Journal of Clinical and Nursing Research, 2026, Volume 10, Issue 3
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

A Competency-Mapping-Based Instructional Model for Health Assessment Education in Nursing

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Abstract: Health assessment represents a fundamental component of professional nursing practice and forms the starting point of the nursing process. As healthcare systems become increasingly complex and patient needs more diverse, nursing education has gradually shifted toward competency-based training models. International professional organizations, including the International Council of Nurses (ICN), the American Association of Colleges of Nursing (AACN), and the American Nurses Association (ANA), have proposed competency frameworks that define the knowledge, skills, and professional attributes required of registered nurse. However, translating these broad competency standards into specific curriculum structures and teaching strategies remains a challenge in nursing education. Drawing on the AACN Essentials framework and incorporating elements from the ICN competency framework and ANA practice standards, this study develops a competency-mapping-based instructional model for health assessment education. The model integrates the Knowledge–Skill–Attitude (KSA) structure and a progressive competency development pathway. Three levels of competency are described: foundational assessment and data collection, integrated analysis and preliminary clinical judgment, and advanced clinical reasoning in complex clinical situations. Previous studies have suggested that nursing competence develops progressively through education and clinical experience. The proposed model aligns learning activities with competency outcomes through a mapping matrix linking curriculum content, teaching strategies, and evaluation approaches. Simulation training, case-based learning, standardized patient encounters, and clinical observation are incorporated to facilitate competency development. By clarifying how competency standards can be translated into teaching practice, the model contributes to bridging the gap between competency frameworks and nursing curriculum implementation. The framework may provide a useful reference for curriculum development, clinical training design, and competency evaluation in nursing education. Future research should further examine the effectiveness of this instructional model through empirical studies and longitudinal assessment of student competency development.

Keywords: Registered nurse competency; Health assessment; Nursing education; Competency mapping; Instructional design

Online publication: Apr 22, 2026

1. Introduction

Health assessment is widely regarded as one of the most essential components of professional nursing practice. As the first step of the nursing process, it provides the foundation for identifying patient problems, determining priorities of care, and developing individualized nursing interventions. Accurate and comprehensive assessment enables nurses to understand patients' physiological conditions as well as psychosocial and environmental factors that may influence health outcomes.

In recent decades, nursing education has increasingly adopted competency-based approaches to ensure that graduates are adequately prepared for contemporary clinical practice. Several international organizations have developed competency frameworks to guide nursing education and professional regulation. For example, the International Council of Nurses (ICN) proposed a competency framework that outlines professional, ethical, and care-related competencies required for nursing practice [1]. Similarly, the American Association of Colleges of Nursing (AACN) introduced The Essentials: Core Competencies for Professional Nursing Education, which defines ten competency domains and eight key concepts expected of nursing graduates [2]. In addition, the American Nurses Association (ANA) has published standards of nursing practice that emphasize systematic assessment as a central element of professional nursing care [3].

Previous research has emphasized that nursing competence is a multidimensional construct involving knowledge, skills, professional attitudes, and clinical judgment [4]. The development of professional competence is also considered a progressive process that evolves through education and clinical experience [5].

Although these frameworks provide valuable guidance, nursing educators often face difficulties in translating abstract competency requirements into specific curriculum structures and teaching strategies. Health assessment courses provide a particularly suitable context for competency integration because they involve knowledge application, communication skills, clinical reasoning, and patient-centered care.

Therefore, developing a competency-mapping-based instructional model may help bridge the gap between competency frameworks and curriculum implementation.

2. Theoretical foundations and literature review

2.1. Competency frameworks for registered nurses

Nursing competence is commonly understood as the integration of knowledge, technical skills, professional attitudes, and clinical judgment required to deliver safe and effective nursing care. Previous research suggests that nursing competence develops progressively through education and clinical experience. Cowan et al. described competence as a complex concept involving knowledge, clinical performance, and professional responsibility [4]. Benner's well-known "novice to expert" theory further illustrates that professional competence develops gradually through experience and clinical exposure [5]. More recent studies have continued to examine the conceptual structure of nursing competence and its implications for nursing education [6–8].

The AACN Essentials framework has become a widely recognized benchmark for undergraduate nursing education. It identifies ten competency domains including knowledge for nursing practice, person-centered care, population health, quality and safety, and leadership development [2]. Similarly, the ICN competency framework emphasizes systematic health assessment and care planning as core competencies for registered nurses [1].

The ANA standards of nursing practice provide operational guidance for nursing activities across the care continuum. These standards emphasize assessment, diagnosis, planning, implementation, and evaluation as core

components of nursing practice. Among these standards, patient assessment is considered the foundation for subsequent clinical decision-making [3].

