

EFL Learners' Perceptions on QR Code Enriched Instruction in Developing Macro-skills

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Abstract: Recent developments in technology have prompted educators to integrate technology into their classes with the help of mobile devices. QR codes are one of the most popular tools to implement technology-enriched instruction (TEI) in classes with their various advantages. To this aim, present study was conducted at TISHK International University in Erbil, Iraq on seventy-five Advanced English students in the fall semester of 2021-2022 Academic Year spanning 10 weeks. The participants, who were 35 male and 40 female ones, were chosen via the snowball sampling method. Their lessons were enriched with e-quizzes, e-presentations, e-texts and supplementary videos in an embedded format via QR codes while they were having classes through Scope 2. Data collection was run by SPSS 25 and Nvivo through a survey, a questionnaire and a thorough interview by sticking to the procedures of a mixed method research design. Cronbach's Alpha reliability test, Shapiro-Wilk Normality Test, Mann Whitney U-test and Thematic Analysis were used to fetch and analyse the findings, respectively. The revealed data showed that students' macro-skills developed substantially. Additionally, their perspectives on QR enriched instruction have changed positively. The findings of this study can have some implications for educators who consider incorporating QR codes into EFL classes for the sake of increasing students' enthusiasm.

Keywords: QR Codes, Macro-Skills, Students' Perceptions, Technology-Enriched Instruction

1. Introduction

The phenomenon coined as 'globalization' in literature has increased the influence of English throughout the world. Although German was dominant before the 1940s, the boom of English has been seen more starkly after the World War II period. Since that time, English has dominated all fields that showed the reflections in personal, social, academic and professional lives of individuals (Valkimadi et al., 2009). To name a few, 1.5 billion people have been using English either natively or as a second language. Although there are 7000 languages spoken globally, only English and Mandarin exceed one billion thresholds. Similarly, English is the official language in 55 countries, followed by French and Arabic with 29 and 22 countries, respectively. Correspondingly, the influence of English on global websites has been clearly observed. According to Statista (2022), 63.7 % of websites have been operated in English, followed

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by Chinese, Spanish and Russian consecutively. Di Bitetti and Ferreras (2017) report that more than 80 % of scientific publications have been issued in English. In the same vein, Sahan et al. (2021) point out that 71 % of the universities offer English Medium Instruction (EMI) and the trend has been on the rise. Considering the overwhelming effects of English, individuals who want to communicate with a common language, interpret traditional and online materials, find a well-paid job in an overseas company, seek a better life in an English-speaking country, or study at educational institutions with an EMI have been prompted to learn English.

According to Yildiz (2016), in order to learn English as a foreign language, students need to be exposed to what teachers call "the language skills" — namely, reading, writing, speaking, and listening. Therefore, the goal of language instruction is to help students become proficient in the language for the purposes of both oral and written communication (Mart, 2019, 2020, 2021). In addition, English teaching and learning process encompasses two dimensions, which are macro and micro skills. Macro-skills are reading, listening, speaking and writing, whereas micro-skills are grammar, pronunciation and vocabulary (Noviarani et al., 2021). Macro-skills are also divided into two categories which are receptive and productive. Receptive skills are reading and listening, while productive skills are writing and speaking. Several approaches have been used to teach English in an engaging way, ranging from direct method to total physical response. However, the obligatory shift from being teacher centred to student centred instruction has urged the educators to employ supplementary materials in classes as an instructional tool, so technology enriched classes have received much attention to have more engaging classes in cooperation (Yildiz, 2021; Abdulrahman & Kara, 2023). In this regard, several web-enhanced tools such as e-lessons, e-games, e-quizzes, e-books, e-feedback have been extensively used to provide continuous education for the sake of increasing success rates of the learners (Ghafar, & Mohamedamin, 2022). In other words, such online tools grant ample opportunity for the educators to teach by inquiry-based, task-based and communicative based learning (Yilmaz, 2021).

