Original Article

Exploring Flexible Learning in Clinical Skills Teaching: Perspectives from Nursing Educators and Students

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ABSTRACT

OBJECTIVE: This study explored how flexible learning (FL) is implemented in clinical nursing education across Malaysian higher education institutions, focusing on the perspectives of nurse educators and nursing students.

METHODOLOGY: A qualitative research design was employed, utilising semi-structured, one-to-one interviews with 39 purposively selected participants, 21 nurse educators and 18 nursing students from six institutions. Interviews were conducted either face-to-face or online, recorded with consent, transcribed verbatim, and analysed thematically.

RESULTS: Three overarching themes were identified: Theme 1: Advantages of Flexible Learning; Theme 2: Challenges in the Implementation of Flexible Learning; and Theme 3: Strategic Preparedness and Institutional Support. Educators valued efficiency, professional growth, and innovation, while students emphasised autonomy and preparedness. However, both groups highlighted digital inequities, workload intensification, resource misalignment, and insufficient feedback. Institutional strategies were often reactive, leading to variable experiences. Both groups endorsed blended learning as the most effective model, balancing flexibility with essential hands-on practice.

CONCLUSION: FL enhances standardisation, innovation, and learner autonomy, but its sustainability requires robust institutional infrastructure, alignment between digital and clinical components, and feedback-rich pedagogical approaches. Blended models that integrate preparatory digital resources with structured face-to-face training offer the most effective pathway for developing competent and confident nursing graduates.

KEYWORDS: Flexible Learning, Nursing Education, Clinical Skills, Blended Learning, Digital Pedagogy

INTRODUCTION

Clinical skills acquisition constitutes a cornerstone of undergraduate nursing education, providing the foundation for safe and effective professional practice. From the outset of their programmes, nursing students are typically introduced to psychomotor and procedural skills through faculty-led demonstrations and structured return-demonstration sessions within Clinical Skills and Simulation Centres (CSCs). These environments provide a controlled setting where students can observe, replicate, and refine essential competencies under direct supervision.

Complementary to this approach, supervised self-directed learning (SDL) enables students to rehearse procedures independently using mannequins, simulated patients, and case-based scenarios. Such blended pedagogical strategies are designed not only to enhance procedural competence but also to build confidence in clinical decision-making, as reported in recent investigations of simulation-based and flexible learning approaches in nursing[1-4]. By combining structured instructor-led training with opportunities for independent practice, CSCs and SDL activities help bridge the gap between theoretical knowledge and its application in authentic clinical contexts, reinforcing both technical proficiency and critical reasoning[5,6].

The global expansion of flexible learning has been accelerated by rapid advances in digital technologies, growing student demand for autonomy, and the reconfiguration of higher education in the aftermath of the COVID-19 pandemic[7]. In response, many institutions transitioned to hybrid or fully online delivery models, enabling continuity but also sparking considerable debate within clinical nursing education. Concerns persist about whether flexible learning can effectively cultivate essential hands-on competencies or replicate the complexity of real-world clinical environments[8,9]. The pandemic posed unprecedented disruptions to conventional instructional delivery, necessitating the rapid adoption of digital tools following the suspension of face-to-face teaching. In Malaysia and across the region, nursing programmes implemented virtual simulations, instructional videos, e

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doi: 10.22442/jlumhs.2026.01529

-learning modules, and asynchronous platforms to sustain curriculum continuity[5,8]. While these adaptations maintained theoretical instruction, significant concerns emerged regarding their adequacy for supporting the development of psychomotor skills fundamental to nursing practice[1,10]. Globally, more than 90% of students experienced significant educational disruption during this period, prompting widespread adoption of flexible models that blended synchronous and asynchronous modalities to meet diverse learner needs[3].