2.2. Challenges in health assessment education

Traditional health assessment teaching often focuses heavily on procedural skills such as physical examination techniques and the sequence of assessment steps. While such training is necessary, an excessive emphasis on technical procedures may result in fragmented learning experiences. Students may acquire isolated technical skills without fully understanding how assessment findings contribute to clinical reasoning and patient-centered care.

Consequently, there is increasing recognition that health assessment education should move beyond mechanical skill training and instead emphasize integrated competency development. Teaching models that combine knowledge acquisition, communication competence, and clinical reasoning are therefore needed.

3. Development of a competency-mapping-based teaching model

3.1. Design principles

The proposed teaching model was developed according to three guiding principles.

First, an integration principle was adopted, combining competency elements from the ICN, AACN, and ANA frameworks.

Second, a progressive development principle was applied, organizing competencies into hierarchical levels that reflect gradual development of knowledge and clinical reasoning abilities.

Third, a practice-oriented principle was emphasized, ensuring that competency descriptions correspond to realistic clinical situations.

3.2. Design rationale and framework overview

The instructional model proposed in this study is grounded in the integration of the Knowledge–Skill–Attitude (KSA) framework with a progressive competency development pathway. The model draws primarily on two authoritative competency frameworks in nursing education.

First, the International Council of Nurses (ICN) competency framework for registered nurses serves as an important reference. Within the category of care provision and management, the subdomain of assessment and care planning explicitly highlights key competencies such as conducting systematic health assessments and collaborating with patients in the development of individualized care plans.

Second, the American Association of Colleges of Nursing (AACN) framework, The Essentials: Core Competencies for Professional Nursing Education, provides a structured foundation for competency-based nursing education. The framework identifies ten competency domains that guide the design of nursing curricula. In the context of health assessment education, several domains are particularly relevant:

(1) Domain 2

Person-centered care, which emphasizes comprehensive and individualized assessment and care planning.

(2) Domain 1

Knowledge for nursing practice and Domain 3: Clinical judgment, which provide the theoretical knowledge base and higher-level cognitive processes necessary for effective assessment.

(3) Domain 8

Informatics and healthcare technologies, which highlights the role of information technology and digital tools in modern health assessment practices.

Based on these frameworks, a three-level competency structure is proposed to represent the progressive development of health assessment capabilities.

3.2.1. Level 1: Foundational assessment and data collection competence

This level focuses on the ability to perform systematic health assessments according to standardized procedures and accurately collect both subjective and objective patient data.

3.2.2. Level 2: Integrated analysis and preliminary clinical judgment competence

At this level, students are expected to integrate and interpret assessment findings, identify potential health problems or risks, formulate preliminary nursing diagnoses or problem lists, and participate in the development of nursing care plans.

3.2.3. Level 3: Advanced clinical reasoning and management of complex situations

This level involves higher-level clinical reasoning in complex or uncertain clinical situations, including leading interprofessional assessment processes and coordinating care planning adjustments. In the present instructional model, Levels 1 and 2 are the primary focus of undergraduate education, while Level 3 is considered a long-term developmental goal.

3.3. Level 1 competency teaching model

3.3.1. Core competency description

At this level, students are expected to perform a basic health assessment independently according to standardized procedures, including health history taking and physical examination of adult patients. Assessment procedures should be accurate, systematic, and properly documented.

3.3.2. Teaching objectives

Students should demonstrate standardized health assessment skills, identify normal and abnormal findings, and record assessment data accurately. Refer **Table 1**.

Table 1. Level-1 competency structure for health assessment education

Competency dimension	Knowledge	Skills	Professional attitudes
Systematic health assessment process	Principles and ethical considerations of health assessment, including privacy protection and informed consent; components and sequence of health assessment	Conduct interviews and physical examinations following standardized procedures; accurately measure and record vital signs	Responsibility for accurate assessment and cumentation; respect for patient autonomy and cultural diversity
Communication and health interview	Principles of therapeutic communication, such as active listening and open-ended questioning; components of health history including chief complaint and past history	Establish initial nurse–patient relationships through therapeutic communication; conduct effective health interviews	Empathy and patient-centered care; attention to patients' experiences and concerns

Table 1 (Continued)

Competency dimension	Knowledge	Skills	Professional attitudes
Physical examination	Basic anatomy and physiology of body systems; principles of inspection, palpation, percussion and auscultation	Perform systematic physical examination; correctly use assessment tools such as stethoscopes and blood pressure monitors	Professional rigor and attention to detail; adherence to infection control principles
Technology- assisted assessment	Basic interpretation of laboratory tests and diagnostic reports	Utilize electronic health records, bedside monitoring devices, and digital health technologies during assessment	Data security awareness and responsible use of healthcare technology
Basic clinical judgment	Recognition of normal and abnormal findings; interpretation of common laboratory values	Identify deviations from normal findings; recognize potential health risks	Application of critical thinking and evidence- based reasoning
Documentation	Principles of standardized nursing	Record assessment data accurately	Professional integrity and accountability in

3.4. Level 2 competency teaching model

3.4.1. Core competency description

Students at this level should be able to interpret and integrate assessment data collected in Level-1, identify potential health problems, prioritize nursing issues, and participate in the development of individualized nursing care plans.

