

Barriers and Facilitators of Nursing Education in the 21st Century in Vocational Universities

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Abstract: Nursing education in the 21st century is being reshaped by technological change, demographic shifts, workforce shortages, and higher expectations for safe, patient-centered care. For vocational universities, these changes are especially important because such institutions are expected to prepare practice-ready graduates with strong clinical competence, adaptability, and employability. This paper examines the major barriers and facilitators affecting nursing education in vocational universities. The major barriers include faculty shortages, limited clinical placement capacity, uneven digital infrastructure, financial and psychological burdens on students, weak academic-clinical integration, and inequities in learning environments. Important facilitators include simulation-based education, digital transformation, stronger school-hospital partnerships, preceptor development, student support systems, and competency-based curriculum reform [1-4]. This paper argues that vocational nursing education should move beyond traditional knowledge transmission and adopt a more integrated, flexible, and practice-oriented model. Long-term progress depends on investment in educators, clinical learning ecosystems, educational technology, and supportive policies. Vocational universities can play a central role in preparing the future nursing workforce if barriers are addressed systematically and facilitators are strengthened strategically.

1. Introduction

Nursing education is undergoing profound transformation in the 21st century. Modern health systems require nurses who possess not only technical competence, but also critical thinking, communication ability, digital literacy, teamwork skills, and ethical judgment. At the same time, the global nursing workforce continues to face major shortages. The World Health Organization has emphasized that nursing education capacity is directly linked to workforce sustainability, service delivery, and health-system resilience [1]. Therefore, reform in nursing education is no longer optional; it is essential.

These challenges are particularly significant for vocational universities. Compared with research-intensive universities, vocational institutions are more strongly oriented toward applied learning, practical training, and employability. In nursing, this means vocational universities are expected to

prepare graduates who can move quickly and safely into real clinical environments. However, this task is increasingly difficult because educational institutions must respond to limited placement capacity, shortages of qualified educators and preceptors, increasing student diversity, and the growing demand for digital and simulation-based learning [1,2].

In addition, UNESCO has stressed that digital transformation has become an important part of modern technical and vocational education and training, especially in developing and rapidly changing educational systems [2]. For vocational nursing education, this means that institutions must respond not only to professional and workforce demands, but also to wider changes in educational technology and teaching models.

Against this background, the present paper analyzes the main barriers and facilitators influencing nursing education in vocational universities in the 21st century. By synthesizing current international reports and recent literature, the paper aims to provide a structured overview that can support curriculum reform, institutional planning, and future research.

2. The Changing Context of Vocational Nursing Education

The 21st century has changed both the work of nurses and the ways nurses must be educated. Healthcare today is more technologically mediated, more interdisciplinary, and more dependent on evidence-based decision-making than in previous decades. Students are expected to learn in environments shaped by electronic health records, telehealth, simulation, artificial intelligence, and increasingly complex patient needs [3]. As a result, nursing programs must combine theoretical learning with authentic, repeated, and supervised practical experience.

For vocational universities, this changing context brings both opportunities and pressures. Their traditional strengths include practice orientation, close links with industry, and a focus on workforce preparation. However, nursing is a regulated profession that requires not only technical skill but also safe judgment, professional identity, and clinical competence under supervision. Vocational nursing education must therefore balance short-cycle practical training with broader academic, ethical, and interpersonal competencies. This balance becomes difficult when institutions expand student enrollment without corresponding investment in faculty, technology, and clinical learning resources [1].

3. Major Barriers to Nursing Education in Vocational Universities

3.1 Faculty Shortages and Educator Workload

One of the most serious barriers in contemporary nursing education is the shortage of faculty. Insufficient faculty limits student admissions, reduces mentoring quality, and slows curriculum innovation. The American Association of Colleges of Nursing has reported continuing nursing faculty vacancies and has identified faculty shortages, lack of preceptors, and inadequate clinical training sites as major constraints on nursing education capacity [4].

For vocational universities, faculty shortages can have particularly strong effects. These institutions often work with tighter budgets and may find it more difficult to recruit educators who possess both academic credentials and up-to-date clinical expertise. Heavy teaching loads can leave faculty with little time for curriculum reform, digital training, simulation design, or evidence-based teaching improvement. When educators are overstretched, teaching quality may become uneven and students may receive less support [5].