QR codes have been used in a myriad of sectors thanks to their convenience and benefits. A QR code is a two-dimensional barcode to store huge amount of information for various reasons. Two types of QR codes are prevalent which are static and dynamic. Static QR codes have fixed links, so the links cannot be edited later, however, dynamic QR codes allow individuals to make changes to the same code at different times (Jung, 2013). To illustrate, further information about products can be provided through QR codes ranging from toys to electronic devices. In addition, saving contacts, recharging the credit for mobile phones, logging in to social media websites, completing registration for a meeting, workshop or seminar, checking the collision and accident history of the car. Subsequently, online banking activities can be completed conveniently through QR codes. Moreover, restaurants and hotels can display their menus and facilitate wireless connection for the customers via QR codes. Furthermore, public transportation facilities can be used conveniently via QR codes because passengers can access the departure and arrival time of the vehicles precisely. It is quite evident that the influence of QR codes has expanded significantly in all aspects of life.

The concept of online education initially surfaced in the form of remote education during the course of historical development (Yildiz, 2022). Due to this fact, QR codes have affected the nature of education on a global scale in various dimensions. To illustrate, online education sessions can be run by QR codes.

Additionally, online surveys, quizzes, questionnaires can be taken via QR codes (Gradel & Edson, 2012; Celik & Kara, 2022). In addition, e- feedback about any exams or writing activities can be provided through QR codes. Furthermore, supplementary materials to be directed to videos, presentations, articles, books, or encyclopaedias can be offered conveniently via QR codes (Al Najdi, 2022). They can have beneficial effects for educators, learners and parents. The procedures which will be time-consuming and troublesome with other instruments can be fulfilled in a very short time through QR codes. In addition, they offer visual stimuli for the learners, so they can learn well compared to traditional teaching platforms. In addition, learners can be actively involved in hands-on activities through QR codes rather than staying passive in a traditional format. It can be stated that QR codes have the potential to transform the conduct of education dramatically.

1.1 Purpose of the Study and Research Questions

Recent technological advancements have captivated the attention of users in all aspects of life. Correspondingly, the prevalence of web-based learning programs has increased because stakeholders in education strive to offer more hands-on activities to bridge the gap between real-world and theoretical sessions. In this regard, QR codes have become increasingly popular in recent years to expand learning through mobile technologies. The primary objective of this study was to investigate students' perceptions of the efficacy of instruction based on QR codes. In order to achieve this objective, the following research questions were formed:

- Does QR code-based instruction improve macro-skills of the learners?
- Do students' perceptions on QR code based instruction differ in terms of age and gender?

2. Literature Review

The usage of QR codes has expanded exponentially since the commencement of QR codes for the first time by a Japanese commercial company Denso Wave in 1994. After noticing the positive effects of QR codes, they have been widely used in various fields such as aviation, construction, energy, manufacturing, food, mining, logistics, media, health to promote products, increase sales or offer after-sales services (Abdul et al., 2019). The percentage of using QR codes has increased as people have become more familiar with them in many aspects of the life.

It cannot be envisioned that such a booming phenomenon will not affect educational settings. QR codes have been used in increasing numbers to raise standards in education. To illustrate, Durak et al. (2016) assert that unprecedented pace of technological developments has prompted educators to integrate QR codes into their classes to activate presentations, images, e-books, e-exams, e-surveys, videos, e-articles and e-brochures, so they have accelerated students' learning rates by offering various stimuli. They also elucidate that parents can be informed by QR codes regarding official learning management systems, upcoming meetings or social community projects to raise their awareness. On the other hand, it does not necessarily mean that QR codes ensure success in each attempt. Kara (2023) points out that unstable internet connection, inadequate mobile devices, insufficient knowledge of ICT literacy and reserving less time for orientation can increase the failure rate of such initiatives.

