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QUICK RESPONSE CODES IN PROMOTING STUDENT-CENTRED LEARNING

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Abstract: This study was aimed to investigate the implementation of Quick Response Codes in improving student-centred learning and to find out some challenges faced by the learners while using the QR Codes. This study employed descriptive study design and a cross-sectional survey-based design. Two research tools were used, namely, questionnaires and interviews. The participants were 20 students at a private business high school (first grade) located in South Korea. The result of the study showed that students overwhelmingly expressed a positive attitude toward the use of Quick Response Codes (QR codes) in promoting student-centred learning. They perceived QR codes as effective tools for enhancing motivation, engagement, and accessibility to learning resources. The majority of students appreciated the autonomy and collaborative opportunities QR codes offer, contributing to increased participation and self-directed learning. Despite the challenges of varying motivation levels in group work and time constraints, students expressed a high agreement to continue using QR codes in future learning. This underscores the importance of teacher creativity and effective time management to maximize the positive impact of QR codes on student-centred learning. While the study acknowledges varied opinions, it underscores the significant role QR codes play in supporting a student-centric approach to learning.

Keywords: cross-sectional survey, descriptive study, positive attitudes, student-centred learning, QR codes

INTRODUCTION

The scholarly discourse on integrating technology into education, as exemplified by Veena et al., (2020), underscores the pivotal role of mobile phones in this context. The empirical evidence provided by Handayani & Aminatun (2020) and Andrzej et al., (2021) supports the efficacy of incorporating mobile technology in educational practices. Nevertheless, an observable reluctance persists among educators, particularly within

language instruction, regarding the integration of mobile phones into pedagogical frameworks, as identified by Sharma and Srivastava (2020). This hesitancy may stem from concerns related to potential student distractions, unequal access to technology, and uncertainty about the educational benefits of mobile phone use. The juxtaposition of the acknowledged potential and the prevailing reservations within language education illuminates a nuanced dynamic warranting scholarly attention and reflective discourse.

The integration of technology in education, as emphasized by scholars like Veena, Sheetal, and Navita (2020), encompasses the utilization of mobile phones, as demonstrated by studies conducted by Handayani and Evyta and Dyah (2020) and Andrzej et al., (2021). However, despite the growing evidence supporting the benefits of mobile phone integration, particularly in language classrooms, there remains hesitation among many teachers, as observed by Sharma and Srivastava (2020). This reluctance to incorporate mobile phones into the educational context may stem from concerns or uncertainties about their potential impact on the learning environment and academic outcomes. Addressing these reservations and fostering a better understanding of the positive implications of mobile technology could contribute to more widespread acceptance and effective utilization in educational settings.

Mobile phones are frequently viewed unfavourably as a component of instructional media in language classrooms, mainly due to their demonstrated drawbacks, particularly concerning learners in various aspects of their lives, as highlighted by (Martiz & Recker, 2019) and (Kristanto, Mustaji, & Mariono, 2017). Research has shown that the presence of mobile phones in educational settings may have some negative effects (Manumpil, Ismanto, & Onibala, 2015; Kogoya, 2015). These devices have been associated with disruptions in the school environment and potential hazards for students. In places like Indonesia, the use of mobile phones in classrooms is often seen as disruptive to the learning process (Barakati, 2013; Manumpil, Ismanto, & Onibala, 2015; Kogoya, 2015).

However, it's important to note that mobile phones also offer positive aspects that can benefit students in the classroom, as highlighted by Myles (2013) and Hennessy (2017). They can serve various functions, acting as a means of communication, a tool for guidance, a calculator, a digital dictionary, a means of capturing learning materials, a timekeeping device, a substitute for small books for record-keeping, and a storage medium for school-related files. Especially in remote areas where schools may lack individual computers for each student, mobile phones have become a practical alternative tool in the educational process. Research by Aamri & Suleiman (2011) and Kim et al. (2013) indicates that mobile phones can indeed be beneficial for learning. Therefore, it can be concluded that mobile phones, despite some potential drawbacks, can be effectively integrated into the educational process.

Recent and pertinent research has yielded noteworthy findings on the impactful use of Quick Response Codes (QR codes) in educational settings. For instance, a study by Bahtiar & Sujono (2020) demonstrated that integrating QR codes into instructional materials significantly enhanced students' engagement and interaction with learning content. Similarly, (Bella et al., 2022) explored the integration of QR codes in classroom assessments and found that it streamlined the feedback process, fostering quicker and more effective communication between teachers and students. Additionally, the work of (Aziza, 2020) highlighted the role of QR codes in promoting collaborative learning experiences, enabling students to seamlessly share resources and collaborate on projects. These findings collectively emphasize the diverse and beneficial applications of QR codes

in education, ranging from improving engagement to facilitating efficient communication and collaborative learning experiences.

