**Faculty Perspectives on Barriers to Technology Integration in Nursing Education: A Qualitative Study**

# Abstract

**Objective:** The study examines the challenges that nursing faculty encounter in integrating technology in nursing in Dubai. Knowledge of these barriers from the faculty’s perspective can be useful in developing ways of integrating and implementing technology in nursing education.

**Methods:** A quantitative study design was used; interviews were conducted with nursing faculty through purposive sampling. The interviews centred on the perceived barriers to the integration of educational technologies. After codifying the data, manual thematic analysis was conducted, and the findings regarding institutional, technical, and pedagogical themes were compiled. Ethical considerations included informed consent, confidentiality, and institutional review board approval.

**Results:** Thematic analysis revealed five main barriers: (1) institutional limitations, such as inadequate infrastructure and training, (2) technical skill gaps among faculty, (3) concerns about the pedagogical effectiveness of technology in skill-based learning, (4) resistance to change, particularly among senior faculty, and (5) perceived impacts on student engagement. Direct quotations from participants illustrated the complexity of these challenges.

**Conclusions:** Overcoming the barriers requires multifaceted assistance with professional development, technological advancements of facilities, and balanced instructional integration of technologies. These results indicate that the faculty’s insights should be taken into account when developing strategies for technology integration and the role of a constructive organizational context regarding the successful implementation of technologies. Subsequent studies should examine these barriers in different regions and incorporate students’ experiences as well to gain a more holistic understanding.

**Keywords:**

Technology integration, nursing education, faculty perspectives, barriers, institutional support, pedagogical challenges, qualitative study, Dubai

# Introduction

Over the past decade, the delivery of courses in higher education has been revolutionised by technology, and nursing education is no exception. The use of technology in clinical nursing education can significantly improve the overall learning outcomes of the students and help prepare nurses to work in current complex, technology-rich healthcare settings (Gause, Mokgaola and Rakhudu, 2022). Contemporary technologies, including model simulations, e-learning modules, virtual reality, and digital patient care systems, are now crucial tools in cultivating critical thinking, decisive clinical reasoning, and real-life skills within a nursing student (Penaflor-Espinosa, 2016). A significant shift has been witnessed in the healthcare domain as more technologically based solutions are developed that must be correlated to progress in nursing education, so graduates have enough skills to address current and future patient requirements (O’Connor and Andrews, 2015). Nevertheless, there are a number of challenges present to significantly integrate technology into nursing education that is both multifaceted and complex (Harris, 2022).

One of the inherent challenges in the adoption of technology in nursing education is the belief among faculty members in change and prior practice. Faculty members have a critical role in designing and delivering nursing education, and their perspectives, knowledge, and skills can affect its adoption among students (Wingo et al., 2016). Faculty members can show hesitation or resistance in this process due to different factors, including inadequate training, lack of organisational support, time limitations and inadequate confidence in the appropriate use of technological tools (Watty, McKay and Ngo, 2016). There is the need to understand faculty perception about these barriers in order to address problems hindering effective integration of technology in nursing education to boost the effectiveness for students (O’Doherty et al., 2018).

Current literature regarding technology integration in nursing education is mainly focused on student perceptions and experiences, overlooking the barriers experienced by faculty members. Evidence indicates that students have a positive attitude toward using digital learning tools. Nevertheless, faculty encounter specific difficulties which may impede the adoption of technology-enhanced teaching (Stec, Smith and Jacox, 2019; Thanaraj and Williams, 2016). For example, some faculty members may be willing to incorporate educational technology into teaching practices. Alternatively, others can find this faster technological shift complex or insufficient technical skills needed for technology integration (Christopoulos and Sprangers, 2021). Indeed, technical challenges, as well as administrative challenges such as budget constraints and the need for more technical assistance in their adoption, make it difficult (Reich, 2020). Nevertheless, the literature still overlooks the faculty aspects in the sphere of nursing education and the understanding of the barriers they face when incorporating technologies into their work.