Flexible strategies such as flipped classrooms, blended learning, and augmented reality (AR) have demonstrated potential in narrowing the gap between theory and practice. Tools like vSim for Nursing and immersive virtual laboratories have been shown to effectively replicate complex scenarios, offering practical alternatives when in-person training is limited[11,12]. In Malaysia, there is a growing interest in the integration of flexible learning within clinical nursing education. A study reported that educators are increasingly employing digital resources, including simulation-based videos and micro-credential platforms, to deliver clinical instruction[9]. Student perspectives further illustrate the nuanced efficacy of flexible learning. Another study observed that satisfaction with online clinical modules was closely linked to the alignment of instructional methods with students' learning preferences[13]. Interactive elements, timely feedback, and opportunities for peer engagement were particularly valued, especially in skill-intensive domains. A follow-up study highlighted that students appreciated the flexibility and self-paced nature of digital learning resources, especially when preparing for Objective Structured Clinical Examinations (OSCEs)[10]. However, concerns were raised regarding motivation, limited interactivity, and the perceived inadequacy of pre-recorded content[10].

Despite these innovations, the implementation of flexible learning in Malaysian clinical nursing education remains inconsistent. While theoretical components have adapted relatively smoothly to digital delivery, clinical modules continue to encounter challenges, including limited faculty readiness, misalignment between digital resources and curriculum objectives, and infrastructural constraints[9]. Moreover, digital inequalities persist particularly among students from rural or low-income backgrounds, undermining equitable access to learning opportunities and contributing to disparities in educational outcomes[14]. These structural limitations raise critical questions about the standardisation and inclusivity of clinical training. This study, therefore, aims to explore the implementation of flexible learning in undergraduate clinical nursing education in Malaysian higher education institutions, with a specific focus on the perspectives of nurse educators and nursing students.

METHODOLOGY

Study Design

This study adopted an interpretive phenomenological design to explore the integration of flexible learning within clinical nursing education across Malaysian higher education institutions. This approach was chosen to understand how participants make sense of their experiences with flexible and digital learning in clinical teaching environments. By focusing on the meanings participants assign to these experiences, the design supports a deeper exploration of the pedagogical and technological shifts they encounter. This aligns with the existing literature, which highlights the value of interpretive inquiry in studying complex, experience-based transitions in health education.

Population and Sample

The research was conducted across six Malaysian public universities that offer undergraduate nursing programmes. These institutions were purposively selected to capture geographical diversity and institutional variations in the adoption of flexible learning approaches, ensuring representation of the broader national nursing education context. A purposive sampling strategy was employed to recruit participants from two groups: (i) Nursing educators with experience in implementing or assessing flexible learning strategies in clinical education; and (ii) Undergraduate nursing students with firsthand experience in any form of flexible clinical learning.

Each participating institution contributed a minimum of seven participants, and additional individuals were recruited until data saturation was achieved, consistent with established qualitative research standards. The sampling and coding process was stopped when additional data demonstrated frequent replication in the interview comments of the participants. Data saturation was a key determinant of the sample size, ensuring robust capture of the breadth of perspectives. Saturation was assessed iteratively during data collection and analysis. This process resulted in a total of 39 purposively selected participants: 21 nurse educators and 18 nursing students.

Eligibility criteria for i) Nurse educators: Full-time faculty members teaching or managing clinical modules and directly involved in the design, implementation, or evaluation of flexible learning approaches. ii) Nursing students: Actively enrolled in undergraduate programmes with direct experience in flexible learning modalities applied to clinical education.

Instrument

Data were collected between April and November 2024 through semi-structured interviews, conducted in both face-to-face and online formats via Microsoft Teams or Zoom, depending on institutional logistics and participant preferences. Face-to-face interviews were conducted at three universities, in designated meeting rooms arranged by the faculty. The remaining

three universities participated through online interviews coordinated by the researcher.

The interview guide was developed by the researcher and team, based on a review of existing empirical literature on flexible learning in nursing education. It included open-ended questions on key themes, including instructional strategies, digital tool integration, student engagement, institutional support, and perceived learning outcomes. Two qualitative research experts reviewed the guide for clarity and relevance before data collection began.

All interviews were conducted by the researchers, who have prior training and experience in qualitative interviewing within health education contexts. Each session lasted 30-60 minutes and was audio-recorded with participants' informed consent. Interviews were transcribed verbatim by the researcher, and field notes were taken before, during, and after each session to capture non-verbal cues and contextual details that supported reflexive analysis. All data were anonymised during transcription and securely stored in encrypted digital formats to ensure confidentiality and data protection.