Previous research has provided valuable insights into the general use of Quick Response Codes (QR codes) in education; however, a significant gap exists when considering their application in the specific context of cultural exchange and language learning, especially within the South Korean educational landscape. While existing studies have explored the broad applications of QR codes in education, little attention has been dedicated to their role in fostering cultural understanding and language acquisition in the unique setting of South Korean schools. This study aims to address the gap by investigating whether the implementation of Quick Response Codes was useful to improve student-centred learning and to find out some challenges faced by the learners while using QR Codes.

The novelty of this research lies in its specific focus on investigating students' perspectives on the use of QR codes in relation to student-centred learning and portraying the benefits and challenges when learning using QR codes. By exploring the untapped potential of QR codes in the realm of cultural exchange within international educational programs, the study seeks to contribute a unique perspective to the broader field of educational technology.

LITERATURE REVIEW

Quick Response Codes

Advancements in mobile technology have made Quick Response Codes (QR codes) applicable in educational settings, particularly English as a Foreign Language (EFL) classrooms (Gurhan et al., 2016). QR codes are matrix barcodes read by smartphones with cameras, presenting information such as URLs, phone numbers, SMS messages, and more (Martiz & Recker, 2019; Aziza, 2020).

QR codes exhibit resilience and flexibility in size, maintaining functionality even when distorted. They can be created and used easily through various web-based generators, allowing both teachers and students to incorporate them into learning activities without advanced technological expertise (Andrzej et al., 2021). With the growing popularity of QR codes, there's an opportunity to harness their potential in education for fostering active learning and self-discovery, aligning with the principles of engagement emphasized by (Bahtiar & Sujono, 2020) and (Gurhan et al., 2016).

These explanations highlight the effectiveness of QR codes as instructional media in educational environments, especially in EFL classrooms (Celik, 2023). The use of QR codes varies based on subject area and grade level, offering a tailored approach to learning needs (Balintag & Wilang, 2020). Numerous studies explore QR codes in language teaching, detailing stages like code creation, mobile websites development, URL shortening, and automated code generation (Bella et al., 2022)

QR codes find applications in educational settings, such as treasure hunts, outdoor activities, paper-based tasks, learner-generated content, and instructional guidance (Aziza, 2020; Andrzej et al., 2021). For instance, in a treasure hunt, students demonstrate teamwork and problem-solving skills, fostering collaboration or competition. Outdoor activities allow students to explore life science topics using QR codes as valuable aids.

Regarding learner-generated content, students can develop Student-Centred Learning (SCL). SCL, placing learners at the centre, enhances motivation, critical thinking skills, and overall academic performance (Blumberg & Michael, 2019). Recent research

supports the positive impact of SCL on learning outcomes, empowering students to take ownership of their learning journey (Song & Kappler, 2021)

While SCL has documented benefits, educators may face challenges in transitioning due to concerns about managing diverse student needs and facilitating effective group dynamics (Johnson & Johnson, 2020; Bremner, 2015). Despite challenges, SCL is recognized as a promising educational approach aligning with contemporary learning needs.

In considering Student-Centred Learning, a flexible framework for conceptualization is valuable (Bremner et al., 2022). These frameworks are summarized in the table below.

Table 1.
Potential components of pedagogy with a student-centred focus
(Bremner et al., 2022)

Aspects of Student-centred learning	Summary
Engaged Participation	Learners take an active role in the learning process, often characterized as "learning through practical experience" or "hands-on learning." Learners engage in interactions with both their peers and the teacher, frequently through activities like pair and group work.
Tailoring to Individual Requirements	The process of educational planning commences with a thorough examination of learners' prior knowledge, competencies, and past experiences, aligning closely with the core principles of constructivist theory. Learning is characterized by its adaptability, accommodating learners' specific requirements and preferences, including their emotional well-being.
Self-Determination	Learners engage in self-directed work, assuming accountability for their own educational journey. Their learning experience encompasses not only content acquisition but also the cultivation of lifelong "learning to learn" competencies, including metacognition.
Relevant skills	The educational content possesses relevance and significance in the context of learners' everyday lives. Learners are equipped with 21st-century proficiencies encompassing analytical thinking, critical reasoning, creativity, and the capacity for continuous lifelong learning.
Power sharing	Learners actively participate in dialogues with both their peers and the teacher to influence decision-making. This practice diminishes the conventional power differentials between teachers and students. It's acknowledged that there might not always be a singular correct solution, and both the teacher's and students' viewpoints are esteemed.
Formative assessment	Learning is regarded as a continuous journey, not merely an end result, with formative assessment, including self- and peer-assessment, playing an integral role in the learning process.