QR codes have yielded positive outcomes in EFL education which is confirmed by the studies of various scholars. To name a few, Jeon and Ma (2015) assert that Korean EFL students improved their writing skills considerably after being exposed to technology embedded English instruction through QR codes. He also reports that QR codes offer several other benefits to enrich writing classes with relevant images, videos, presentations and sample essays. In the same vein, Kuru and Zeybek (2022) conducted a study in Turkey with university students that unearthed that QR codes enhanced students' reading marks substantially. They also suggest that QR codes allow the educators to embed authentic materials into reading classes, so extensive reading activities can be put into practice at ease. Likewise, Dirjal et al. (2021) carried out a study in Iraq context with university students which revealed that QR code enriched instruction enhanced students' listening and speaking performance dramatically. Similarly, Nga (2023) conducted a study in Vietnam at a tertiary level revealing that QR codes paved the way for pronunciation accuracy. Additionally, Sewbihon et al. (2021) conducted a noteworthy study on university students in Ethiopia that showed that QR codes were essential to ensure vocabulary expansion and increase grammatical accuracy.

Some studies have highlighted some hesitations about the implementation of QR code-based instruction at educational institutions. For instance, Chicioreanu (2015) found that QR code enriched instruction cannot yield positive results in terms of developing macro-skills if the reserved time for orientation and training is inadequate. Additionally, Balintag and Wilang (2020) conducted a study in Thailand that showed that students' opinions differed greatly after being exposed to the treatment on writing instruction. Furthermore, Chang (2021) received teachers' and students' opinions, which showed that insufficient knowledge of ICT can reduce the positive outcomes of QR codes. The published studies hint that QR codes are promising to raise the quality of education if minor issues about the conduct of QR codes are handled professionally.

3. Methodology

3.1 Research Design and Instruments

Primary instruments to collect data were questionnaire and interview which were analyzed through SPSS 25 and NVivo respectively, so a mixed methods design approach was adopted to receive numerical and verbalized data and interpret accordingly (Ivankova & Creswell, 2009). Cronbach Alpha reliability test, Shapiro Wilkison Normality Test, Mann Whitney U Test, Frequencies were employed to analyze and make relevant interpretations based on the questionnaire. Additionally, thematic classifications were made based on the common themes in the interview to emphasize the strengths and weaknesses of QR code-based instruction (Oliveira et al., 2013).

3.2 Participants, Sampling and Setting

The setting of this study was the private TISHK International University (TIU hereinafter) where around 5000 students received a top-notch education in 29 departments in Erbil, Iraq as of 2021-2022 Academic Year. The population included all students who took Advanced English course in 2021-2022 Academic Year. Advanced English course has been provided by TIU Language Preparatory School for the students whose levels were B1 or above, so the lecturers are privileged to equip students with 21st century skills

through well-designed activities. Additionally, those students who have been enrolled in Advanced English course are digital natives because they were born at a time when ubiquitous opportunities are available to use technology actively. Subsequently, the language of instruction has been completely English to foster communication and prepare students for their professional careers, which require them to speak certain languages fluently so that they can increase their chance landing well-paid contracts. In this regard, sample students, who are familiar with digital devices and have sufficient English competence, fit perfectly to investigate the effects of QR codes on students' learning rates. The researcher got students' consent forms in advance to join the activities voluntarily. Snowball sampling method was employed to narrow the population and analyse findings thoroughly. To illustrate, the first set of sample units encompassed twenty-five students were chosen from the population in a randomized way. After that, those students, selected randomly, recommended two friends of theirs who shared common qualities with them. Thus, seventy-five participants, studying in six departments, were recruited to carry out the study successfully. The number of male students was thirty-five, whereas the number of female students was forty. In addition, students' ages ranged from seventeen to twenty-two. Fifty-four students were between 17 and 19 years old, while twenty-one students were between 20 and 22 years old. Emerson (2015) asserts that snowball sampling technique has been extensively used in social sciences as it is cost-effective and quicker to find participants from reliable sources. As seen clearly, population, sampling and setting are harmonious with each other to collect data and make certain interpretations.