3.2 Limited Clinical Placement Capacity

Clinical learning remains at the center of nursing education, yet placement availability has become a major bottleneck. In many systems, student enrollment has grown faster than hospitals and community settings can provide high-quality supervised placements. This shortage limits opportunities for practice-based learning and makes it harder for institutions to ensure consistent clinical experience across students [4].

For vocational universities, this challenge strikes at the heart of their educational mission. Students may experience reduced hands-on practice, shorter placements, or uneven supervision across sites. Research has shown that students' adjustment to internship and clinical placement conditions is strongly influenced by the quality of the learning environment, supervision, and emotional support [6]. When those conditions are weak, the gap between classroom learning and real-world practice becomes wider.

3.3 Weak Support for Preceptors and Clinical Instructors

Even when placements are available, the quality of clinical education depends heavily on preceptors and clinical instructors. However, preceptors often face heavy workloads, insufficient preparation, and limited recognition for their teaching role. These pressures reduce the quality of supervision and may discourage experienced clinicians from taking on student mentoring responsibilities [7].

This issue is especially important for vocational universities because workplace learning is central to their training model. If preceptors are treated as informal helpers rather than supported educational partners, clinical teaching becomes unstable. Effective vocational nursing education therefore depends on stronger cooperation between universities and healthcare providers, including formal preparation, clear expectations, and institutional recognition for preceptors [7].

3.4 Uneven Digital Infrastructure and Digital Readiness

Digital transformation is now a defining feature of contemporary education, but its implementation remains uneven. Digital tools can increase access, flexibility, and engagement, yet they also require infrastructure, educator readiness, and student digital competence. UNESCO has noted that digital transformation is essential for the modernization of vocational education, but access and readiness remain unequal across institutions and regions [2].

In nursing education, this challenge is even more complex because practical skill development cannot be replaced entirely by online learning. Studies on digital transformation in nursing education have identified barriers such as insufficient technological resources, weak faculty preparedness, and inadequate institutional support [8]. Vocational universities with fewer resources may face additional problems, including outdated labs, unstable learning platforms, and unequal student access to devices and internet connectivity.

3.5 Financial, Psychological, and Retention-Related Pressures on Students

Another major barrier is the growing burden placed on nursing students. Many students face stress from academic demands, clinical performance expectations, long hours, travel requirements, and financial hardship. Recent studies have shown that unpaid placements and insufficient support can contribute to student stress, reduced well-being, and attrition from nursing programs [9,10].

These challenges may be more severe in vocational universities, where many students come from less advantaged or first-generation educational backgrounds. In such contexts, financial pressure is

not a minor issue. It affects attendance, learning engagement, mental health, and persistence. If institutions focus only on formal teaching while neglecting student support, educational outcomes are likely to remain unequal [10].

3.6 Inequity, Exclusion, and Unsupportive Learning Environments

A further barrier concerns the social and relational climate of nursing education. Poor faculty-student relationships, ineffective communication, discrimination, and lack of belonging can all reduce student engagement and success. Recent research has emphasized that equity, diversity, and inclusion remain unevenly developed across nursing education institutions [11]. Students who feel unsupported or marginalized may participate less actively in both classroom and clinical learning.

For vocational universities, where student populations are often more diverse in academic background and social experience, inclusive teaching is especially important. Educational quality cannot be separated from the quality of human relationships within the learning environment.

4. Major Facilitators of Nursing Education in Vocational Universities

4.1 Simulation-Based Education

One of the strongest facilitators in recent nursing education research is simulation-based education. The World Health Organization has recognized simulation as an important strategy in nursing and midwifery education [3]. More recent evidence also suggests that simulation can improve students' learning experiences, strengthen confidence, and reduce pressure on limited clinical placements [12].

For vocational universities, simulation is highly valuable because it aligns with applied and skills-based learning. It allows students to repeat procedures, receive immediate feedback, and practice safely before entering real clinical settings. When implemented well, simulation does not replace practice but improves readiness for practice. New forms of virtual simulation and AI-supported simulation may further expand learning opportunities in the future [12].

4.2 Strong School-Hospital Partnerships

A second major facilitator is the development of strong academic-clinical partnerships. Nursing education is more effective when universities and clinical institutions share responsibility for student learning, placement planning, supervision, and feedback. Research has shown that clinical education quality improves when preceptors and instructors are supported within structured partnership models [7].