It is pertinent to engage in a discussion concerning the essential components that should be integrated into the student-centred learning approach. (Jacobs & Renandya, 2016) offer a comprehensive overview of the ten constituent elements of SCL, as delineated in Table 2.

Table 2.
Key elements of student-centred learning
(Jacobs & Renandya, 2016)

Elements of student-centred education	Concise clarification
Students and teachers as co-learners	Teachers willingly recognize that their knowledge is not all-encompassing, and they actively engage in a process of co-learning with their students.
Student-student interaction	Teachers promote students to engage in sharing with their peers, both in traditional face-to-face interactions and through online platforms.
Learner autonomy	Learners attain greater independence from teachers, consequently assuming heightened responsibility for their individual learning journeys.
Focus on meaning	Optimal learning occurs when students possess a comprehensive comprehension of the subject matter and the rationale behind their study.
Curricular integration	Students grasp the connections between their school studies and the real-world applications beyond the classroom.
Diversity	Education accommodates variations among students and fosters an understanding of the advantages of diversity.
Thinking skills	Students extend their understanding beyond the provided information by applying concepts, offering examples, expressing dissent, establishing new associations, instructing one another, and engaging in exploration.
Alternative assessment	Assessment expands to encompass unconventional formats, with students participating alongside teachers in the role of assessors.
Learning Climate	Students and teachers endeavour to create an environment that promotes active involvement from every member of the class
Motivation	Intrinsic motivation takes the forefront when the classroom atmosphere aligns with students' natural inclination to acquire knowledge.

The Characteristics of Student-centred Learning

This study outlines four key principles of student-centred learning: addressing diverse learning needs and cultural backgrounds, enabling students to showcase understanding, offering flexibility in time and location for learning, and promoting self-regulated learning paths.

In line with the previously discussed ideas, O'Neil and McMahon (2005) outline fundamental principles for Student-centred Learning, emphasizing a comprehensive educational approach with a focus on complete accountability for students' learning outcomes. They stress intentional and wholehearted engagement to ensure active participation in the learning process. The principles advocate for demonstrating equal opportunities for success, fostering an inclusive and supportive educational environment. Additionally, teachers are urged to play a supportive role, guiding and facilitating students' learning journeys. These principles highlight the integration of emotional and cognitive dimensions to enhance the learning process by recognizing the interconnectedness of both aspects in the educational experience.

SCL and Pedagogical Principles of Global Citizenship Education (GCED)

The concept of Student-centred Learning (SCL) has garnered significant attention in the education field, emphasizing pedagogical strategies that prioritize students as active

participants in their learning experiences. Weimer's work in 2002 has been instrumental in shedding light on various aspects of SCL, highlighting its potential benefits such as increased student engagement, improved critical thinking skills, and a deeper understanding of subject matter. This student-centric approach represents a shift from traditional teacher-centred methods, aiming to actively involve students in the learning process.

In tandem with the focus on SCL, Global Citizenship Education (GCED) has emerged as a vital framework to equip students with the knowledge, skills, and values necessary to tackle global challenges. The literature underscores that GCED encourages global awareness, interconnectedness, inclusivity, intercultural competence, and critical thinking about global issues. Scholars like Osler and Starkey (2005) have examined the core principles of GCED, emphasizing its role in preparing students for an interconnected world through experiential learning.

In South Korea, the educational landscape has evolved significantly over the past decade, aligning with the principles of Global Citizenship Education. The South Korean educational system recognizes the importance of instilling a global perspective in students, emphasizing technology integration to create student-centred learning environments. This study aims to comprehensively assess the current state of South Korea's educational system, evaluating the initiatives and challenges in aligning with GCED principles. By exploring the integration of technology and dynamics within classrooms, the research seeks to provide insights for the continual improvement of education in South Korea.

