Incorporation of Demonstration Videos into the Nurse Anesthesia Simulation Lab Curriculum

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Abstract

Simulation-based education is essential in nurse anesthesia training, yet student preparedness varies widely. This project examined whether a theory-informed instructional video improved second-year SRNAs' perceived performance during a complex emergence simulation. Using a pre–post design, students completed an induction simulation without preparatory video, followed by a survey measuring preparedness, confidence, and recall. Students viewed custom instructional videos based on Mayer's multimedia learning principles before completing an emergence simulation and a post-intervention survey. Results showed increases in perceived preparedness, confidence, and procedural recall. Students reported that the video clarified expectations and enhanced their ability to perform required skills. Instructional videos designed with cognitive load principles offer a low-cost, scalable method to standardize preparation and improve simulation readiness.

Introduction

- Nurse anesthesia students must master complex skills rapidly, and simulation performance is influenced by variability in preparation.
- Research shows that instructional videos improve learning outcomes by reducing cognitive load, enhancing engagement, and standardizing instruction.
- Mayer's Cognitive Theory of Multimedia Learning provides evidence-based principles for optimizing video design (e.g., segmentation, signaling, personalization).
- The problem: SRNAs often enter simulation labs with inconsistent understanding of expectations and procedural steps.
- **Purpose:** Determine whether watching an instructional video before simulation lab improves students' perceived preparedness, confidence, and recall.

Hypotheses

- Nurse anesthesia students who view an instructional video before a high-stakes simulation lab will report **greater perceived preparedness, confidence, and recall** compared to when no video is provided.
- Students will report that the instructional video **positively contributed to their overall simulation performance** by improving clarity of expectations and reinforcing key procedural steps.

Methods

- **Design:** Pre–post intervention using Qualtrics surveys.
- **Setting:** Second-year SRNAs enrolled in the Florida State University simulation curriculum.
- **Procedure:**
- Students first completed a "Complicated Induction" simulation with **no instructional video**.
  - Afterward, they completed a pre-intervention survey measuring preparedness, confidence, and recall.
  - Students watched **custom instructional videos** (scan QR to view) designed with multimedia learning principles prior to the "Complicated Emergence" simulation.
  - Students took a post- survey that evaluated the same metrics as the pre-survey.
- **Primary Outcome:** Student belief that the video improved simulation performance.
- **Secondary Outcomes:** Preparedness, confidence, clarity of expectations, and recall.

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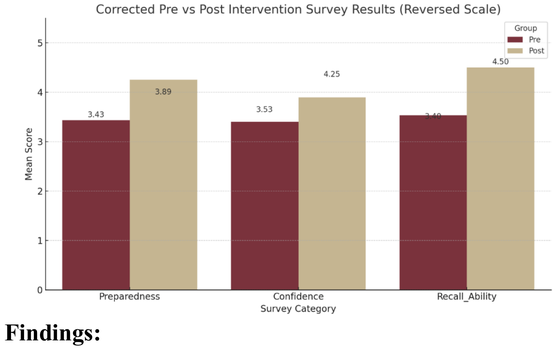
Participants

- Second-year student registered nurse anesthetists enrolled in the FSU DNAP simulation curriculum.
- Pre-intervention survey: 30 respondents
- Post-intervention survey: 28 respondents

Results



- **Key Findings:**
  - Students reported meaningful improvement across all domains.
  - Qualitative comments highlighted:
    - clearer understanding of expectations
    - improved step-by-step recall
    - greater confidence entering the simulation
  - The majority agreed or strongly agreed that the instructional video improved their overall performance.

Discussion

- Pre-simulation instructional videos increased SRNAs' perceived readiness, replicating findings in existing literature supporting video-enhanced learning.
- Improvements align with Mayer's principles, suggesting that intentional video design supports cognitive processing and skill acquisition.
- Results mirror evidence from Glosser et al. (2022), Chen et al. (2024), and Wong et al. (2019), showing improved procedural performance and clarity when videos supplement instruction.
- **Limitations:** self-report outcomes, single cohort, no control group, and no objective performance scoring.
- **Implication:** Video-based preparation is a scalable, low-cost strategy that can standardize baseline knowledge and improve learner confidence prior to high-stakes simulation.

Conclusions

- Instructional videos improved SRNAs' perceived preparedness, confidence, and recall for a complex emergence simulation.
- Students overwhelmingly believed the video contributed positively to their performance.
- When grounded in multimedia learning theory, instructional videos provide:
  - standardized expectations
  - improved clarity of required skills
  - flexible, self-paced review
- Integration of tailored instructional videos is a sustainable, effective enhancement to nurse anesthesia simulation training.

References

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