The primary objective of this qualitative research is to explore and analyse how barriers to technology integration affect the nursing faculty. The study will use nursing educators’ perceptions to analyse these factors, which, on the whole, have an adverse influence on the implementation of educational technology. Such findings will be useful in designing support structures, materials, and professional development programmes to accommodate faculty transition to incorporating technology into nursing curricula in increments (Crawford and Jenkins, 2016). Faculty perspectives and insights could also be important to academic institutions in building a supportive environment for technology adoption in their teaching practices as a means of staff empowerment.

The central research question guiding this study is: "What barriers are perceived by faculty in integrating technology into nursing education?" The study adopted a qualitative approach to comprehensively explore the faculty perspectives, leading to an in-depth analysis of the factors influencing technology-oriented nursing education. This study's approach fills the gap and disseminates it with the aim of promoting strategies to support the successful adoption of technology by faculty members, ultimately improving nursing education quality and relevance.

# METHODOLOGY

## Study Design

This study sought to identify barriers experienced by the nursing faculty in incorporating technology into nursing education in Dubai. A qualitative research design was used since the study aimed at eliciting rich information from the faculty. Purposive sampling was used since the participants were required to be involved in nursing education and teaching experience in the use of technology. This sampling technique was applied to make sure that the participants were capable of yielding good data insights into the study area of interest. The sample was comprised of nursing faculty from various universities in Dubai, showing different teaching experiences, roles, and previous exposure to educational technologies.

## PARTICIPANTS

Through purposive sampling, participants were chosen based on certain background knowledge in nursing education and their familiarity with technology integration. The research involved a total of 12 nursing faculty members. The criteria for inclusion were as follows: Included criteria are

(1) The faculty member has taught nursing students for at least a year

(2) The faculty member has employed or encountered some form of educational technology in their course, for example, e-learning platforms, simulation software, or digital patient care

(3) The faculty member has agreed to share their experience, both positive aspects and difficulties and their perceptions of how technology affects nursing education. Participants were selected to represent various academic ranks, such as lecturers, senior lecturers, and associate professors, so as to get a variety of viewpoints. The participants were contacted electronically through e-mail and requested to participate in the study after being informed about the research's goals and significance.

## DATA COLLECTION

Semi-structured interviews were used to collect data, helping the researchers to explore the rich experiences of faculty members. The interviews were selected for this study because of their ability to elicit subjective experiences and complex opinions (Smith, Flowers and Larkin, 2009). The interview guide was created from present literature considering technology integration in nursing education, and then its clarity and compatibility were reviewed by experts. It included open-ended questions such as: “What issues do you encounter when incorporating technological advances in your classroom teaching?” and “In what ways do you think your institution supports the integration of technology in the teaching and learning process?” These questions were used in such a way that participants were prompted to discuss about barriers based on institutional support, experience, technology, and concerns as educators.

The interviews took 45-60 minutes and were conducted in English since the courses in most nursing institutions in Dubai are conducted in English. The interviews were conducted in a quiet environment at the participant's workplace or through video links, depending on the participant's schedule. Each interview was recorded with permission from the participants for easy transcription and analysis. Participants were given an information sheet detailing the purpose of the study, voluntary participation, and the right to withdraw from the study at any time without explication.

## DATA ANALYSIS

The data was analyzed using a thematic analysis approach, which is popular in qualitative data research to determine patterns or themes (Braun and Clarke, 2006). This approach was used because it is flexible and enables the examination of participants' perceptions in detail. The data analysis was a step-by-step process. First, the audiotaped interviews were transcribed verbatim. The researcher then reviewed the transcripts to ascertain familiarity with the content of the interview.

The following step was the manual coding of the data. An initial code set was developed considering the recurring phrases, words, and subjects in the interviews. For example, codes like 'lack of training', 'technical difficulties', and 'institutional support' are initially determined from the data. These initial codes were then aggregated into more encompassing broader code groups in order to capture main themes. The main themes concerned the barriers, such as a need for more technical competencies among the faculty, inadequate institutional support, resource constraints, and resistance to change. As the process progressed, the researcher reviewed and redefined the codes and themes back to the data using an iterative process so that they accurately reflected the data. This was then succeeded by the development of sub-themes within the main themes, which offered a deeper appreciation of the participants' experience.