To ensure credibility, trustworthiness, and rigour, several strategies were employed: member checking verified the accuracy of findings against participants' experiences; peer debriefing involved discussions with colleagues to validate interpretations and enhance analysis thoroughness; and triangulation of data sources incorporated multiple participant perspectives through diverse data collection methods, enriching the findings' credibility. These practices collectively strengthened the study's validity and reliability.

Data Analysis

Data analysis followed Braun and Clarke's six-phase thematic analysis framework[15]. The researcher began by immersing themselves in the transcripts to gain familiarity with the data. Initial codes were generated inductively and then grouped into potential themes reflecting key patterns across the dataset. Themes were iteratively reviewed and refined to ensure coherence and relevance to the research objectives.

Trustworthiness was established using Guba and Lincoln's criteria[16]. Credibility was enhanced through prolonged engagement with the data over 7 months and through the use of maximum variation sampling, which ensured diversity in age, gender, education, and work experience. Member checks were performed by sharing findings with selected participants for feedback. Confirmability was strengthened through peer checking by two qualitative research experts, and dependability was ensured via an inquiry audit conducted by an external professor. Transferability was supported by providing detailed descriptions of the study context.

Ethical permission

Ethical approval for this study was obtained from the following institutional research ethics committees: International Islamic University Malaysia Research Ethics Committee (IREC) (Reference: IREC 2024-178); USM Human Research Ethics Committee (Reference: USM/JEPeM/KK/24050444); UiTM Research Ethics Committee (Reference: REC/11/2024 (OT/MR/30)). In addition, permission was obtained from the respective deans of faculties.

All participants were provided with a detailed information sheet explaining the study's objectives, procedures, and ethical safeguards. Written informed consent was obtained before participation. Participants were informed of their right to withdraw from the study at any time without consequences. Confidentiality and anonymity were maintained throughout the research process in accordance with institutional and ethical guidelines.

RESULTS

Characteristics of Respondent

The data on the characteristics of the respondents in this study **Table I and II** are:

Table I: Characteristics of Nurse Educators

Participant	Course	Teaching Experience
Educator 1	Medical & Surgical Nursing / Emergency Nursing	18 years
Educator 2	Medical & Surgical Nursing/ Paediatric Nursing	13 years
Educator 3	Medical & Surgical Nursing	13 years
Educator 4	Emergency Nursing/ Critical Care Nursing	12 years
Educator 5	Paediatric Nursing	14 years
Educator 6	Medical & Surgical Nursing	13 years
Educator 7	Mental Health Nursing	22 years
Educator 8	Medical & Surgical Nursing	15 years
Educator 9	Critical Care Nursing	15 years
Educator 10	Emergency Nursing / Fundamentals of Nursing	13 years
Educator 11	Fundamental of Nursing	12 years
Educator 12	Medical & Surgical Nursing	17 years
Educator 13	Medical & Surgical Nursing	16 years
Educator 14	Fundamental of Nursing	15 years
Educator 15	Fundamental of Nursing	8 years
Educator 16	Medical & Surgical Nursing	12 years
Educator 17	Medical & Surgical Nursing	8 years
Educator 18	Medical & Surgical Nursing	13 years
Educator 19	Medical & Surgical Nursing	15 years
Educator 20	Medical & Surgical Nursing	10 years
Educator 21	Medical & Surgical Nursing	10 years

The findings are structured into three main themes and corresponding sub-themes, each capturing a critical dimension of flexible learning from the perspectives of both educators and students. Theme 1: Advantages of Flexible Learning; Theme 2:

Table II: Characteristics of students

Name	Year of study	Course
Student 1	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 2	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 3	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 4	Bachelor's degree (Year 4)	Medical & Surgical Nursing/ Emergency Nursing**
Student 5	Bachelor's degree (Year 3)	Medical & Surgical Nursing/ Emergency Nursing/ Critical Care Nursing****
Student 6	Bachelor's degree (Year 4)	Medical & Surgical Nursing/ Paediatric Nursing/ Critical Care Nursing***
Student 7	Bachelor's degree (Year 3)	Medical & Surgical Nursing/ Emergency Nursing**
Student 8	Bachelor's degree (Year 1)	Fundamental of Nursing*****
Student 9	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 10	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 11	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 12	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 13	Bachelor's degree (Year 2)	Medical & Surgical Nursing*
Student 14	Bachelor's degree (Year 3)	Medical & Surgical Nursing/ Critical Care Nursing******
Student 15	Bachelor's degree (Year 4)	Medical & Surgical Nursing/ Critical Care Nursing******
Student 16	Diploma (Year 2)	Medical & Surgical Nursing*
Student 17	Diploma (Year 2)	Medical & Surgical Nursing*
Student 18	Diploma (Year 2)	Medical & Surgical Nursing*