METHOD

In this descriptive study, a cross-sectional survey-based design is employed. In a cross-sectional survey design, the data are collected by the researcher at one point in time to measure current attitudes or practices (Creswell, 2009). This research design was chosen since this study was also aimed to examine current attitudes, beliefs, opinions or practices in the way individuals think about issues, whereas practices are their behaviour. This study was conducted to investigate whether QR Codes was useful to improve student-centered learning and to find out some challenges which experienced by the students while using those codes. To achieve this objective, two research tools were used, namely, questionnaires and interviews. In this study, researchers used personal interviews, whereas the researcher conducted face-to-face interviews with the participants. Rapport can be established, questions can be clarified, and unclear or incomplete answers can be followed up (Fraenkel, J.R. et al, 2012).

The participant for the study were consisted of 20 students, all enrolled in a private business high school (first grade) located in South Korea. They had been using Quick Response Codes in an Indonesian Cultural Class for three months. However, only 6 of these students were involved in the interview, selected randomly. The measuring instrument was a questionnaire designed based on theories about the use of Quick Response Codes and related theories about student-centred learning. It is worth mentioning that the researcher translated the questionnaire into Korean, the participants' first language, to avoid misunderstandings. Overall, there were 10 items concerning the positive impacts of using Quick Response Codes in promoting student-centred learning, including positive learning experience, active participation, increase in confidence, self-directed learning, motivation, ease of use, student-centeredness, learning engagement,

collaborative learning, and stimulation of a positive learning attitude. The items were presented on a 4-point Likert scale from Level 1: Strongly Disagree to Level 4: Strongly Agree. In addition to the questionnaire, interviews were conducted to obtain supplementary and cross-validated data regarding students' benefits and challenges in using Quick Response Codes to promote student-centred learning. The interviewees were asked about their engagement and interaction using QR codes in the learning process, the convenience and accessibility of using QR codes to improve student-centred learning, their opinion on the role of QR codes in promoting self-directed learning and autonomy, their views on the role of QR codes in assessments and how it impacts their learning outcomes and the learning process, and any challenges and barriers associated with the use of QR codes in student-centred learning.

All participants were tested in a large-group setting in their classrooms at school by one of the investigators. They were asked to complete a two-page survey, specially designed for the present study. To ensure that all participants were listening to the directions and performing the task, the examiner read each question aloud, paused, and allowed time for them to mark their own answers. Once they finished answering the questionnaire, they were requested to check their responses for incompleteness or missing answers. Before conducting the interviews, the subjects were briefed on the aims and procedures of the interview sessions. To reduce their fear of exposing their honest views and to ensure better and valid results, the interviewees were informed that their answers would be treated with complete confidentiality. A voice recorder was used to record the interviews. The data collection process was conducted twice, on October 24th and 31st, 2023. The data collected in the present study comprised two types: quantitative and qualitative. The quantitative data from the questionnaires were analyzed in terms of means using the Statistical Package for Social Sciences (SPSS) and percentages. For analysing the qualitative part of the data, on the other hand, a content analysis method was used. In the analysis process, the interviewees' responses for each question were firstly translated into English and then transcribed. After that, the responses were analysed in terms of themes related to the study objectives.

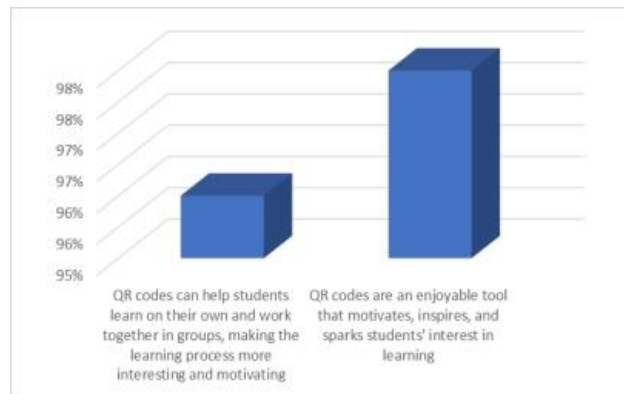
FINDINGS AND DISCUSSION

Quick Response Codes in promoting student-centred learning

Regarding students' opinions on the use of Quick Response Codes (QR codes) in empowering their learning, interesting findings were obtained. Concerning their attitudes toward QR codes in promoting student-centred learning, the results reveal that most students responded positively to the idea that using QR codes enhances their motivation. They feel that QR codes improve engagement by providing interactive and immediate access to supplementary materials, resources, and activities. It is not surprising that students agreed that QR codes also enhance accessibility to learning resources, including digital textbooks, videos, and online platforms. This finding aligns with results from numerous studies in this field, indicating that QR codes allow for autonomy and directed learning, supporting student-centred learning (Jacobs & Renandya, 2016; Bremner et al., 2022). In line with findings from Shahril et al., (2019), who stated that QR codes offer convenience, fostering positive student behaviours and boosting their involvement in classroom activities. Additionally, these codes serve as a catalyst for educators to incorporate technology-driven approaches into the educational process.