For vocational universities, such partnerships are essential. Strong school-hospital collaboration can improve placement quality, support more relevant curriculum design, and create smoother transitions from study to employment. It can also help institutions respond to regional workforce needs, especially in community care, elderly care, and local health services.

4.3 Faculty Development and Educational Leadership

Faculty development is another key facilitator. Modern nursing education requires educators to possess not only subject expertise but also pedagogical, technological, and assessment competence. Professional development, mentoring, and institutional support can help faculty adopt new teaching methods and improve student learning outcomes [5].

Educational leadership is equally important. Institutions that support teaching innovation, quality assurance, and staff well-being are better positioned to adapt to educational change. For vocational

universities, leadership matters because resources must often be coordinated carefully across labs, simulation centers, clinical partnerships, and student support services.

4.4 Strategic Digital Transformation

Although digitalization can be a barrier when readiness is weak, it becomes a facilitator when implemented strategically. Digital tools can support flexible learning, blended teaching, self-paced review, case-based learning, and more continuous assessment. UNESCO has highlighted digital transformation as a major pathway for improving the relevance and responsiveness of vocational education systems [2].

For nursing education, the most effective approach is not full replacement of practice with online learning, but meaningful integration of digital and face-to-face methods. Digital case studies, virtual simulations, telehealth-related training, and asynchronous learning materials can enhance preparation for simulation and clinical practice [2,8]. With proper support, digital learning can strengthen rather than weaken nursing education quality.

4.5 Student-Centered Support Systems

Student support systems are also important facilitators. These may include academic advising, peer mentoring, psychological counseling, financial assistance, and early warning systems for students at risk. Research on attrition and student experience indicates that students are more likely to persist and succeed when they receive clear guidance, emotional support, and respectful treatment [10,11].

For vocational universities, this is particularly important because their students often have diverse learning needs. Strong support systems can improve retention, reduce stress, and help students adapt to demanding clinical environments. Student support should therefore be understood as part of educational quality rather than as an optional extra.

4.6 Competency-Based and Practice-Integrated Curriculum Reform

Finally, curriculum reform itself can act as a major facilitator. Modern nursing curricula need to be competency-based, outcome-oriented, and closely linked to the realities of contemporary healthcare. This includes communication, patient safety, teamwork, digital literacy, cultural responsiveness, and critical thinking, rather than only task-based skill performance [1,13].

Vocational universities are well positioned to lead such reform because they are already oriented toward employability and applied competence. However, curriculum reform must avoid reducing nursing education to technical training alone. The goal is to prepare reflective practitioners who can adapt to changing health systems and provide safe, humane, and evidence-based care.

5. Implications for Vocational Universities

The evidence reviewed above suggests that vocational universities need a systemic rather than fragmented response to nursing education reform. Isolated improvement in one area is unlikely to succeed if broader structural issues remain unresolved. For example, simulation can reduce some pressure on clinical placements, but only if institutions also invest in trained faculty, technical support, and appropriate assessment methods [3,12].

Several priorities are clear. First, vocational universities should invest in faculty recruitment, retention, and development, especially for educators who can connect theory and practice. Second, school-hospital collaboration should be strengthened through formal supervision structures, preceptor preparation, and shared evaluation systems. Third, simulation and blended learning should be

expanded as planned and integrated components of nursing education rather than temporary substitutes. Fourth, student support systems should address financial pressure, mental health, and transition challenges. Finally, curriculum reform should align closely with workforce needs while preserving the professional, ethical, and reflective dimensions of nursing [1-3,12].

6. Conclusion

Nursing education in vocational universities is shaped by a complex interaction of barriers and facilitators. Major barriers include faculty shortages, limited clinical placements, weak support for preceptors, uneven digital readiness, financial and psychological burdens on students, and inequitable learning environments [4-11]. At the same time, important facilitators are available, including simulation-based learning, digital innovation, academic-clinical partnerships, faculty development, student-centered support, and competency-based curriculum reform [1-3,12,13].

Vocational universities should not be viewed as secondary institutions in nursing education. On the contrary, they are strategically positioned to prepare a practice-ready nursing workforce. Their success, however, depends on whether they can build integrated educational ecosystems in which educators, students, healthcare partners, and policy frameworks work together. In the 21st century, the future of vocational nursing education will depend less on preserving traditional teaching models and more on combining practical relevance with pedagogical innovation, inclusive support, and professional quality [1,2].

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