Application of the Delphi Method to Refine Key Components in the Iterative Development of a Mobile Tele-simulation Unit (MTU)

Cody L. Dunne [1] , Jennifer Jewer [2] , Michael H. Parsons [3]

1. Department of Emergency Medicine, University of Calgary, Calgary, CAN 2. Faculty of Business, Memorial University, St. John's, CAN 3. Emergency Medicine, Memorial University of Newfoundland, St. John's, CAN

✉ **Corresponding author:** Cody L. Dunne, cody.dunne@mun.ca

How to cite this poster
Dunne C L, Jewer J, Parsons M H (2017) Application of the Delphi Method to Refine Key Components in the Iterative Development of a Mobile Tele-simulation Unit (MTU) . Cureus 9(8): e.

Abstract

Introduction: Safe and efficient provision of quality healthcare requires maintenance of knowledge and skills relevant to daily practice. This is particularly relevant in rural and remote locations where high-acuity low-occurrence procedures and clinical scenarios present even less frequently. Simulation based training is widely used to supplement clinical exposure and practice but effective delivery of this approach to the rural/remote practitioner must address barriers of time, cost and geographical separation. Mobile tele-simulation is an innovative approach that may help in bridging the gap through delivery of effective mentoring using telemedicine technologies and tailored educational content.

Methods: To help direct the iterative design cycle for the mobile tele-simulation unit, input from potential future users was felt to be essential. The Delphi method was employed to reach consensus among study participants on four key questions: 1) What applications would the MTU be best suited for?, 2) What technical requirements and teaching tools would be needed to make the MTU successful?, 3) Which fields, besides EM/medical education, may benefit from partnerships with the final MTU?, 4) What research studies could be developed using the MTU? It was decided in advance that two rounds would be the maximum due to time constraints of the larger MTU project. The first questionnaire focused on demographics and the four questions above. Independent reviewers analyzed, compiled and compared responses. Participants were sent the updated list, asked to confirm their responses and then to rank all responses from highest to lowest priority.

Results: Fifteen of 17 first round participants completed the questions, giving an 88.2% response rate. All shared a simulation background. 66% were physicians, 13.3% medical students, and 20% staff at Memorial's Simulation Center. 66% had been involved with simulation-based education less than 5 years, and the others greater than 5 year. 13 of 15 (86.7%) responded in round 2. Consensus was not reached statistically using Kendall's W test for each of the four questions. However, there were several responses that showed higher median ranks than the others under each question:

- POTENTIAL APPLICATIONS: Rural healthcare training, and medical professional

training
- TECHNICAL FACTORS: Reliable learner-mentor connection, and competent technical support
- NON-TECHNICAL FACTORS: Knowledgeable mentor, and content relevant to location's practice,
- RESEARCH STUDIES: Training needs assessment from rural sites, and learner's experience compared to stationary simulation center

Conclusion: Input from a heterogeneous group of simulation users was sought to help prioritize key features in the development of the Mobile Tele-simulation Unit. Although statistically the study did not reach consensus, valuable feedback was compiled and pragmatically applied in the iterative development cycle.

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