teacher-centered classes which only allowed one-way communication. Classes based on smart technology can promote vitality in public English education by using smart phones which is a device that students like and encouraging bi-directional communication between teacher and students. Also, smart technology based classes make it possible for students to participate in making learning material by themselves. As Lee mentioned, a virtuous cycle of English learning can be expected if we properly utilize smart technology which provides fun and interesting learning material and equipment to encourage students' active participation in public education [12].

4. CONCLUSION

This research tried to find potential uses of smart phones as a learning tool which motivates students and makes English class more interesting. By introducing 'Smart English teaching model using QR codes' which utilizes smart devices and applications, it is expected to create an environment that any student can enjoy learning English using modern technology.

The first activity introduced in the this study was an activity constituting writing sentences, attaching them to QR codes and then sharing with the teacher and other students. This activity is a revolutionary smart teaching model that enables not only out-of-classroom communicative classes but also significant interaction and communication between the author and the reader via QR codes. The activity using QR code can be effectively used to reduce the gap in English education, which is a serious problem today, since English learning using QR codes is ubiquitous so that everyone can have a fair opportunity to access learning.

The second activity introduced in the present paper was writing description of photos and sharing them with other students using a QR code and it was introduced in a primary school English class on the EBSe 'The Best English Teacher' program. Although in a typical classroom opportunities where students can utilize digital data are rare, this class enabled students to utilize not only analog data but also digital data in creative ways. Teacher K successfully introduced an authentic activity to the class using QR codes to find photos of friends and to describe them in English using key expressions previously learned. This way, it was possible for the teacher and students to have authentic communication in English.

Introducing QR codes in the classroom can motivate students in learning and the activity of finding information about tasks and activities via QR codes can stimulate students' curiosity and inquiring minds. Also, the class can be more interesting and motivating if photos encoded in QR code are of familiar people such as friends and teachers. Various activities using QR codes seem to make students have a good feeling towards the instructor, which leads them to pay attention to the class.

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