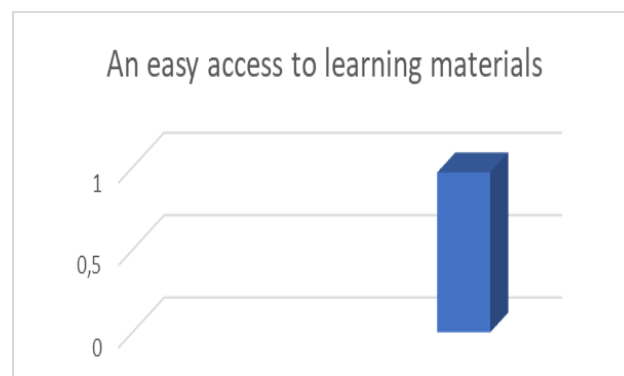
Moreover, learners tend to have a positive attitude toward the use of QR codes in supporting student-centred learning, indicating that QR codes have the potential to facilitate both independent study and collaborative group work. They serve as intriguing and motivating instruments within the realm of education (Rikala & Kankaanranta, 2012). More than half of the students (96%) agreed that QR codes help them learn on their own and work together in groups, making the learning process more interesting and motivating. This is consistent with the result that 98% of the students found that QR codes are an enjoyable tool that motivates, inspires, and sparks their interest in learning (Hapsari et al., 2019). Additionally, students' curiosity about authentic activities has increased, and they feel that QR codes play a positive role in encouraging their involvement in learning activities (Young, 2015).

Chart 1.
Benefits of using QR codes in fostering independent and collaborative student engagement



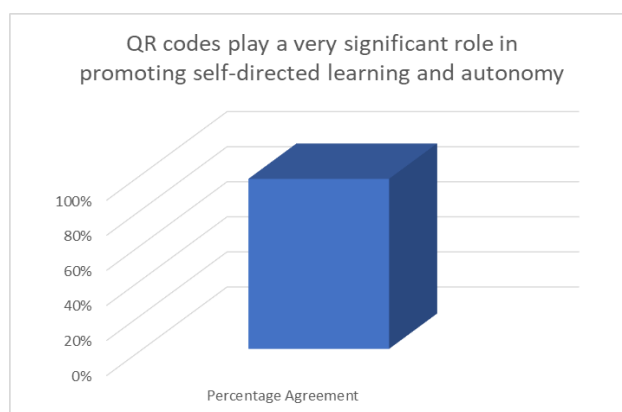
Regarding the significant role of QR codes in improving accessibility to learning resources, including digital textbooks, videos, and online platforms, it was found that 97 percent of the learners stated that by using QR codes, they consider that QR codes offer convenience, impacting their ability to access and manage educational content (Goh & Jarret, 2014). By scanning QR codes, students can easily access learning resources instantly, creating a more efficient and effective learning environment.

Chart 2.
Benefits of QR codes for learning accessibility



In line with the theory of student-centred learning, more than half of the learners (88%) agreed that QR codes play a very significant role in promoting self-directed learning and autonomy (Kossey et al., 2015). Accessing the learning materials by using the QR codes has facilitated them to personalize the learning pathways, and the QR codes have allowed them to set their own pace and focus on specific topics of interest.

Chart 3.
The benefit of QR codes in promoting self-directed learning and autonomy



Interestingly, through the data of the questionnaire, it was found that 88 percent of the learners considered that their participation in the learning activities has increased by using QR codes. For instance, in the activity called treasure hunt, they felt that it was one of the most interesting activities they had during the learning period (Latif et al., 2011). Besides that, by using QR codes, the learning activities have changed to be paperless and environmentally friendly (Yuliyanti & Sakina, 2021).

However, 5 percent of the students did not feel happy working in groups. This is supported by information gathered from interviews; they tend to have a negative response toward group work in completing some projects because sometimes some of their friends have shown low motivation, and they feel afraid of creating conflict based on the situation.

