IMPROVING THE TEACHING OF SURGERY IN MEDICAL TECHNICAL COLLEGES THROUGH SIMULATION AND COMPETENCY BASED LEARNING

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Abstract: Surgery courses in medical technical colleges should prepare students to provide safe care within their professional scope. Teachers need practical methods for connecting theoretical knowledge with observable clinical performance.

Objective: To propose an adaptable teaching framework for surgery instructors in medical technical colleges, with particular attention to surgical nursing skills, patient safety, and assessment.

Approach: This conceptual paper draws on selected World Health Organization patient safety guidance and International Nursing Association for Clinical Simulation and Learning standards. It presents an instructional proposal rather than an empirical study or systematic review.

Proposed framework: Teaching is organized around measurable learning objectives, focused explanation, instructor demonstration, supervised simulation, structured feedback, and reassessment. Suggested learning activities address aseptic practice, wound care, perioperative observation, communication, and escalation of clinical concerns. Performance is assessed through direct observation and structured practical stations.

Conclusion: The framework offers a practical way to organize surgery teaching around student performance and safety. Its effectiveness in medical technical colleges requires local evaluation; improvements in competence or patient outcomes cannot be assumed without supporting data.

Keywords: surgery education; medical technical college; surgical nursing; simulation; competency based learning; patient safety; clinical assessment.

Introduction

Medical technical colleges prepare nursing and allied health students for practical responsibilities in healthcare. Within this setting, surgery teaching should connect knowledge of surgical conditions with the care activities students will be authorized to perform. Understanding a procedure is only one part of preparation: learners must also communicate with patients, maintain appropriate infection prevention practices, recognize concerning changes, and seek timely supervision.

Lecture based instruction can introduce essential concepts, but teachers also need opportunities to observe how students apply them. A learner may describe asepsis correctly yet fail to recognize contamination during a practical task. Similarly, knowledge of postoperative complications does not necessarily demonstrate an ability to report a change clearly. Teaching objectives should therefore include observable actions as well as factual understanding.

The WHO patient safety curriculum provides a resource for incorporating safety education into health professional training [1]. Simulation guidance from INACSL addresses the organization of learning experiences, educational objectives, evaluation, and debriefing [2–4]. This paper proposes how selected principles can be adapted to surgery courses in medical technical colleges.

Aim and Methodological Approach

The aim is to develop a practical framework for teachers who deliver surgery courses to nursing and allied health students. The paper uses selected professional guidance to inform a conceptual instructional model. No students or patients were enrolled, no intervention was tested, and no statistical analysis was performed. The selected sources do not constitute a systematic literature review.

The proposed activities require adaptation to the institution's curriculum, available equipment, student training level, and applicable professional scope. The model concerns preparation for supervised care; it does not confer authority to perform independent surgical procedures.

Proposed Teaching Framework

Define Observable Learning Objectives

Each lesson should begin with a small number of specific objectives. For example, a student may be expected to identify a breach in aseptic technique, prepare materials for a simulated dressing task, explain the activity to a simulated patient, or report an abnormal observation to a supervisor. Objectives should identify the conditions of performance and the criteria teachers will use to assess it. INACSL includes outcomes and objectives as a distinct component of simulation guidance [2].

Connect Theory With Instructor Demonstration

A focused explanation should establish the purpose of the activity and the relevant safety principles. The instructor can then demonstrate the task using the institution's approved protocol, explaining the reasoning behind important decisions. Students should be invited to identify potential errors and explain when they would stop and request assistance.

Demonstration should make communication visible. The teacher should model patient identification, explanation, respect for privacy, and appropriate documentation alongside the practical task. This makes professional behavior part of the learning objective rather than an additional topic addressed only at the end of the course.

Use Supervised Simulation and Case Discussion

Simulation can provide a setting for practicing care activities before supervised clinical exposure. Depending on resources, teachers can use task trainers, reusable practice materials, role play, and written scenarios. The equipment should match the learning objective; a complex simulator is unnecessary when the aim is to practice communication or identify contamination in a simulated setup.

Students should receive a briefing explaining the scenario, their responsibilities, available resources, and assessment expectations. Practice must remain within the intended professional role. Case discussions can ask learners to distinguish routine observations from findings that require urgent reporting, using approved local guidance rather than unsupported treatment decisions.

Provide Structured Feedback and Reassessment

After practice, the teacher should guide discussion of what occurred, why decisions were made, and which actions need correction. INACSL identifies debriefing as a specific element of simulation practice [4]. For the proposed model, feedback should refer to observed behavior and the stated objectives.

Students who make a safety related error should receive a clear explanation, an opportunity to repeat the activity, and reassessment. Repetition alone should not be treated as evidence of competence. The teacher needs to observe whether the learner has corrected the problem and can explain the reasoning behind the revised action.

An Illustrative Lesson Structure

The following 90 minute lesson is an author proposed example for a simulated wound dressing activity. It is not a tested protocol.

Stage	**Time**	**Teacher and student activity**
Objectives and briefing	10 minutes	Establish scope, expected actions, and safety criteria
Focused theory	15 minutes	Discuss wound observation and aseptic principles
Demonstration	15 minutes	Model the activity using an approved institutional protocol
Supervised practice	25 minutes	Students practice while the teacher observes and guides
Debriefing	15 minutes	Discuss decisions, errors, communication, and corrections
Assessment and next steps	10 minutes	Assess selected objectives and assign further practice

Class size may require additional sessions or rotating stations so that each student receives adequate practice and individual observation. A ten minute assessment period may cover only a small group or selected objectives; it should not be presented as sufficient to certify every student in a large class.

Assessment of Practical Competence

Assessment should combine knowledge questions with observation of performance. INACSL provides guidance specifically addressing evaluation of learning and performance [3]. In the proposed framework, teachers can use structured stations for simulated patient communication, identification of an aseptic error, preparation for a dressing activity, and reporting of postoperative observations.

Each station should have explicit criteria shared with students before assessment. Potentially critical safety errors should be identified in advance by faculty using approved protocols. A high overall score should not automatically compensate for an unresolved critical error. Pass requirements and reassessment arrangements must be set locally and reviewed for consistency.

Student confidence may be collected as a secondary educational measure, but it should not replace observed competence. Teachers should also distinguish performance in simulation from readiness for a real clinical environment, where supervision and workplace assessment remain necessary.

Discussion and Limitations

The proposed model emphasizes what students can demonstrate and explain. It also provides teachers with a common sequence for planning practical lessons. Its feasibility depends on instructor preparation, suitable materials, manageable group sizes, and protected time for feedback. Faculty discussion of sample performances can help establish a shared understanding of assessment criteria.

This paper does not demonstrate that the model improves examination results, clinical competence, or patient outcomes. The sources provide general educational guidance rather than direct evidence for this particular curriculum. Future evaluation could compare baseline and follow up practical performance, document critical errors, examine retention, and assess agreement between evaluators. Any formal

study should follow applicable institutional ethics requirements and protect student participation and confidentiality.

Conclusion

Surgery teachers in medical technical colleges can organize practical instruction around observable objectives, demonstration, supervised simulation, structured feedback, and reassessment. The proposed framework prioritizes surgical nursing and allied health responsibilities within the learner's professional scope. Local implementation should be evaluated before claims are made about educational effectiveness or clinical benefit.

References

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