3.4.2. Teaching objectives

Students should demonstrate the ability to analyze assessment findings, formulate nursing diagnoses or health problems, and develop evidence-based nursing plans in collaboration with patients and healthcare teams. See **Table 2**.

Table 2. Level 2 competency structure for health assessment education

Competency dimension	Knowledge	Skills	Professional attitudes
Data integration and pattern recognition	Pathophysiological mechanisms of common diseases; clinical significance of abnormal assessment findings	Integrate subjective and objective data to develop a comprehensive patient profile	Application of critical thinking in data interpretation
Nursing diagnosis and problem identification	Classification systems of Nursing diagnoses (e.g., NANDA-I); principles of priority setting	Formulate appropriate nursing diagnoses based on assessment data; prioritize patient problems	Evidence-based reasoning and analytical thinking
Care planning	Components of nursing care plans; principles of SMART goal setting	Collaboratively develop patient-centered care plans; select evidence-based interventions	Collaboration and advocacy for patient participation
Preliminary clinical judgment	Basic principles of differential diagnosis and risk identification	Determine when immediate intervention or further assessment is required	Commitment to patient safety and awareness of professional limitations

3.5. Curriculum implementation pathway

The implementation of the competency-based teaching model follows a spiral curriculum structure.

Competencies are gradually reinforced across different semesters. For example, early courses focus primarily on Level 1 competency such as system-based physical examination, while later courses emphasize Level 2 competencies including data integration and clinical reasoning.

Evaluation methods include both formative and summative assessments.

Formative assessments may include:

(1) Objective Structured Clinical Examinations (OSCE)

(2) Case analysis reports

(3) Group presentations of nursing care plans

Summative assessments may include:

(1) Comprehensive clinical performance evaluations

(2) Written examinations covering theoretical knowledge and clinical reasoning.

3.6. Competency-teaching activity mapping matrix

Through competency mapping, macro-level competency frameworks are translated into teachable and assessable knowledge-skill-attitude components. This instructional model provides a structured blueprint for health assessment education and promotes alignment between nursing curriculum design and professional competency requirements. See **Table 3**.

Table 3. Mapping of teaching activities and competency outcomes

Teaching activity	Competency level	Corresponding AACN / ICN competency domains	Evaluation focus
Standardized patient interview and physical examination	Level 1	AACN Domain 2: Person-centered care; ICN competency: Therapeutic communication and systematic assessment	Procedural accuracy, communication effectiveness, data completeness
Complex case discussion seminars	Level 2	AACN Domain 1: Knowledge for nursing practice; Domain 3: Clinical judgment	Depth of data analysis and logical reasoning
Nursing care plan workshops	Level 2	AACN Domain 2: Person-centered care; ICN competency: collaborative care planning	Feasibility of goals, relevance of interventions, patient involvement
Clinical observation under supervision	Level 1–2 integration	Multiple competency domains	Comprehensive clinical Performance and teamwork

4. Discussion

The competency-mapping model developed in this study offers several potential advantages for nursing education.

First, it provides a structured framework that links competency standards with teaching activities and evaluation methods. By clarifying expected learning outcomes, the model may improve consistency in curriculum design and teaching practice.

Second, competency mapping helps students understand the relationship between classroom learning and future professional responsibilities. This alignment may strengthen students' professional identity and motivation to develop clinical competence.

Third, the framework may also support clinical training programs by providing guidance for competency evaluation and professional development planning.

However, several challenges should also be considered. Implementing competency-based education requires faculty development and training in innovative teaching strategies such as simulation-based education and problem-based learning. In addition, evaluating higher-level competencies such as clinical reasoning and ethical decision-making remains methodologically challenging.

Future research may examine the effectiveness of this instructional model through pilot implementation and longitudinal evaluation of student competency development.

5. Conclusion

This study presents a competency-mapping-based instructional model for health assessment education grounded in international nursing competency frameworks. By integrating elements from the ICN, AACN, and ANA standards, the model provides a structured approach for translating competency frameworks into curriculum design and teaching practice.

The framework clarifies competency development pathways from basic assessment skills to more advanced clinical reasoning abilities. Adoption of this model may contribute to improving the effectiveness of health assessment education and support the preparation of competent nursing professionals capable of delivering safe and high-quality patient care.

Funding

The fourth phase of the Employment Education Project for Matching Supply and Demand by the Ministry of Education: Construction of a Competency Map for Medical, Healthcare, and Nursing Professionals in the Hainan Free Trade Port and Enhancement of Human Resources (Project No.: 2024122020142)

Disclosure statement

The authors declare no conflict of interest.

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