Thematic analysis was highly appropriate for this study as it involves the identification of themes in the data without reference to prior theories and frameworks. Data analysis was done manually, with the researcher using pen and paper to write notes, categorize, and refine codes. The review process was more reflective, which in turn gave a more personalized view of the data's results. Finally, after interpreting the last themes, an analysis was done from the perspective of the research question and of the literature reviewed to conclude on barriers to the use of technology in nursing education.

## ETHICAL CONSIDERATIONS

Ethical considerations were key principles in this study, such as participants' rights and confidentiality being taken into account during the research process. Before data were collected on this study, the proposed study was presented for ethical review and approval to the institutional review board (IRB) of the universities where the study was carried out. The IRB and the Declaration of Helsinki (World Medical Association, 2013) were taken into account in the study, respecting beneficence and justice.

Each participant electronically signed an informed consent document to participate in the study. They were also given an information sheet that outlined the study’s aims, their rights, details stating that participation had been voluntary, and possible harms and benefits. In addition, the participants were given pseudonyms to ensure confidentiality, and all collected information was saved in a password-protected file. The researcher manually transcribed the responses retrieved from the audio recordings, and the data of the participants’ identities were anonymized.

# RESULTS

During the semi-structured interviews, certain barriers unique to nursing faculty in Dubai in the use of technology in their teaching came out clearly. The findings highlighted barriers related to institutional support, technical and pedagogical issues, personal attitudes toward technology, and perceived impacts on student engagement. Several main themes were identified in the interviews, and each of them describes certain issues and gives the view of the faculty members.

## Theme 1: Institutional Barriers

One of the major emergent themes was the perceived lack of adequate institutional support. Faculty members indicated that their institutions needed to offer adequate support to implement the technology properly in their teaching practices. Participants cited training, resources, and support as major challenges in adopting technology due to their restricted access.

One participant expressed frustration, saying, "We are encouraged to use technology, but there’s no follow-up support or training. I feel lost when I encounter technical issues, and there’s no one to help." Another participant echoed similar concerns, explaining that "without proper training and resources, technology just becomes a burden instead of a tool."

Faculty members mentioned the challenge of incompatible or outdated technological infrastructure, which hindered the efficient adoption of technology-enhanced approaches. "Our computers and software are outdated," one participant said. "Even if I want to use a new platform, it doesn’t work because our systems can’t support it."

## Theme 2: Technical Skills and Confidence

The second theme was dedicated to the technology competencies and confidence levels in using technology by the faculty members. One of the major issues included low technical proficiency and, thus, minimal understanding of digital tools. Many participants expressed their concern over the preparedness to effectively incorporate technologies into their teaching, developing anxiety and reluctance to use new tools.

"I know the basics of using a computer, but I feel overwhelmed with more advanced technology," admitted one participant. "Sometimes, I’m afraid to try new tools because I don’t want to make mistakes in front of my students."

Another participant suggested the need for professional training to develop better digital skills, stating, "We had a short introductory workshop on technology a few years ago, but that’s not enough. Technology is constantly evolving, and without regular training, it’s hard to keep up." Many faculty members pointed out that only extensive and sustained training interventions can enhance their self-confidence in using digital technologies and their general teaching efficacy.

## Theme 3: Pedagogical Concerns

Faculty members also articulated some issues regarding the possibility of technology-augmented learning outcomes within nursing education. They wondered whether technology enhances the teaching-learning processes or hinders the traditional, hands-on techniques that are essential in nursing education.

One participant said, "Nursing is a practical field. I wonder how much technology can really contribute to skills like patient care, which require face-to-face interaction and empathy." One of the participants noted that the emergence of technology raises some concerns about how teachers interact directly with their students, remarking, "I worry that too much reliance on digital tools might make our teaching less personal. Students need that one-on-one interaction, especially in nursing."