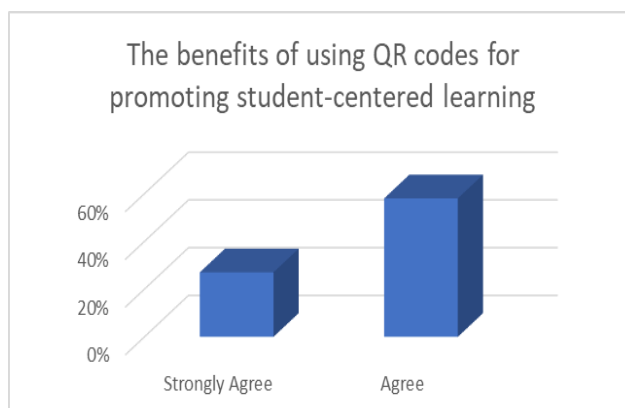
Regarding the degree of agreement among students to continue the use of QR codes in promoting student-centred learning in their future learning processes, the agreement was quite high with 55% agreement and 18% strongly agreeing. In contrast, 27% of the students did not agree to use QR codes in the whole learning process. These findings are strengthened by the results of the interviews, which indicate that, at times, low achievers face difficulties in fulfilling tasks within a limited time, which influences their learning motivation.

Benefits and Challenges which Learners Encounter when Using Quick Response Codes for Student-centred Learning

In response to the inquiry regarding the benefits of using QR codes to promote student-centred learning, various advantages were identified based on the experiences of learners engaging with QR codes in their learning activities. The use of QR codes was found to significantly enhance learning engagement, peer interactions, overall learning performance, and thinking skills. However, some drawbacks were also observed.

Learners faced challenges when attempting to explore learning materials hidden within QR codes, especially when time constraints allowed only fifty minutes of learning. Additionally, working in a team setting with students exhibiting low learning motivation and cognitive capacity proved challenging, making the achievement of learning goals difficult. These findings highlight both the positive impacts and challenges associated with integrating QR codes into the learning environment.

Chart 4.
The benefits of using QR codes for promoting student-centred learning



Furthermore, the findings from the interview revealed that 80% of the learners did not find any challenges in accessing the learning materials through QR codes. Fortunately, the internet quality has supported them well in accessing the learning material, which can be easily found inside the QR codes.

Regarding their overall response to the use of Quick Response Codes in promoting student-centred learning, the findings reveal that most students responded positively to the idea that exploring the use of the codes plays a positive role in supporting their achievement in mastering the learning materials in general. This is supported by interview data, which indicates that they realize, by accessing the learning material through QR codes, they acquire numerous benefits that align with the characteristics of student-centred learning. First and foremost, it was found that by using the codes, they actively engage in the learning process, and the teacher has shown that her knowledge is not all-encompassing (Jacobs & Renandya, 2016).

Secondly, the study revealed that by using QR codes, student-student interactions have significantly increased (Bremner et al., 2022). Thirdly, it was also found that they attain greater independence from the teacher, influencing their individual learning journey. Additionally, their optimal learning has been demonstrated because 89 percent of them, according to interview data, experienced a focus on learning comprehensively. Regarding curricular integration, data from the interview provided information that the codes prepared for the learning materials have played the most significant role in connecting their school studies to the real world. Moreover, the program of learning Indonesian culture has also supported them in preparing to realize the advantages of diversity. Last but not least, by exploring the use of QR codes, they have built their thinking skills by extending their understanding beyond the provided information,

applying concepts, offering examples, expressing dissent, and establishing new associations.

However, due to the limited time in the learning process (50 minutes) for each session, they found that this issue has created some limitations in supporting maximum achievement by exploring the use of QR codes in the learning process. For instance, during a treasure hunt game using QR codes, they felt that with a longer learning duration, they would enjoy the learning better and achieve better learning outcomes. Based on the aforementioned findings, it is worth considering that in achieving a bigger positive impact in the use of QR codes in promoting student-centred learning, two key factors have been revealed through this study, namely, teacher creativity and proper time allocation.

CONCLUSION

The analysis of students' questionnaires and interview data revealed that students have a positive attitude toward the use of Quick Response Codes in promoting student-centred learning. Exploring the use of QR codes has proven to provide students with opportunities to improve their analytical skills, problem-solving skills, as well as skills in deep learning, lifelong learning, self-directed learning, reflective learning, and motivation. Additionally, it was revealed that exploring the use of these codes in learning activities has brought many benefits, especially in improving their awareness of preparing themselves to be global citizens, enhancing their English proficiency, learning motivation, and all aspects supporting their soft and hard skills. They also believe that the use of Quick Response Codes in the learning process is feasible and valuable. Moreover, if possible, it is suggested that the function of the codes could achieve a higher level of benefit for the learners if explored more and applied in more creative and interesting learning designs.