3.3 Validity and Reliability

The questionnaire items were cross-checked by the authorized bodies of the research center at the same university; therefore, the researcher examined whether the questionnaire's constructs were relevant and simple to understand. In this way, content validity was ensured by updating the queries based on the opinions of experts. Later, Cronbach Alpha was performed to determine the reliability of the items within the four main categories, and the resulting value was .822, indicating that the questionnaire's internal reliability was also adequate for use with participants.

Table 1: Reliability Statistics of Piloting Phase

Cronbach's Alpha	N of Items
.822	4

3.4 Procedure

Ten weeks were set aside to collect the data in this study. Two weeks were reserved to inform the students clearly about the whole study. To illustrate, they were introduced to different examples of QR codes in education. Additionally, they were guided to use them effectively in order not to have any technical problems. Subsequently, they were exposed to reading some blogs and published articles on the effectiveness of QR codes. The rationale for orienting them in advance was to minimize technical issues and thereby increasing their positive attitudes towards QR codes. After the orientation period, the students

were instructed according to a pre-defined plan. *Scope 2*, published by Oxford, was used to develop their skills. Scope series are prominent coursebooks to teach English in a systematic way, considering students' levels on a global scale. Also, the degree of difficulty has been increased gradually in order not to demotivate students. Students had three lessons weekly, which required the lecturer to complete a unit biweekly. Correspondingly, four units were covered during the semester. Each unit was introduced and extended with relevant speaking questions. In addition, writing topics were introduced with a sample to examine thoroughly and write a similar one later. Grammar topics included five tenses, comparative, superlative, quantifiers and relative clauses. Afterwards, reading topics were related to *Being Different*, *History of Television*, *Disposable World* and *Online Life*. After that, each unit was accompanied by a video and audio tracks related to the main theme. Additionally, key words for each unit were given as a list to use in context. Moreover, some interactive games were included to increase students' engagement and break the monotony in classes through the official I-tools of the book.

The conduct of the lessons was clearly illustrated in Figure 1.

