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Use of an Instructional Design Model in Validating an Online Animated Case-Based Systems Thinking Module

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Purpose:

A decade ago, medical errors caused more than 98,000 preventable deaths. Today, medical errors are the third leading cause of death in the United States (Makary & Daniel, 2016). Medical errors are not unique to the United States, but occur globally. Medical errors are not unique to the United States, but occur globally with an estimated one million patients dying across the world due to preventable healthcare errors (Godschalk, Hartel, & Sbrzensy, 2017). The increasing error trend is linked to Inadequate Organizations Systems or Processes to Improve Safety and Quality (Emergency Care Research Institute, 2017). Researchers in quality and safety assert a crucial need for systems thinking education among nurses and healthcare professionals (Stalter, Phillips & Dolansky, 2017). Innovative animated case-based instruction involving online education is an example of best teaching practice (Mayer, 2014).

The purpose of this study was to retrospectively determine if the Analyze, Design, Develop, Implement, and Evaluate (ADDIE) model of instructional design was used effectively to develop and test an e-learning systems thinking module. The use of the ADDIE model employs best practice in online design evaluation. In this study, ADDIE is used to validate the effectiveness of the systems thinking module. The systems thinking module is consistent with the concept analysis conducted by Stalter et al. (2016). Animated case studies and gaming provided learners with opportunities to understand general systems theory, medication reconciliation and to learn from mistakes using a just culture framework where professionalism is nurtured to improve systems decision-making.

Methods:

A mixed method design involved a record audit review of the instructional designer’s journal and calendar entries, learner pre and post test results, and learners’ perspectives of the systems thinking module from discussion boards within a learning management system. A researcher designed checklist based on the seminal work by Danks (2011) was used to determine if ADDIE steps and key activities were evident. An interactive pre- and post-test determined if learners (n=8) increased in systems thinking knowledge.

Results:

Frequency statistics validated which steps were followed. Content from the instructional designer’s journal, calendar and the discussion boards were analyzed to determine which key activities occurred.

Conclusion:

Findings revealed that 100% of key activities were evident in each step and that learners increased systems thinking knowledge. Recommendations for change to the module were primarily technology-related.
Title:
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Keywords:
instructional design, online education and systems thinking

References:


Abstract Summary:
A critical need for error prevention instruction exists. Systems thinking emphasizes how nursing actions impact systems. This presentation focuses on the designing process of an online animated systems thinking module. Virtual nurse learner test scores validated that gaming was engaging for effective learning. Recommendations were primarily technology-related.

Content Outline:
Introduction

1. A decade ago, medical errors in the United States caused more than 98,000 preventable deaths. Today, medical errors are the third leading cause of death in the United States.
2. Medical errors are not unique to the United States, but occur globally with an estimated one million patients dying across the world due to preventable health care errors (Godschalk, Hartel, & Sbrzensy, 2017)

Body
Main Point #1 - Systems thinking education may lead to error reduction.

Supporting point #1 – a) Researchers in quality and safety assert a crucial need for systems thinking education among nurses and healthcare professionals (Stalter, Phillips & Dolansky, 2017).

Supporting point #2 -

a) Innovative animated case-based instruction involving online education is an example of best teaching practice (Mayer, 2014).

b) Systems thinking may be taught using innovative animated case-based instruction

Main Point #2- Analyze, Design, Develop, Implement, and Evaluate (ADDIE) model of instructional design can be used effectively to develop and test online learning modules

Supporting point #1 -

a) A mixed method design was employed as a retrospective review of learners’ experiences.

b) A researcher designed checklist based on the seminal work by Danks (2011) was used to conduct a record audit review of the instructional designer’s journal and calendar entries, learner pre and post test results, and learner online discussion boards.

Main Point #3- Results

Supporting point #1 -

a) Frequency statistics validated which of the ADDIE steps were followed.

b) Content from the instructional designer’s journal, calendar and the discussion boards were analyzed to determine which key activities occurred.

Conclusion

1. Findings revealed that 100% of key activities were evident in each step and that learners increased systems thinking knowledge.
2. Recommendations for change to the module were primarily technology-related

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Author Summary: Dr. Stalter is an Associate Professor at Wright State University in Dayton, Ohio. She teaches online RN-BSN students. She is certified in Instructional Design for Digital Learning and
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**Professional Experience:** My areas of expertise include over 40 years in nursing education and practice. I have ten years experience serving UTMB as RN-BSN Program Director. I have doctoral education experience and interest in curriculum development for online education. I hold a professional certification in online education from University of Wisconsin-Madison.

**Author Summary:** Dr. Wiggs is a Distinguished Teaching Professor at the University of Texas Medical Branch, Galveston. She is Track Administrator of the online RN-BSN Program. She holds a professional certification in online education from University of Wisconsin-Madison. Her systems thinking expertise is validated by multiple publications with QSEN colleagues including a concept analysis and an integrative review. In practice, she works with nurses at UTMB Health to foster systems thinking to improve patient outcomes.