Even with the above concerns, a number of the faculty members understood that the use of technology could enhance conventional approaches to learning, though not necessarily directly. However, they reported needing more clearly provided pedagogical strategies for integrating technology into their teaching practices. "If we had more support on how to use technology in a way that enhances, rather than replaces, traditional methods, I think we’d see better results," explained one participant.

## Theme 4: Resistance to Change

Another theme identified from the interviews was the faculty's resistance to change. Some faculty members expressed reluctance to embrace new technological practices due to complexity, time constraints, or simply sticking to traditional ways.

One participant stated, "I’ve been teaching the same way for over a decade. Introducing technology feels like a huge shift, and I’m not sure it’s necessary." Another faculty member mentioned, "There’s a reluctance, especially among senior faculty, to adopt new methods. We’re comfortable with what we know, and change feels daunting." This was primarily due to the belief that technological integration would increase their workload instead of easing it. "Learning a new platform takes time. With our busy schedules, it’s hard to commit to something that feels more complicated," expressed one participant.

## Theme 5: Impact on Student Engagement and Learning Outcomes

The last theme gathered from the interviews looked at how learning with the use of technology was deemed to affect students' learning and performance. Some faculty respondents developed mixed opinions about whether information technology positively impacted the students. Some of them pointed out that it appeared the students were even more passive or distracted whenever digital tools were incorporated into the class.

"Sometimes I feel students are more focused on the screen than on the content," remarked one participant. "It’s difficult to gauge their understanding when they’re just clicking through slides or watching videos." Another participant added, "While technology can make content more accessible, I’m not sure it fully engages students in the learning process. Nursing requires critical thinking, and I worry that too much technology might hinder that."

Nevertheless, few faculty members pointed out that technology could enhance student's learning and performance if utilized properly. "I think there’s potential, but it has to be balanced. Technology can’t replace critical thinking exercises or clinical practice," stated one participant.

Table 1: Emerging Themes and Sub-Themes from Semi-Structured Interviews

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| --- | --- | --- |
| Theme | Sub-Themes | Example Quotations |
| **Institutional Barriers** | Lack of training, inadequate support, outdated infrastructure | "We are encouraged to use technology, but there’s no follow-up support." |
| **Technical Skills and Confidence** | Insufficient expertise, lack of confidence, need for regular training | "I feel overwhelmed with more advanced technology." |
| **Pedagogical Concerns** | Value of technology in nursing education, balancing traditional methods | "Nursing is a practical field. I wonder how much technology can contribute." |
| **Resistance to Change** | Preference for traditional methods, time constraints | "There’s a reluctance, especially among senior faculty, to adopt new methods." |
| **Impact on Student Engagement and Learning Outcomes** | Mixed effects on engagement, potential for passive learning | "It’s difficult to gauge their understanding when they’re just clicking through slides." |

# DISCUSSION

## Summary of the Results

The results reveal major barriers that nursing faculty encounter in integrating technology into the teaching-learning process. Several difficulties were cited, including training needs, outdated structures, and inadequate support. The faculty also cites a lack of confidence in their technical skills as a reason why they do not readily incorporate digital tools into their teaching. However, there were doubts about whether technology integration would really improve nursing education, especially given the practical nature of nursing, which relies heavily on hands-on learning. Finally, resistance to change and doubts about the effectiveness of technology-mediated engagement for students were reported as significant issues.

## Interpretation of the Findings

The findings agree with other studies on technology integration in education. A lack of institutional support and training, identified as a primary barrier in this study, is consistent with findings from research in other regions (Castro, 2021). Faculty also feel reluctant to use technology if they need more institutional support, proving that while financial investment is important, technology implementation and integration need constant support. The concerns faculty had about the impact of technology on student engagement reflect a common critique where failure to incorporate technology leads to passive learning (Schindler et al., 2017). This is especially significant in the field of nursing education, where face-to-face teaching and practical approaches are applied to clinical skills and interpersonal communication, which is particularly challenging to teach digitally.

The study also reveals the issue of resistance to change, especially among the faculties who are so used to their conventional teaching methods. This conforms to the Technology Acceptance Model, which states that perceived ease and usefulness impact the level of technology acceptance (Chau, 1996). Faculty members who find digital tools complex are less likely to integrate them into their teaching practices. Thus, solutions to these problems have to involve training and reconstruction of the concepts that institutions employ when considering the purpose of technology within pedagogical goals.