**MSN: Medical & Surgical Nursing, **MSN/EN: Medical & Surgical Nursing/ Emergency Nursing, ***MSN/PN/CCN: Medical & Surgical Nursing/Paediatric Nursing/Critical Care Nursing, ****MSN/EN/CCN: Medical & Surgical Nursing/Emergency Nursing/ Critical Care Nursing, FN: *****Fundamental of Nursing, ******MSN/CCN: Medical & Surgical Nursing/ Critical Care Nursing*

Table III: Thematic Analysis of the Findings

Theme	Sub-theme / Category	Sub-category / Description
Theme 1: Advantages of Flexible Learning	1.1 Operational Efficiency and Pedagogical Standardisation	Reusable digital materials; improved time efficiency; consistency across cohorts; enhanced student preparation.
	1.2 Innovation and Professional Growth	Adoption of new technologies, experimentation with multimodal strategies, and enhanced professional development.
	1.3 Learner Autonomy and Self-Regulated Engagement	Flexibility in learning time and place; promotion of independent learning; challenges with self-discipline and procrastination.
	1.4 Theoretical Consolidation and Procedural Reinforcement	Stronger integration between theory and practice; improved critical reasoning; increased student confidence.
Theme 2: Challenges in the Implementation of Flexible Learning	2.1 Technological Access and Digital Inequities	Internet instability, limited device access, and the digital divide are affecting the consistency of learning.
	2.2 Temporal Demands and Workload Intensification	Increased workload for educators, time constraints, and cognitive load for students.
	2.3 Discontinuities Between Digital and In-Person Instruction	Inconsistencies between recorded and live demonstrations; procedural confusion; need for quality control.
Theme 3: Strategic Preparedness and Institutional Support	3.1 Organisational Deficits in FL Readiness	Limited institutional planning, insufficient training opportunities, and reactive implementation.
	3.2 Irregular Delivery of Instructional Materials	Delayed resource uploads; poor coordination; competing educator responsibilities.
	3.3 Lack of Feedback	Inadequate formative feedback; inconsistent evaluation; need for structured online guidance.

Challenges in the Implementation of Flexible Learning; and Theme 3: Strategic Preparedness and Institutional Support, as shown in **Table III**.

Theme 1: Advantages of Flexible Learning

Sub-theme 1.1: Operational Efficiency and Pedagogical Standardisation

Educators reported that FL facilitated the development of reusable digital teaching resources, thereby enhancing time efficiency and curricular consistency across cohorts. The strategic use of recorded demonstrations, in particular, was seen to mitigate the duplication of effort and reduce variation in instructional delivery. Participant accounts underscored the value of standardised pedagogical artefacts: *"We record a procedure once, and the same material can be used for multiple groups"* - (Educator 1). *"We don't have to repeat ourselves again and again. The videos save time"* (Educator 6).

From the student perspective, the reusability of video content was instrumental in enabling preparatory learning, particularly in procedural contexts. Participants described engaging with materials repetitively to reinforce understanding: *"Rewatching videos helps me prepare better for demonstrations and clinical skills lab sessions"*- (Student 4). *"The videos are shared beforehand, and we can go back to them anytime we forget a step"*- (Student 3). *"It helps to watch them again just before the actual lab"* - (Student 11). This reflects a shared perception of FL as enhancing instructional continuity and learner readiness, particularly in the context of complex skill acquisition.

