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EXPERIENCES OF STUDENT NURSES UTILIZING QR CODES IN MEDICAL-SURGICAL NURSING CLASS RECITATION TO ENHANCE ENGAGEMENT

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ABSTRACT

Integration of technology into education has transformed older ways of teaching, and QR code technology seems to be emerging as a tool for increasing student participation. Included in CMO 15 2017 is NCM 112, one of the core subjects that student nurses are most horrified of because it has the highest weight in the BSN curriculum. While existing literature on use of QR code in education, few studies about the use of QR Code in recitation, specifically in Nursing Education. This qualitative study examines the lived experiences of student nurses in a medical-surgical nursing class who used QR codes to record recitation points. Phenomenological qualitative study with semi-structured interviews. Participants were chosen through purposive sampling. Data collected through semi-structured interviews in a face-to-face setup. This study included 25 BS nursing students with the following inclusion criteria: student nurses passed Nursing Care Management 112, voluntarily agreed to participate and share experiences, provided informed consent and must have used QR code technology as a learning tool for at least one semester. The interviews were recorded, transcribed, and analyzed for thematic content using Colaizzi's method. Findings revealed three produced three major themes: Boosted class participation, Friendly competition, and Technology Challenges. Participants reported increased motivation and high interactive engagement with strengthened collaboration among peers. QR code technology holds pointed potential to boost student participation and collaborative learning in the practice of medical-surgical nursing. Challenges like technological issues and digital adaptability became points of concern. However, careful orientation, implementation, and teacher-student support with the use of technology are necessary to fulfil its benefits.

Keywords: *QR Code, Student Nurses, Engagement, Technology*

INTRODUCTION

The Japanese company Denso-Wave, based in Kariya, Aichi, Japan, introduced quick response codes in 1994. These two-dimensional barcodes were originally designed for tracking storage. Now, integrating Quick Response (QR) codes into nursing education is a new approach that shows great promise. It can improve student engagement, satisfaction, and learning outcomes. Recent studies show that QR codes are useful tools for providing just-in-time access to educational resources. This access supports clinical skills development and helps nursing students feel more prepared for exams (Scott et al., 2025; El-Sayad, Fareed, & Masry, 2023; Bradshaw, Rawle, & Muller, 2024). For instance, Scott et al. (2025) studied dynamic QR codes paired with data analytics. They found that using QR codes to access timely multimodal content led to better engagement and knowledge retention. Likewise, El-Sayad et al. (2023) noted significant improvements in clinical competency and positive student feedback after QR code training. Additionally, both students and educators view QR code technology favorably. They see it as a way to modernise nursing curricula and meet the changing needs of learners in a more digital world (Scott et al., 2025). Given that mobile technologies are increasingly popular among nursing students today, using QR codes during medical-surgical nursing classes can create interactive learning experiences. It encourages active participation and strengthens critical clinical judgment skills necessary for professional practice. This study examines student nurses' experiences with QR codes during medical-surgical nursing classes and aims to understand how this technology boosts their engagement and learning.

METHODS

This study used structured self-reports and detailed, standardised open-ended interviews along with non-verbal observations noted in field notes. Participants received full information about the study's purpose, procedures, benefits, risks, and their rights, including the choice to participate voluntarily and withdraw at any time. We kept confidentiality strictly, recording interviews and transcribing them word for word. The researcher conducted all interviews, checked the transcriptions for accuracy, and created a neutral, trusting setting to encourage honest and comfortable sharing, following ethical qualitative practices (Lopez et al., 2010; Gall & Borg, 2003; Polit & Beck, 2004).

To ensure the study's reliability, we applied Lincoln and Guba's (1985) criteria of credibility, transferability, dependability, and confirmability. We supported credibility by encouraging participants to express themselves freely and recording interviews in full. Transferability was achieved through purposeful sampling of nurses from various clinical settings, which provided rich, descriptive data for comparison. Dependability involved using suitable research designs, including standardised interviews and field observations. We maintained confirmability by being objective, presenting participants' voices authentically, and reducing researcher bias. We also gave participants a token of appreciation for their contributions.

This study followed ethical standards to protect participants' rights and welfare. Participants were informed about the study's purpose, procedures, potential benefits, risks, and their right to participate

voluntarily, including the option to withdraw at any time, ensuring respect for their autonomy. We maintained strict confidentiality, securely recording and transcribing all responses. The researcher created a neutral, supportive environment to encourage open, honest sharing while avoiding coercion or discomfort, in line with principles of beneficence and non-maleficence. We received ethical approval from the relevant Pangasinan State University Ethics Review Board. This framework ensured that the study upheld justice, reliability, and integrity throughout the research process.

