Taking Flight: A Novel Schema Leveraging Artificial Intelligence in the Simulated Environment to Transform Competency-Based Education

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Background

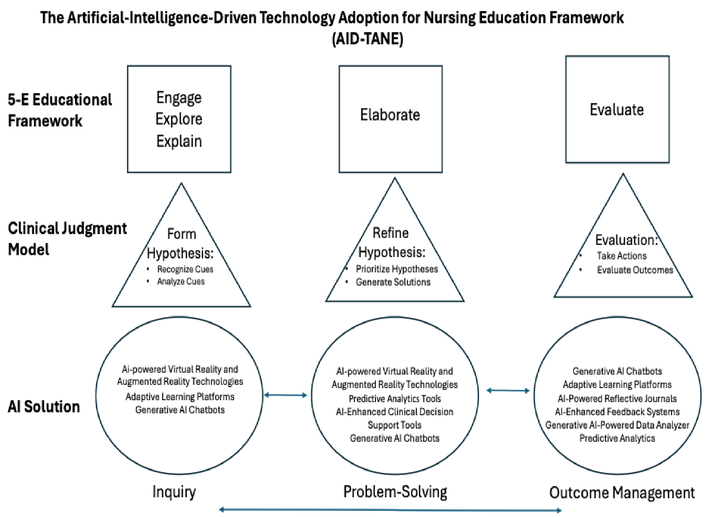
- Artificial Intelligence (AI) is **transforming healthcare** by enhancing diagnostic accuracy, personalizing treatment plans, and improving patient outcomes.[1]
- AI technologies are rapidly **transforming nursing** by enhancing clinical decision-making and patient care, necessitating structured frameworks for effective integration.[2]
- The swift adoption of AI tools in healthcare underscores the need for **comprehensive frameworks** to ensure ethical and efficient deployment in nursing education.[3]
- Using AI-driven technologies in the simulated clinical environment provides tailored educational experiences to individual learners' needs, promotes more profound understanding, and fosters skill acquisition. This personalized approach aligns with the **principles of Competency-Based Education**, ensuring that nursing students achieve measurable competencies and are well-prepared for real-world practice.[4]

Purpose

- This study aimed to describe and evaluate the AI-Driven Technology Adoption for Nursing Education (AID-TANE) framework among a sample of undergraduate nursing students.

Method

- This study employed a convergent mixed-methods design with pre- and post-evaluation measures to evaluate the change in participants' knowledge of older adults after participating in an AI-driven educational event..
- A sample of senior-level Bachelor of Science in Nursing students at a nursing school in the Southeastern United States participated.
- The research utilized the Facts on Aging Quiz[5] to assess knowledge before and after the intervention, and a Guided Reflection Survey was employed to gather post-intervention insights.
- An AI-driven computer-based simulator[6] was used to create realistic clinical scenarios, while ATLAS.ti™[7] facilitated AI-assisted qualitative analysis of the students' reflections.



Framework

- The AID-TANE model incorporates constructs from the 5-E Instructional Model[8] to **promote active learning**.
- Level 3 of the Clinical Judgement Model[9] is incorporated to guide faculty in integrating AI-driven technologies to promote **competency-based education**.
- AI Solutions are suggested for simulated clinical environments to promote Inquiry, Problem-Solving, and Outcome Measurement in **support of CBE.**
- Movement across the Inquiry, Problem-Solving, and Outcome Management phases accounts for the iterative nature of learning, further **supporting CBE.**

Innovation to Support Competency-Based Education

Results

- Statistical Results: A paired t-test showed a statistically significant improvement in knowledge from pre-test (M = 33.29, SD = 5.33) to post-test (M = 36.04, SD = 6.76), with t = 5.05 and **p < 0.001**. A Cohen's *d* value of 0.40 indicates a moderate practical significance.
- Qualitative Themes: Four themes emerged from responses to the statement, "Describe what you learned working with older adults through participation in the simulation activity". The themes were **Communication** and **Understanding**, **Patience** and **Empathy**, **Respect** for **Independence**, and **Challenging Stereotypes**.

Conclusion

- Findings from the implementation and testing of the AID-TANE framework suggest that intentional integration of AI technologies using the AID-TANE framework into the simulated clinical environment to enhance knowledge and critical thinking among nursing students is a **practical strate**gy.
- The AID-TANE provides a structured approach to using AI technologies to improve instructional design and learner **readiness for a technology-laden practice environment**.
- The framework supports the integration of advanced technologies **to support CBE**.

Implications

- Findings suggest the AID-TANE conceptual framework promotes **evidence-based**, **personalized**, and **technology-enhanced** learning.
- The AID-TANE offers **faculty guidance** for ethical and purposeful AI integration.
- Utilization of the AIT-TANE framework aligns AI tools with **measurable competencies** in nursing education

References