Sub-theme 1.2: Innovation and Professional Growth

Several educators described flexible learning as a vehicle for pedagogical renewal, offering opportunities to experiment with new technologies, instructional strategies, and multimodal content delivery. There was a prevailing sentiment that FL prompted educators to re-evaluate and expand their pedagogical repertoire. As one participant noted: *"Exploring new teaching methods has been enriching; it pushes us to grow both professionally and personally"* -(Educator 16). *"Using simulation and interactive quizzes made me think differently about how I teach"* - (Educator 12). *"The shift to flexible learning has pushed me out of my comfort zone in a good way"* - (Educator 5). This process of innovation appeared to be both reactive and proactive, emerging in response to institutional demands while also reflecting intrinsic motivations for professional development.

Sub-theme 1.3: Learner Autonomy and Self-Regulated Engagement

Students consistently emphasised the benefits of temporal and spatial flexibility in FL environments, highlighting the opportunity for self-paced and autonomous learning. The provision of asynchronous materials, including procedural checklists and instructional videos, enabled learners to structure their engagement according to individual preferences and schedules. One student stated: *"We are given checklists and videos to prepare on our own before attending practical sessions"* - (Student 2). *"It allows me to fit my learning around other responsibilities"* - (Student 9).

However, this autonomy was not uniformly perceived as beneficial. Several participants acknowledged difficulties in self-regulation, particularly in the absence of scheduled deadlines or direct oversight: *"It's easy to procrastinate when the responsibility is entirely on us"* (Student 8). *"Sometimes I delay watching the videos until the last minute"* - (Student 13). *"Without deadlines, I sometimes lose track of what I'm supposed to focus on"* - (Student 14). The autonomy afforded by FL, while appreciated, revealed an underlying tension between flexibility and learner accountability.

Sub-theme 1.4: Theoretical Consolidation and Procedural Reinforcement

Both educators and students identified a synergistic relationship between FL and the reinforcement of theoretical knowledge. Students reported that pre-class engagement with video-based content enhanced their ability to contextualise clinical procedures within broader theoretical frameworks. *"Flexible learning bridges the gap between theory and practice, especially when we can practise after watching the videos"* - (Student 3). *"The material helped me think more critically about what I was doing"* - (Student 18). *"It helps to understand the logic behind the steps"* - (Student 7).

Educators corroborated these observations, noting that the integration of digital resources supported a more structured approach to skill acquisition and critical thinking. *"Students show better reasoning when they've reviewed videos beforehand"* - (Educator 14). *"You can see the difference in their confidence when they've had time to prepare"* - (Educator 9).

Theme 2: Challenges in the Implementation of Flexible Learning

Sub-theme 2.1: Technological Access and Digital Inequities

A shared concern among educators and students was the variable access to appropriate digital infrastructure. Students in particular described difficulties stemming from unreliable internet connections and limited access to devices, particularly in rural or economically marginalised settings: *"Internet connectivity is a big issue for students in remote areas"* (Educator 6). *"Sometimes I couldn't watch the videos because the internet kept dropping"* - (Student 13). *"Downloading files took forever in the hostel"* - (Student 14).

Educators highlighted the impact of these disparities on instructional delivery, noting that technical interruptions frequently compromised student engagement. *"We had to extend deadlines for students with no Wi-Fi"* - (Educator 4). *"These tech issues really affect how we plan our teaching"* -

(Educator 11). The issue extended beyond hardware to include access to paid features on educational platforms, further stratifying student experiences of FL.

Sub-theme 2.2: Temporal Demands and Workload Intensification

Educators reported a significant increase in workload associated with the dual demands of preparing asynchronous materials and managing synchronous sessions. *"Creating recorded materials and setting up online tools takes a lot of time"* - (Educator 5). *It's like doing two jobs, teaching online and in person"* - (Educator 15) *"Even weekend weren't really off anymore"* - (Educator 2).

Although less frequently articulated by students, there was an implicit recognition of increased cognitive load, particularly when FL resources lacked coherence or were delivered inconsistently. *"When the videos and readingddon'ttmatch, it gets really confusing"* - (Student 6).*"Sometimes it feels like we are left to figure it out ourselves"* - (Student 16).