## Implications of the Results

Based on the study findings, it is clear that current nursing education institutions have to reconsider their strategies regarding technology integration. As for recommendations, the study suggests that institutions should opt for frequent hands-on training that would increase confidence among faculty, specifically in using advanced applications in nursing education, including simulation software. Institutions should also address the infrastructural insufficiencies that faculty complained of by upgrading equipment and ensuring those systems are relevant to modern learning systems. Furthermore, institutions should promote the view of technology as supplementing and adding value to conventional approaches rather than directly replacing them, helping faculty to address resistance to change.

Regarding policymakers, these findings show that the mere provision of technological tools is not sufficient; appropriate support and capacity-building measures must be available in parallel with such instruments. Implementing policies that encourage the preparation of faculties that are conversant with the technologies and creating follow-up support programs may aid in maintaining the continued use of the technologies in nursing education.

## Limitations of the Project

Some limitations in the study need consideration. Initially, the study in Dubai, as such, may need to be more generalizable to other regions that may have different rules regarding education and institutions. The findings that relate to the supposed negative attitudes by the faculty of technology and innovation may actually be a result of cultural and organizational factors that exist in the country or the present university; however, research that may be conducted in other universities may produce different results. Further, the sample size of the participants was small, and this might reduce the variation in respondents’ answers. Only qualitative data were collected for this study; therefore, no quantitative data or a broader trend on technology integration among faculty was conducted. Last but not least, this study was restricted to the faculty responses only but did not include the views of the student community, which could have offered the larger picture of technology integration.

## Recommendations for Future Work

To extend these findings, research should determine faculty perceptions toward technology integration across a variety of educational contexts and areas. A comparative study could reveal common obstacles across different educational systems and unique challenges in specific cultural or institutional contexts. The addition of quantitative and qualitative data and a large sample size would also give a better picture of the challenges concerning technology integration.

In addition, literature that features students’ views could provide useful information on how technology affects learning outcomes, particularly in fields such as nursing. Examining the effectiveness of certain training programs and institutional support arrangements could also prove useful in understanding effective approaches to stimulating technology integration. Last, a longitudinal study could be conducted to evaluate the changes in faculty attitudes and behaviours and assess the long-term impact of sustained support and training on technology adoption in nursing education.

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# SEMI-STRUCTURED INTERVIEW QUESTIONS

* **General Experiences with Technology in Education**

1. Can you describe your experience with using technology in your teaching?

2. How do you feel about the role of technology in nursing education?

* **Perceived Barriers to Technology Integration**

3. What challenges have you encountered when trying to integrate technology into your courses?

4. In your opinion, what are the main barriers that make it difficult to use technology in nursing education?

5. Can you describe any institutional or administrative challenges you face regarding technology use?

* **Institutional Support and Resources**

6. How would you describe the support provided by your institution for technology use in teaching?

7. What kinds of resources (training, technical support, etc.) are available to help you use technology effectively in your courses?

8. In what ways do you think additional support could make technology integration easier?

* **Faculty Perspectives and Skills**

9. How comfortable do you feel using new technology in the classroom?

10. Do you feel you have received adequate training in using educational technology?

11. What specific skills or knowledge would help you feel more confident using technology in your teaching?

* **Student Engagement and Learning Outcomes**

12. How do you perceive student engagement and learning when technology is used in the classroom?

13. Have you noticed any challenges related to student engagement with technology-enhanced learning?

* **Resistance and Cultural Factors**

14. Have you observed any resistance to technology integration among faculty or staff? If so, what do you believe contributes to this?

15. Do you think cultural attitudes toward technology in education influence its integration? If yes, could you elaborate on this?

* **Future Perspectives and Suggestions**

16. What changes do you think could help overcome the barriers to technology integration in nursing education?

17. How do you see the future of technology use in nursing education?

18. Is there anything else you would like to add about the topic of technology integration in nursing education?