Last but not least, this study provides two important pedagogical implications. First, it is reasonable to explore the use of QR codes to enhance student-centred learning in an English class, particularly in EFL contexts where opportunities to use English are limited. Second, given that QR codes can facilitate the goals of student-centred learning, effective learning preparation, focusing on creativity and enjoyment, should also be supported by proper time allocation. However, it's important to note that this study is an exploratory investigation into the use of QR codes to improve student-centred learning, and the extension of the study is limited. Future research could concentrate on promoting QR codes in differentiated learning, aligning closely with the exploration of future studies. Regarding the quality of education in Korea in general, it is hoped that this study will prompt greater consideration of providing fun learning activities that focus on student-centred learning. This suggestion arises from the observation that the majority of learning activities are still conducted using classical methods.

REFERENCES

- Aamri, A., & Suleiman, K. (2011). The use of mobile phones in learning English language by Sultan Qaboos University students: Practices, attitudes and challenges. *Canadian Journal on Scientific & Industrial Research*, 2(3), 1-14.
- Andrzej, S., Boban, M., Marina, D. (2021). Information technology and gen z: The role of teacher, the internet, and technology in Education of young people.

- Aziza, P. K. (2020). The implementation of using quick response codes in listening comprehension for senior high school. *RETAIN*, 08(01), 125 – 131.
- Bahtiar, A. Z., & Sujono, H. D. (2020). Teacher and student perspective of using the Quick Response code feature in the biology module. *Proceedings of the International Conference on Online and Blended Learning 2019 (ICOBL 2019)* (pp. 30-37). Yogyakarta: Atlantis Press. <https://www.atlantis-press.com>
- Balintag, C. M., & Wilang, J. D. (2020). QR codes utilization in EFL classroom: Affective language. *Journal of Linguistics and English Teaching*, 5(1), 1-13. <https://doi.org/10.24903/sj.v5i1.425>
- Bella, Q. A., Yula, M., & Siti, S. (2022). Development of quick response code-based learning module on human reproductive system materials to increase student learning outcome. *Journal Compound*, 10(2), 41-55. <https://doi.org/10.37304/jcp.v10i2.7503>
- Blumberg, P., & Michael, J. (2019). Student-centered learning in higher education. *The International Journal of Educational Research*, 39(5), 457-475. <https://files.eric.ed.gov/fulltext/EJ938583.pdf>
- Bremner, N. (2015). Challenges and opportunities in implementing student-centred learning: A case study. *Journal of Educational Research*, 28(4), 421-437. <https://www.researchgate.net/publication/353573407>
- Bremner, N., Sakata, N., & Cameron, L. (2022). The outcomes of learner-centered pedagogy: A systematic review. *International Journal of Educational Development*, 94, 1-2. <https://www.sciencedirect.com/science/article/pii/S0738059322000992>
- Celik, B. (2023). EFL learners' perceptions on QR code enriched instruction in developing. *International Journal of Social Sciences & Educational Studies*, 10(3), 326-340. <https://doi.org/10.23918/ijsses.v10i3p326>
- Creswell, J. W. (2012). *Educational research: planning, conducting, and evaluating quantitative and qualitative research* (fourth ed). Boston: Pearson Education, Inc
- Fraenkel, J. R., Wallen, R. J., Hyun, H., & Helen, H. (2012). *How to design and evaluate research in education* (eighth ed.). McGraw-Hill. Retrieved from https://saochhengpheng.files.wordpress.com/2017/03/jack_fraenkel_norman_wallen_helen_hyun_how_to_design_and_evaluate_research_in_education_8th_edition_-mcgraw-hill_humanities_social_sciences_languages2011.pdf
- Gurhan. D., Ozkeskin , E. E., & Murat. A. (2016). QR codes in education and communication. *Turkish Online Journal of Distance Education*, 17(1), 1-17. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1097236.pdf>
- Goh, H. L., & Jarret, M. B. (2014). Integrating QR codes and mobile technology in developing listening and speaking skills in teaching of English language. *International Journal on E-Learning Practices (IJELP)*, 1(1), 26-38.
- Hapsari, S., Ekawati, N. Y., & Molla, L. N. (2019). Implementing Quick Response (QR) codes in teaching reading. *Journal of English Language Education*, 2(2), 70-80. <https://doi.org/10.24905/efj.v2i2.57>.
- Handayani, E. T., & Aminatun, D. (2020). Student's point of view on the use of WhatsApp group to elevate writing ability. *Journal of English Language Teaching and Learning*, 12(1), 31-37. <https://jim.teknokrat.ac.id/index.php/english-language-teaching/article/view/602/192>
- Hennessy, S., Ruthven, K., & Brindley, S. (2017). Teacher perspectives on integrating ICT into school subject teaching. *Journal of Curriculum Studies*, 44, 1–40.