Sub-theme 2.3: Discontinuities Between Digital and In -Person Instruction

Numerous students reported inconsistencies between video-based instruction and practical demonstrations conducted in laboratory settings. These discrepancies often resulted in procedural uncertainty and diminished confidence. As one student noted, *"Sometimes the steps in the video are different from what we do in the last"* - (Student 3). "*It confuses me when the lecturers do it differently than in the video"* - (Student 9). *"You don't know which version will be in the team"* - (Student 16).

Educators did not consistently acknowledge this misalignment, suggesting a potential gap in awareness or quality assurance protocols. *"We assumed the videos were clear, but maybe we need to check them more often"*- (Educator 10). The resulting discordance between instructional modes may undermine the perceived credibility and utility of FL resources.

Theme 3: Strategic Preparedness and Institutional Support

Sub-theme 3.1: Organisational Deficits in FL Readiness

Both groups identified institutional preparedness as a critical shortcoming in the rollout of FL. Educators reported limited opportunities for protected time to attend professional development sessions: *"Our university offers many workshops. built to us to find the time to attend"* - (Educator 7) *"We had no structured support at the start; it was all reactive"* - (Educator 2).

Students perceived a lack of institutional coordination in supporting educators, particularly during early phases of implementation: *"She had never used the virtual simulation, so she also was struggling"* - (Student 10). *"It felt like everyone was figuring it out at the same time, with no clear plan"* - (Student 8). The data suggest that institutional efforts, while well-intentioned, may not have sufficiently anticipated the logistical and pedagogical complexities of FL.

Sub-theme 3.2: Irregular Delivery of Instructional Materials

The temporal misalignment of resource availability was a recurring concern among students. Delayed access to videos and preparatory materials impaired engagement and created stress: *"Sometimes we got the materials late, and it felt rushed"* - (Student 4). "It's *hard to prepare properly when things come at the last minute"* - (Student 7). "*You don't know what to expect when you walk into late"* - (Student 13).

Educators attributed these delays to competing demands, suggesting a systemic issue related to time allocation and workflow management.*"We try to upload early, but time constraints make it difficult"* - (Educator 6). *"I wish we had admin support for these tasks"* - (Educator 5).

Sub-theme 3.3: Lack of Feedback

Students consistently reported inadequate feedback on practical skill development within the FL model. Although some assessments incorporated formative elements, these were not consistently implemented across modules or instructors.*"After practising on my own, I wasn't sure if I was doing it right without proper feedback* " - (Student 4). *"Feedback is mostly in labs, not during the self-study part"* - (Student 2). *"The video doesn't tell you if you are doing it right or wrong"* - (Student 5).

The absence of real-time corrective input, particularly during skill acquisition, emerged as a critical gap in instructional design. This was compounded by the limitations of automated feedback mechanisms and the inconsistent presence of instructors in online forums.*"We need more structured feedback online*" (Student 10). *"I missed having someone there to correct me"* - (Student 16).

DISCUSSION

Flexible learning (FL) in clinical skills education involves the use of digital tools and flexible formats such as recorded demonstrations, online modules, and virtual simulations to supportsstudents' acquisition of hands-on competencies. It allows students to review procedures at their own pace, enhancing understanding and confidence before in-person practice. For educators, FL supports standardised delivery and reduces repetition.

This study explored the perspectives of nursing educators and students on FL in clinical skills education, identifying four key themes: (1) advantages for educators and students, (2) challenges in implementation, (3) institutional preparedness, and (4) student engagement.

Consistent with previous studies, participants reported that FL enhanced efficiency and consistency. Educators valued reusable content for standardised teaching, while students appreciated the ability to revisit videos to reinforce procedural knowledge and prepare for clinical tasks.[1,17,18].

Advantages and Innovation through Flexible Learning

Educators reported that FL fostered professional innovation, pushing them to adopt novel tools and adapt pedagogical strategies. This mirrors the existing literature on how digital disruption drives teaching innovation and skill diversification[2,19,20]. Within the TPACK framework, these changes represent an expansion ofeeducators' technological and pedagogical repertoires, enhancing their adaptability in evolving learning environments. From the student perspective, FL promoted autonomy and self-directed learning. However, issues with self-regulation and procrastination were also noted. This reflects findings in other studies where flexible structures empower some learners while exposing motivational gaps in others[5,17,21]. Self-Determination Theory (SDT) offers insight here: autonomy enhances engagement only when supported by competence and social connection.