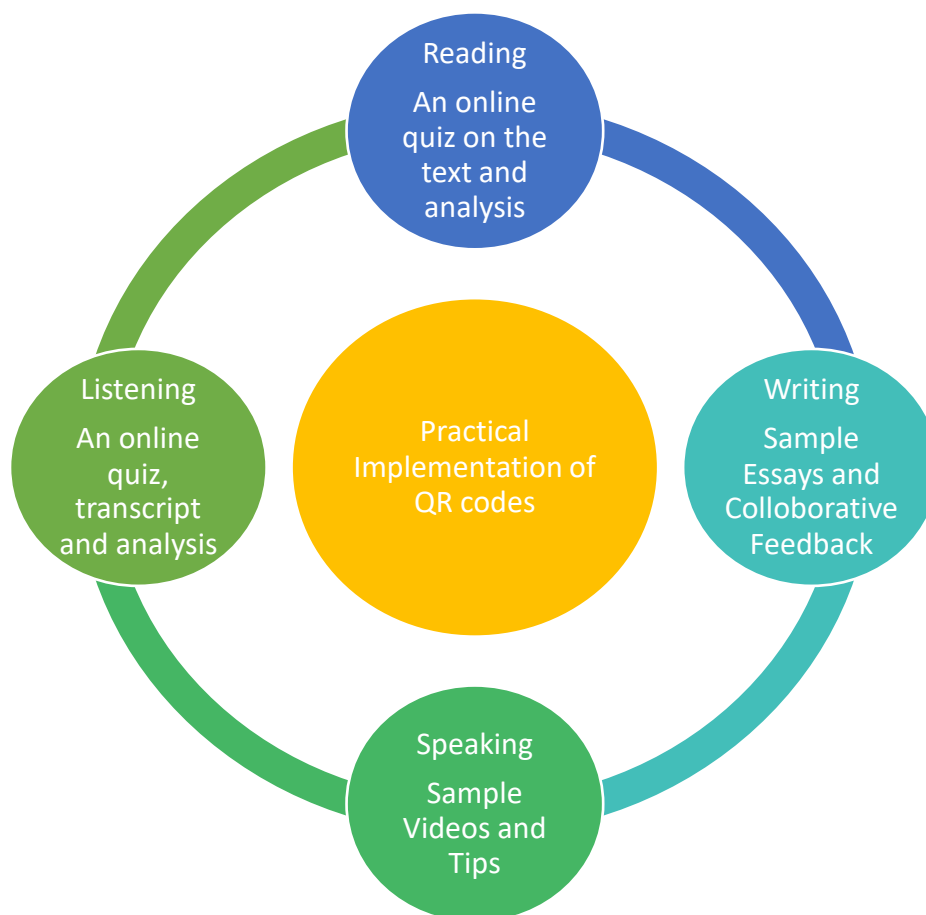


Figure 1: Illustration of activities to foster each skill through QR codes

The researcher followed an unorthodox teaching style in this course, which included the integration of QR codes into each skill by prioritizing official resources from the *Scope* series. To name a few, reading passages were enriched with related short quizzes embedded in QR codes, so students knew how to comprehend the text and answer questions accurately. This activity increased their alertness to gain more details about the text and answer quizzes within the given time as Balintag and Wilang (2020) suggested. This activity also supported them to devise ways on time management skills. They lost their chance to earn a mark if not completed on time. In addition, writing activities were accompanied by related videos and sample essays embedded in QR codes. Students were granted ample opportunity to expand their knowledge and write more creatively. In the same vein, the lecturer offered writing feedback on paper and online to activate peer-learning through QR codes which included a link of Google Form. Students had the privilege to learn from each other by considering the feedback of the lecturer on their friends' writing works. Subsequently, audio tracks of the book were accompanied by short quizzes and detailed analysis to the quiz through QR codes. The lecturer pasted the links of the quiz, transcript of the conversation and analysis of each item in the quiz through three separate QR codes, so there were not any gaps to reach accurate information. These supplementary listening activities encouraged the students to listen to the tracks several times and learn from their mistakes (Shin et al., 2012). The last skill to be promoted through QR codes was speaking which was as essential as others. Speaking activities were enriched with sample videos that encompassed insightful ideas and tips to increase students' fluency and self-confidence while speaking English. In a nutshell, it can be inferred that QR codes played pivotal roles in enhancing students' performance in four skills.

4. Findings

Three subcategories, which were survey, questionnaire, and interview were forged to interpret the findings in detail. The findings of each data collection tool can be explored below:

4.1 Survey

Items in the survey included the strengths and weaknesses of QR codes which were illustrated in Table 2.

Table 2: Thematic Distribution of Items on Positive and Negative Aspects of QR codes

Items	Options	N	Percentage
What are some positive aspects of QR codes?	Handy	69	92 %
	Flexible	72	96 %
	Engaging	74	99 %
	Insightful	62	83 %
	Promote collaboration	61	81 %
	Eco-friendly	75	100 %

	Cost-effective	75	100 %
Mean		70	93 %
What are some weaknesses of QR codes?	Distractibility	15	20 %
	Unable to switch to traditional instruction later	23	31 %
	Technophobia	3	4 %
	Regulations on mobile phone ban	56	75 %
	Battery related issues	12	16 %
	Budget to be the owner of mobile technologies	5	7 %
Mean		19	26 %
Do the advantages of QR codes outweigh the disadvantages?	Yes	70	93 %
	No	5	7 %