- Indrianti. (2012). Developing student-centered grammar materials for beginners' level Indonesian. *Electronic Journal of Foreign Language Teaching*, 9(1), 380-401.
- Jacobs, M. G., & Renandya, A. Willy. (2016). *Student-centered learning in ELT*. Springer International.
- Johnson, M., & Johnson, D. (2018). Overcoming the challenges of implementing student-centered learning: A case study. *Journal of Educational Innovation*, 45(3), 345-367.
- Kang, J., & Kim, S. (2019). Student-centered learning in South Korean classrooms: Challenges and opportunities. *Journal of Global Education*, 8(3), 123-138.
- Kossey, J., Berger, A., & Brown, V. (2015). Connecting to educational resources online with QR codes. *FDLA Journal*, 2(1), 1-10.
- Kristanto, A., Mustaji, & Mariono, A. (2017). The development of instructional materials e-learning based on blended learning. *Canadian Center of Science and Education*, 10-17.
- Latif, A. L., Fadzil, M., & Azzman, T. A. M. T. M., c&Ng, M. S. (2011). Can the use of QR codes enhance m-learning in a blended learning environment? *Journal Lifelong Learning Society*, 8(2), 1-20.
- Mangram, M. E. (2013). A simplified perspective of the Markowitz portfolio. *Global Journal of Business Research*, 7(1), 59-70.
- Manumpil, B., Yudi, I., & Franl, O. (2015). The relationship between gadget usage and students' achievement level in public senior high school 9 Manado. *Ejournal of Nursing (e-Kep)*, 3(2), Pages 1-6.
- Martiz, G., & Recker, M. (2019). Mobile phone use for English language learning in a Dominican Republic University classroom: A qualitative inquiry. *Computer-Based Learning in Context*, 1(1), 14-27.
- O'Neil, G., & McMahan, T. (2005). Student-centered learning: What does it mean for students and lecturers? In G. O'Neil, S. Moore, and B. McMullin (Eds.) *Emerging issues in the practice of university learning and teaching* (pp. 27-36). AISHE.
- Osler, A., & Starkey, H. (2005). *Changing citizenship: Democracy and inclusion in education*. Open University Press.
- Rikala, J., & Kankaanranta, M. (2012). The use of quick response codes in the classroom. *mLearn*, 148-155.
- Rikala, J., & Kankaanranta, M. (2012). The use of quick response codes in the classroom. In M. Specht, M. Sharples, & J. Multisilta (Eds.), *mLearn 2012: Mobile and contextual learning: Proceedings of the 11th International Conference on Mobile and Contextual Learning 2012* (pp. 148-155).
- Shahril, M. A., Tarmudi, S., Hamid, R., & Mohi, Z. (2019). Interactive knowledge experience: encouraging students using quick response code in higher learning institution in Malaysia. *International Journal of Management Sciences and Business Research*, 8(5), 73-78.
- Sharma, L., & Srivastava, M. (2020). Teachers' motivation to adopt technology in higher education. *Journal of Applied Research in Higher Education*, 12(4), 673-692. <https://doi.org/10.1108/JARHE-07-2018-0156>
- Song, L., & Kappler, B. (2021). Student-centered learning and its impact on learning outcomes. *Educational Psychology Review*, 32(2), 401-423.
- Veena, S., Sheetal, M., Navita, V. (2020). Covid 19 - lockdown: Technology adaptation, teaching, learning, students' engagement and faculty experience.

- Yuliyanti, S. & Sakina, R. (2021). Quick response codes in improving students' vocabulary mastery. *JEPAL*, 2(1), 1-19.
- Weimer, M. (2002). *Learner-centered teaching: Five key changes to practice*. Wiley & Sons.
- Young, J. J. (2015). A study on technology embedded English classes using QR codes. *International Journal of Contents*, 11(1), 1-6.
<https://doi.org/10.5392/IJoC.2015.11.1.001>.