RESULTS AND DISCUSSION

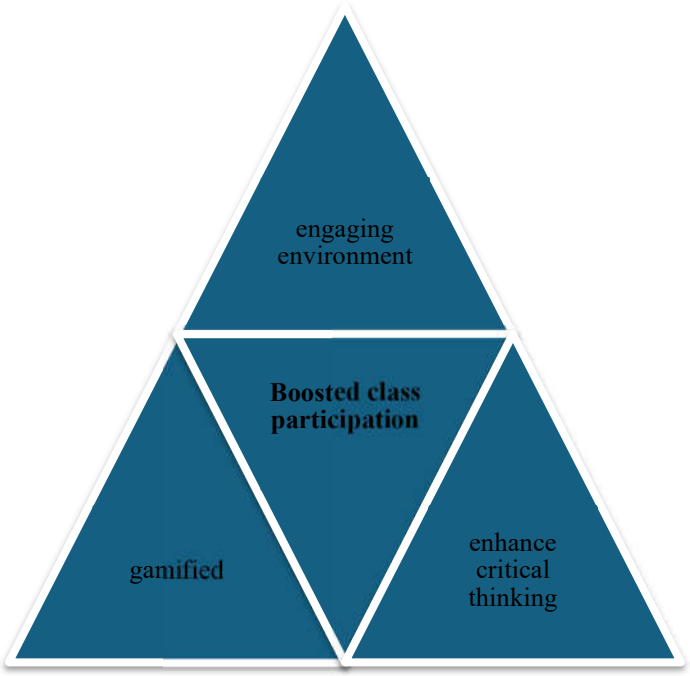

Figure 1.: Boosted Class Participation

Main Theme: Boosted Class Participation

a) Engaging Environment

QR codes have been used effectively in educational settings to create interactive and engaging learning environments. They allow easy mobile access to quizzes, case studies, and resources. This change turns passive lectures into active sessions. This is especially beneficial in large nursing classes, where it can be hard to get individual engagement. Kinyon et al. (2023) found that technology-driven activities, like mobile-based response systems and QR code tasks, improve student participation and focus during class. Research shows that interactive technologies boost learner engagement by making sessions more immersive and encouraging real-time involvement. For example, Chang, Wu, Chang, Tseng, and Wang

(2021) found that using technology to enhance active learning increases attention and motivation in healthcare education.

b) Gamified Learning

Timed quizzes delivered through QR codes effectively include gamification elements. Research shows this approach boosts learner motivation and engagement in clinical education. Wong et al. (2023) found that gamified learning strategies, such as timed challenges, scoring, and competition, enhance nursing students' clinical judgment and decision-making skills. Gamification relies on psychological incentives like rewards, competition, and tracking progress. These factors improve learning outcomes in clinical reasoning and retention (Sardi, Idri, and Fernández-Alemán, 2017).

c) Critical Thinking

QR-linked case studies give learners a chance to work with realistic scenarios. This helps develop critical and independent analytical skills that are important for clinical reasoning. The practice supports the goals of the Next Generation NCLEX (NGN), which focuses on clinical judgment and decision-making through realistic cases. A study from Damanhour University in 2020 showed that using QR code technology with case-based learning allowed students to access informative, multimedia patient cases. This approach improved their critical thinking skills in line with NGN competencies.

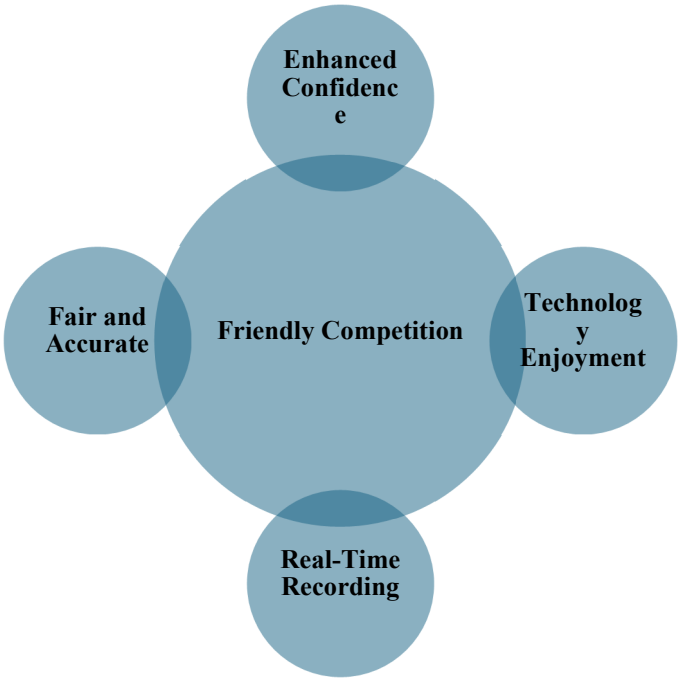

Figure 2.: Friendly Competition

Main Theme: Friendly Competition

a. Real-Time Recording

Leaderboards provide immediate feedback. This boosts motivation and engagement by promoting social learning and self-regulation. This ties closely to social cognitive theory, which highlights the importance of social context and feedback in improving learners' motivation and goal-setting (Zurmehly, 2017). Research in nursing education shows that timely feedback, along with competitive ranking, improves self-reflection and persistence (Bandura, 1986; Zurmehly, 2017).