Challenges and Structural Barriers

Despite its benefits, several systemic challenges were identified. Students and educators cited technological inequities, such as unstable internet and limited device access barriers, that have been widely reported in similar contexts[2,5,10]. Educators also described increased workload, particularly in developing and managing digital content, echoing global concerns about the labour demands of online pedagogy [21,22]. Students highlighted misalignment between digital materials and hands-on practice, which reduced their confidence in clinical skills. This disconnect has been similarly observed in other nursing programmes, where inconsistencies between video content and lab instruction led to confusion and skill uncertainty [21,23].

Instructor Presence and the Case for Blended Learning

Instructor presence emerged as a pivotal factor in the success of FL. Students reported insufficient real-time guidance, while educators felt pressured by blurred boundaries between personal and professional availability. These tensions reflect broader concerns about faculty burnout and the sustainability of constant online accessibility[19,21]. Both groups consistently advocated for blended learning as the ideal model combining digital flexibility with the tactile, interpersonal aspects of clinical training[22,23]. While online resources were seen as helpful for preparation, they could not replace in-person instruction. Structured feedback, in particular, was viewed as essential for reinforcing clinical competence and building learner confidence, in line with findings across nursing education literature[4,6].

Finally, both groups consistently endorsed blended learning as the most effective pedagogical model. Digital resources were seen as valuable for preparation but could not replace the tactile and interpersonal dimensions of clinical training. This aligns with the broader consensus that blended models balance flexibility with essential hands-on experience. Immediate and structured feedback, in particular, was identified as critical for reinforcing skill competence and student confidence, a finding similar to those elsewhere.

Taken together, these findings suggest that while flexible learning provides meaningful pedagogical advantages, its effectiveness in clinical nursing education depends on institutional support, alignment between digital and practical components, and sustained, feedback-rich instructor engagement. A well-structured blended learning model appears to offer the most balanced and pragmatic approach.

This study was limited to six public universities in Malaysia, which may affect the generalisability of the findings to other contexts or private institutions. Additionally, as with all qualitative research, the results are context-specific and reflect the experiences of the selected participants at a given time. Future research could incorporate longitudinal designs or mixed-methods approaches to explore further the long -term impact of flexible learning in clinical education.

CONCLUSION

Flexible learning (FL) demonstrates significant potential in nursing education by enhancing efficiency, promoting innovation, and supporting learner autonomy. However, its success depends on institutional readiness, alignment between the digital and clinical components, and the consistent provision of timely feedback. Both educators and students emphasised that blended approaches remain essential, with digital tools serving as preparation rather than substitutes for hands-on learning.

For nursing education, this means embedding structured support for digital literacy, integrating quality assurance processes to align resources with practice, and adopting policies that balance flexibility with educator workload and well-being. By addressing these structural and pedagogical challenges, institutions can harness the advantages of FL while ensuring equitable, sustainable, and high-quality clinical training.

ACKNOWLEDGMENT

The authors sincerely thank all participants who generously shared their time and experiences, making this study possible.

Ethical permission: Ethical approval for this study was obtained from the following institutional research ethics committees. International Islamic University, Malaysia, IREC letter No. IREC 2024-178, USM Human Research Ethics Committee letter No. USM/ JEPeM/KK/24050444, UiTM REC letter No. REC/11/2024 (OT/MR/30).

In addition, permission was obtained from the respective deans of faculties.

Conflict of interest: There is no conflict of interest between the authors.

Financial Disclosure/Grant Approval: This study received funding from the Malaysian Qualifications Agency (MQA) [SPG 22-050-0050]

Data Sharing Statement: The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publicly.

AUTHOR CONTRIBUTION

Ahmad N: Designed the study, analysed the data and drafted the manuscript.
Wan Mamat WH: Contributed to data interpretation and critical revision.
Pien LS: Contributed to data interpretation and critical revision.
Shariff NM: Contributed to data interpretation and critical revision.
Ahmad N: Assisted in data collection, proofreading, and editing.
Vionalita G: Assisted in data collection, proofreading, and editing.
Mitchell G: Assisted in data collection, proofreading, and editing.
All authors approved the final manuscript.

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