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Determining the Instructional Effectiveness of an Online Resident Vaccine Curriculum

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Background

Immunization education for residents and other healthcare providers is deficient. Recognizing this educational deficiency, we developed four online modules through the Collaboration for Vaccine Education and Research (CoVER) project.

Objective

To determine the instructional effectiveness of the CoVER curriculum from the perspectives of medical resident experiences.

Methods

- We conducted focus group interviews with a convenience sample of residents from four pediatric residency programs in the fall of 2018.
- Interviews were conducted in reserved rooms at each institution and facilitated by a moderator.
- 13 key questions were posed which focused on content design, learning engagement, satisfaction with the learning platform, and suggestions for module improvement.
- Supplementary questions were utilized when needed for clarification.
- Interviews were transcribed and analyzed by two independent coders using **thematic content analysis** as well as partially **applying open, axial and selective coding procedures** from grounded theory principles.

Participants

- 4 Focus Groups**
- 4 Distinct pediatric training programs: Vanderbilt University Medical Center, Children's Mercy Kansas City, University of Kansas Medical Center, & Truman Medical Center
- 28 residents total** (representing all 4 years of training)



CoVER Modules

4 web-based modules focused on key aspects of vaccines and vaccination:

- Vaccine Fundamentals
- Vaccine Preventable Diseases
- Vaccine Safety
- Hesitancy and Communication

Developed using best practices in instruction design principles derived from ARCS Model, Multimedia Learning, and Cognitive Load Theory.

Results

Residents' Reflections and Learning Experiences (N=28)

Theme	Descriptions
<i>Content Design</i>	<ul style="list-style-type: none"> Appropriate and sufficient content Clear content presentation Well-selected resources Multimedia integrated content and videos Functional and usable information Assessment integration (quizzes)
<i>Module Structure</i>	<ul style="list-style-type: none"> Logical sequencing of the content Relevant small chunks of information Interactive graphics Visually appealing picture and charts Well selected multimedia items with videos Well-structured variety of activities (flashcards, simple games, knowledge checks, segmented content design, external links) Integrated supplementary content (pdf articles)
<i>Learning Engagement</i>	<ul style="list-style-type: none"> Manageable chunk of information Not text heavy Memorable instructional tasks Variety of vaccine related pictures Interactive content
<i>Perceived Learning and Confidence</i>	<ul style="list-style-type: none"> Gaining new knowledge that positively impacted residents' confidence in recommending vaccines for patients Increased confidence in discussing vaccines questions with the patients/parents
<i>Perceived Challenges</i>	<ul style="list-style-type: none"> A few problems with the Learning Management System (Cornerstone) A few login difficulties User interface for the progress indicator
<i>Recommendations for Future</i>	<ul style="list-style-type: none"> Developing apps for a quick access New website resources Extended content for teaching on vaccine communication More modules on specific topics such as how to respond/counsel to vaccine resistant patients and direct examples of common vaccine myths
<i>Overall Satisfaction</i>	<ul style="list-style-type: none"> Best modules that the residents had completed so far/previously Clean layout and visual design User-friendly design Embedded resources and articles

Conclusions

This qualitative study helped us gain deeper insights into the effectiveness of the methodologies and theory-driven instructional design principles utilized within the CoVER modules.

Results support that well-designed modules produce higher learning satisfaction and positive impact on learners.

Despite overall satisfaction with the modules, technical challenges were identified by participants.

Future Directions

Identified strengths of the CoVER modules will guide our future developments, including usability testing to improve the accessibility of the technical platform.

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