b. Fair and Accurate

Automated QR code assessments ensure more objective and standardised grading. They significantly reduce bias linked to manual grading (Smith and Jones, 2022). Studies in nursing simulations show that QR scanning methods offer safer and fairer evaluations of medication administration, resembling real clinical practice (Brown et al., 2022).

c. Technology Enjoyment

The use of mobile devices in healthcare education greatly increases user satisfaction and engagement. Reviews have found that smartphones and apps improve accessibility, learner motivation, and knowledge retention (Nguyen et al., 2023). Students consistently report that mobile integration makes coursework more enjoyable and convenient. This approach enhances overall learning experiences (Anderson and Lee, 2023).

4. Enhanced Confidence

Immediate feedback helps students evaluate their performance accurately. This builds the confidence necessary for clinical decision-making (Clark et al., 2022). Research shows that real-time feedback during simulations supports better self-assessment skills and professional judgment (Davis et al., 2022; Clark et al., 2022).

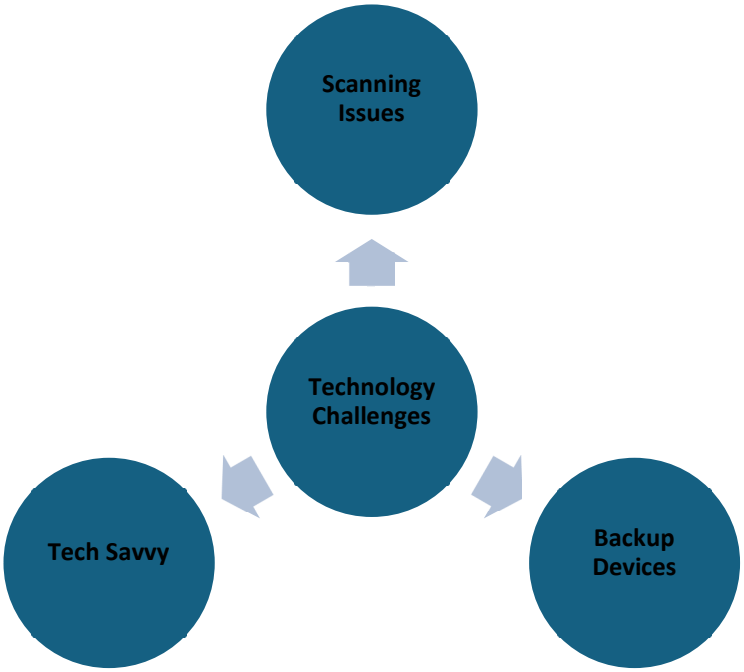

Figure 3.: Technology Challenges

Main Theme: Technology Challenges

a. Scanning Issues

Poor QR code readability disrupted workflow in educational settings. Various pilot studies have noted such challenges while investigating QR implementation in healthcare education. For instance, Zurmehly and Adams (2017) found that severely wrinkled or small QR codes reduced scanner connectivity. This issue impaired access to learning materials. Additionally, the need for fast and reliable internet access significantly limits many clinical areas, as reported by several authors (Scott et al., 2025; Lin et al., 2019). These technological limitations can interrupt instructional flow, leading to frustration and reduced student participation.

b. Backup Devices

To address this issue, pairing students without devices with those who own smartphones has been a practical strategy in clinical education. However, consistent support for backup devices or alternative access is still necessary to ensure equal opportunities for all learners. Equity gaps have emerged for students who lack smartphones, a challenge clearly identified in large-classroom studies (Zurmehly and Adams, 2017).

c. Tech Savvy

Without structured help in using QR code technologies and related mobile apps, some learners may face barriers that limit their ability to benefit fully from technology-enhanced learning environments.

Significant differences in digital literacy among students highlight the ongoing need for pedagogical and technical support from educational institutions (Wong et al., 2023; Scott et al., 2025).

CONCLUSION

The findings match global research on using QR codes in nursing education. The theme of increased participation shows that QR codes can engage millennial learners through self-paced, technology-driven activities. Gamification elements like timed quizzes relate to better clinical judgment by simulating high-stakes exam conditions. Using QR codes for friendly competition supports social cognitive principles. Peer modelling and real-time feedback boost motivation. However, educators need to balance competition with inclusivity. This helps avoid discouraging students who are less skilled with technology. Studies highlight ongoing equity challenges in this area. Technology barriers reveal gaps in digital access and literacy. Scanning problems and device inequality reflect issues found in large-classroom pilot projects. Offering training sessions and loaner devices could help, especially for non-traditional learners. Incorporate QR codes into important topics to enhance engagement benefits. Workshops on troubleshooting and gamification techniques can encourage better adoption. Schools should ensure device accessibility to maintain inclusivity.

Limitations and Future Research

In summary, QR codes successfully update medical-surgical nursing education by promoting engagement and confidence. However, success relies on tackling technical and equity issues through focused support.

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