Once Table 2 was analyzed on QR code based enriched instruction, it was figured out that participants favored QR code enriched instruction on grounds that they offer several benefits such as handy (92 %), flexible (96 %), engaging (99 %), insightful (83 %), promoting collaboration (81 %), eco-friendly and cost effective (100 % respectively). These findings illustrated that QR codes are useful and convenient, flexible enough to use anytime, appealing, novel, collaborative, environmentally friendly and costless. On the other hand, some hesitations arose about the practicality of QR codes related to distractibility (20 %), switching the mode of instruction (31 %), technophobia (4 %), mobile phone ban (75 %), battery related issues (16 %) and budget (7 %). These findings hinted that the mobile phone ban, imposed in many institutions globally, has the potential to reduce the practicality of QR codes in classes, which may not effect the implementation as an extracurricular activity. Likewise, some students can lose their enthusiasm towards traditional education after being exposed to QR codes in increasing amounts. In the same vein, some students can focus on different activities such as games, other websites etc., rather than doing the activity assigned by the lecturer. Other weaknesses such as technophobia, charging and budget were less than taking into consideration. There may be a causal relationship between the affordability of mobile technologies, being more responsible at university to charge devices in advance and conducting the exam at a private university for adults. Considering the overall findings of the survey, it can be concluded that QR codes have many potential ways to take advantage of despite some minor obstacles.

4.2 Questionnaire

Items in the questionnaire were designed to unleash students' opinions on the development of macro-skills. The detailed analysis is illustrated below in Table 3.

Table 3: Students' Overall Satisfaction Rates in Terms of Developing Macro-Skills

Construct	Item	Min.	Max.	Mean	SD	Variance
Macro-skills	QR code enriched instruction developed my reading skills.	2	5	4.55	.827	.684
	QR code enriched instruction was useful to write more academically.	2	5	4.71	.653	.426
	QR code enriched instruction enhanced my speaking performance.	1	5	4.15	1.087	1.181
	QR code enriched instruction sharpened my listening skills.	3	5	4.56	.683	.466

As shown in Table 3, QR code-based instruction received positive feedback from the participants to varying degrees. The lowest mean score (4.15) was observed in speaking, which hinted that the version of the activities or the order of the events was not designed to capture students' interest like other skills. When other skills were examined in detail, their mean scores were higher than 4.50 thresholds which showed that the activities were planned in a manner to attract students' attention and increase their enthusiasm towards learning. These figures unearthed that the improvement in 3 skills which were reading, writing and listening was satisfactory enough, whereas some adjustments were required to increase the satisfaction rate of the participants in terms of speaking.

Shapiro Wilk Normality Test was conducted to decide whether T-test or Mann Whitney U-test would be used in the subsequent phase. If the data deviates from the normal distribution, Mann Whitney U-test has been run. On the other hand, t-test was run if the data was distributed evenly (Nachar, 2008).

Table 4: Normality Test of Items in the Questionnaire

	Tests of Normality					
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Reading	.442	75	.000	.597	75	.000
Listening	.473	75	.000	.512	75	.000
Speaking	.304	75	.000	.765	75	.000
Writing	.407	75	.000	.652	75	.000

a. Lilliefors Significance Correction

Once the items were analyzed in the questionnaire, some essential points were highlighted. The rationale for running test of normality was to figure out whether the data distributed evenly or deviated from the

normal distribution in a dramatic way. According to Shapiro Wilk Normality Test results, the data deviated from the normal distribution in terms of all measured skills with a figure of .000 which was less than 0.05. Thus, it was decided to apply Mann Whitney U-test to measure whether participants' opinions differed greatly in terms of age and gender.

Table 5: Mann Whitney U Test in Terms of Age

Gender	Reading	Writing	Speaking	Listening
Mann-Whitney U	523.500	500.500	303.000	478.000
Wilcoxon W	2008.500	731.500	534.000	709.000
Z	-.661	-1.126	-3.393	-1.263
Asymp. Sig. (2-tailed)	.508	.260	.001	.206

a. Grouping Variable: AGE

According to the findings in Table 5, there was no significant difference except speaking in terms of age. In other words, it was noticed that students' opinions did not change considerably in three skills, however, the cycle halted when the difference was measured in speaking skill, with a .001 p-value. The students whose ages ranged from 17 to 19 appreciated the effects of QR codes on developing their speaking skills more than other students whose ages were between 20 and 22. Other p-values were insignificant, with a figure of .508, .260 and .206 consecutively.

