Making the Invisible Visible: A Window into the Mind of the Laparoscopic Trainee

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PURPOSE

The purpose of this research was to identify laparoscopic surgery schemata (LSS) to describe the specific competencies (knowledge, skills) embedded in simple laparoscopic procedures

WHAT ARE LAPRORSCOPIC SURGERY SCHEMATA?

LSS identify the elements of operative performance that illustrate the integration of knowledge (e.g., anatomy, physiology, judgment), and execution of surgical techniques

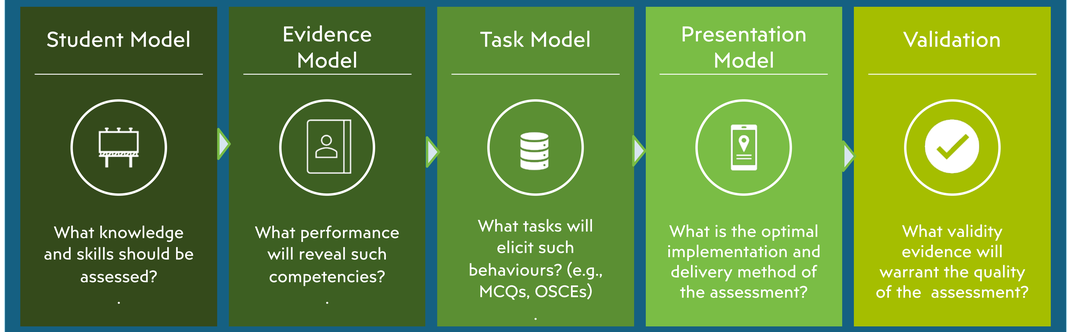
LSS provide opportunity to develop innovative assessments and instructional methods to:

- uncover the mental representations of surgeons in the operating room depending on level of expertise
- measure application of complex cognitive and psychomotor skills (provide a window into the 'mind of the novice learner)
- generate a framework for teachers to provide feedback to learners during laparoscopic procedures.

FRAMEWORK GUIDING DEVELOPMENT: EVIDENCE CENTRED DESIGN (ECD)[1]

- The ECD approach to designing assessments is based on a rigorous process to develop the assessment, while also generating evidence to support its score use and interpretations (validity)
- The ECD framework identifies multiple 'layers' that guide the process of test design and lay the groundwork for an assessment's operationalization (i.e., moving from theory to test delivery)

[1]Almond, Steinberg, & Mislevy, 2002; Mislevy, Steinberg, & Almond, 2003; Mislevy & Riconscente, 2006



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WHAT KNOWLEDGE AND SKILLS SHOULD BE ASSESSED?

- The construct of laparoscopic surgery is defined by a set of 10 entrustable professional activities (EPAs) and 67 competency descriptors articulated as observable behaviours (OB) that describe performance at the novice level (see Gomez-Garibello et al., 2003)
- We identified which of the EPAs and competencies are prioritized for integration of knowledge and skills in the OR

WHAT PERFORMANCE WILL REVEAL SUCH COMPETENCIES?

- Collected a series of short videos (N=15) that exemplify various procedures in the OR related to EPAs
- Conducted think-aloud interviews with SMEs asking them to:
  i. Verbalize (think-aloud) as they watch the videos and explain what they are seeing
  ii. Explain what they would expect a novice surgeon to know and recognize

WHAT TASKS WILL ELICIT SUCH BEHAVIOURS?

- Based on data analysis (deductive and inductive coding approaches of think-aloud videos) developing integrative assessment tasks that prompt test-takers to interact with videos
- Test-takers interact with videos through various assessment tasks e.g., (short written answer, short verbal response identifying features in videos)