Table 6: Mann Whitney U Test in Terms of Gender

Gender	Reading	Writing	Speaking	Listening
Mann-Whitney U	590.000	700.000	655.000	585.000
Wilcoxon W	1410.000	1520.000	1285.000	1215.000
Z	-1.505	.000	-.521	-1.469
Asymp. Sig. (2-tailed)	.132	1.000	.603	.142

a. Grouping Variable: Gender

Table 6 findings unearthed that there was no noticeable difference between students' opinions in terms of gender. In other words, male and female students' opinions were identical about the effects of QR codes in enhancing their linguistic competence, with a p-value of .132, 1.000, .603 and .142 consecutively which were less than 0.05 pre-defined significance value. It can be concluded that participants' opinions did not change dramatically based on their genders.

4.3 Interview

The findings of the interview shed light on essential points which can be observed below:

I used to have some basic information on QR codes. However, this study has expanded my knowledge about the practicality of QR codes in education. I have seen that they are quite handy. We can use them conveniently and access any information instantly. The links which were embedded by the lecturer were so useful for me. I have gained insight thanks to these links. In addition, I have improved my self-confidence thanks to this study. I was so shy during listening sessions in the past, but listening to the same audio track and analysing my mistakes have helped me so much to boost my marks in listening and speak more confidently during listening sessions. I wish I had been exposed to such inspiring instruction earlier. (Student 27)

My weakness in English was writing academically. Although I had reserved hours to improve it, I was unable to overcome my writing anxiety. I used to think that I would make many mistakes, so my teacher and friends would humiliate me for my mistakes. However, I have seen that all my friends have made some minor and major mistakes when the lecturer has displayed the writing performance of each student. In addition, we have learned from each other to sharpen our writing skills in cooperation. I have progressed a lot in terms of writing thanks to the QR based education provided by the lecturer in a disciplined manner. I recommend that all lecturers give a chance for web-enhanced tools in their classes. (Student 43)

I was facing with serious problems comprehending texts prior to this study. My problem was about reading texts and answering questions on time. I got bored so easily and answered questions haphazardly. However, I have learned during this study that skimming and scanning techniques can be used widely to improve comprehension skills. The lecturer has offered some quizzes, tips and insightful videos through QR codes in this study, which has changed my attitude towards reading substantially. When I have learned how to read, analyze and come to the decision within the given time, I have earned higher marks in the exams. The rationale for getting a mark was that I learned how to apply some tips and answer questions. This habit has had a chain reaction that increases my marks in other courses. I am glad to have received an education by reaping the fruits of technology in my classes. (Student 54)

The most important gain of this study for me was speaking, which was enriched with videos. The lecturer sent a video embedded in a QR code in advance. We studied and tried to get some ideas during our conversations. We also took notes to grasp key words. I noticed that my speaking skills increased gradually. In addition, the videos had many noteworthy points to help us change our personality in a positive way and develop positive traits to study more ambitiously. Moreover, we improved our pronunciation dramatically by watching the videos several times. I think integrating relevant videos into lessons should be a must to increase students' motivation and give them opportunities to expand their learning. (Student 60)

I have seen many positive sides of QR codes in this study. For instance, we were able to see our writing feedback through a Google Form which was so convenient. In addition, we read many insightful excerpts in terms of reading. Moreover, we did not destroy the environment by printing or throwing trash because all activities were done online through QR codes. After that, we cemented a good relationship with our friends because we had many activities to complete as a team. Additionally, we did not make any payment, sign up or subscribe to use QR codes. They were user friendly and cost-effective. Although there were some minor problems, they did not pose serious problems for us. I feel lucky that I was able to take advantage of technology through QR codes in this study. (Student 64)

Integrating QR codes into the lessons was so handy for me. We were able to use our mobile devices to scan the QR codes and complete the tasks within the given time. In addition, the flexibility to see the content several times gave us opportunities to learn from our mistakes and increase our learning rate. Subsequently, we saved the environment because we did not need to print copies in the traditional format. On the other hand, we distracted our attention from time to time because some websites and programs were intriguing enough to kill time. This problem was also handled once the lecturer warned us kindly to focus on the given activity. All in all, this study was beneficial to increase my knowledge by getting pleasure with web-enhanced activities. (Student 72)

5. Discussion

The perceptions of EFL students' on QR codes were sought in this study through a survey, a questionnaire and an interview. To put it simply, university students' genuine opinions were uncovered in terms of developing their macro-skills. The collected data highlighted essential points which were discussed below:

According to the findings in the survey, students emphasized that QR codes were handy, flexible, engaging, insightful, eco-friendly, collaborative and cost effective. It is in line with Robles's (2022) study which revealed that QR codes have been used in increasing volumes thanks to being flexible, handy, environmentally friendly and costless. On the other hand, some hesitations are expressed about QR codes which are related to being distracted, technophobia, affordability and imposed mobile phone bans. These findings are consistent with Gogova and Koceska's (2014) study, which unearths that QR codes have some disadvantages like other web-enhanced tools used widely in education. However, they emphasize that the advantages can be eliminated by taking some rational measures in advance. Another point to be emphasized in the survey is the students' satisfaction rate which is over 90 %. This finding is also supported by Shin et al. (2012) who elucidate that QR codes have the potential to increase students' satisfaction rate considerably.

The findings in the questionnaire shed light on other significant points as well. The students asserted that their macro-skills have improved to varying degrees. It was observed that QR codes had a profound impact on their learning in terms of listening, reading, speaking and writing. However, the mean score of speaking was lower than the other categories. Butarbutar (2021) points out that QR codes do not guarantee that students' speaking performance will be enhanced if not supported with a well-designed approach. Another essential point in the questionnaire was the effect of age and gender. The revealed data showed that younger students had more positive views on the speaking section, while there was no significant difference in other skills. In the same vein, no noticeable difference was seen in terms of gender. Erkir (2017) contends that QR codes are technological tools, so the adaptation rate of the students increases once they are younger and familiar with the features of technology in their social lives.

The findings of the interview were also in line with the other data collection instruments. Students elucidated that using their mobile devices to expand their learning played an integral role in increasing their ambition. Kara and Yildiz (2022) elucidate that mobile devices have numerous functions to change the atmosphere in classes. In addition, they appreciated the flexibility of the QR codes to learn further in their free time. Subsequently, they appreciated the effort of the lecturer during collaborative activities. After that, they attested that they sharpened their time management skills in all fields through QR codes.

Abdulrahman (2022) states that knowing how to use time wisely in classes can increase the success rate of the students dramatically.

Once all data were crosschecked by experts, it was also observed that the data were compatible with each other. In other words, no conflict was observed between the findings of each instrument.

6. Conclusion and Recommendations

This investigatory study revealed that QR codes offer numerous opportunities to realize the educational goals in EFL classes. Throughout the study, it was observed that QR codes expanded students' learning in terms of macro-skills. Once the data were collected at the end of the study, the findings were completely positive. The students reiterated that QR codes increased their comprehension skills in reading sessions, enhanced their speaking skills substantially, sharpened their listening skills and unleashed their creativity in writing sessions. Additionally, a sharp increase was noticed in terms of their motivation. The students joined the lessons more eagerly, participated in all activities more ambitiously, and started studying more diligently thanks to increasing their knowledge in an engaging way. Apart from other advantages, hands-on activities with well-balanced instruments through mobile devices contributed positively to their learning rate.

Some suggestions can be offered to prompt future studies in this field. Perceptions of students on the effectiveness of QR codes were sought in this study, which could be enlarged with their exam results. In addition, only the development in macro-skills were investigated, which can be extended with micro-skills. After that, 75 freshman students who studied at a private university comprised the sample, which can be expanded with other stages at different universities in the region. Furthermore, a hybrid model was used to implement a QR based enriched instruction, which can be separated to see the precise influence of QR codes in or out of class activities. Additionally, the number of female students were higher than male students, which can be equalized in future studies to have a clearer perspective by each gender respectively.

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