

Observing But Not Yet Doing: What’s The Value?

Abigail Bennett, DO¹, John Woodward, MD¹, Joseph L’Huillier, MD¹, Taylor Quinn, BS², Manohar Golleru, BS², Nell Aronoff, BA, MLS³, Lora Cauvoto, PHD², Jing Yang, PHD², Steven Schwaitzberg, MD, FACS¹

¹University at Buffalo Department of Surgery ²University at Buffalo Department of Industrial and Systems Engineering ³University at Buffalo Libraries

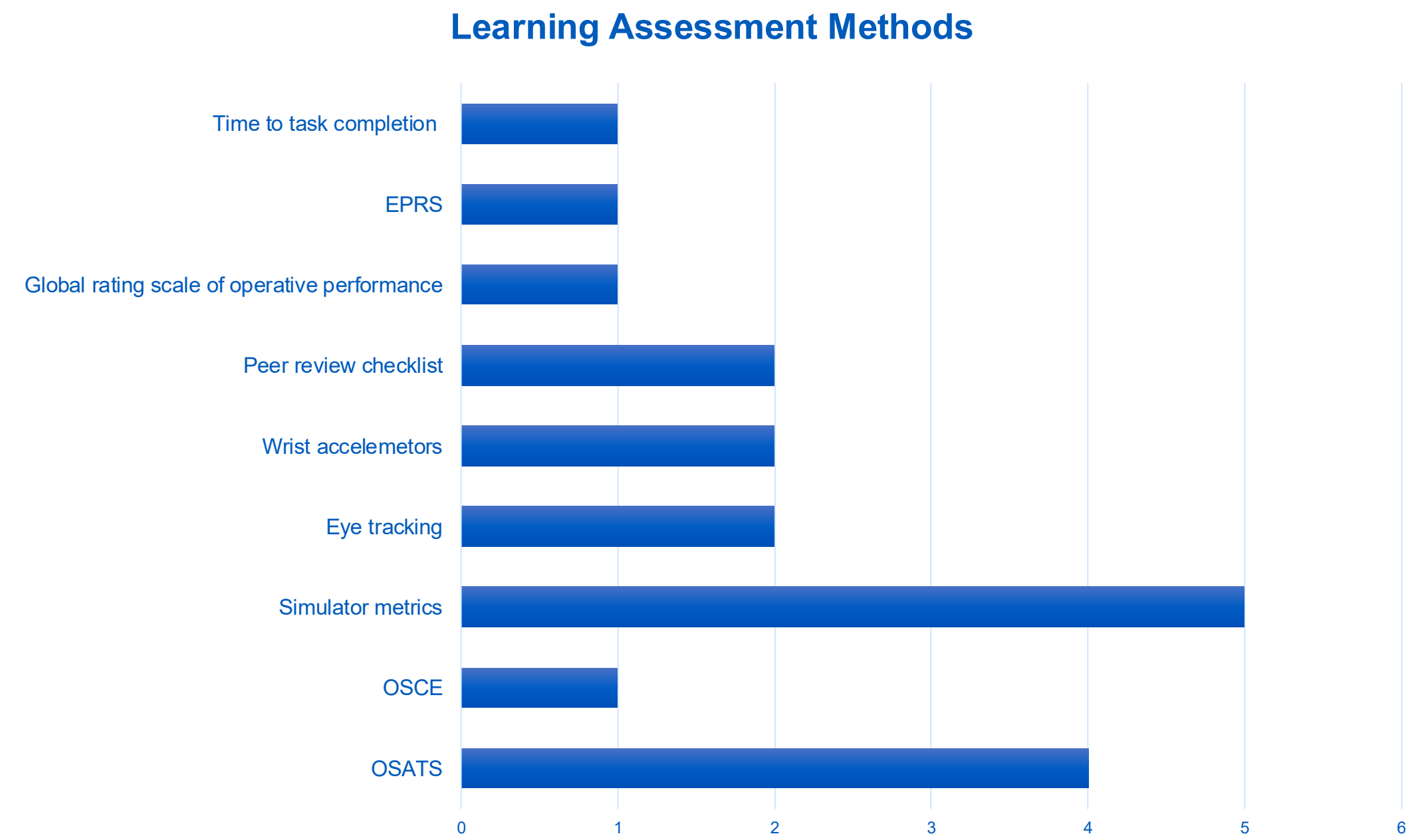


Introduction

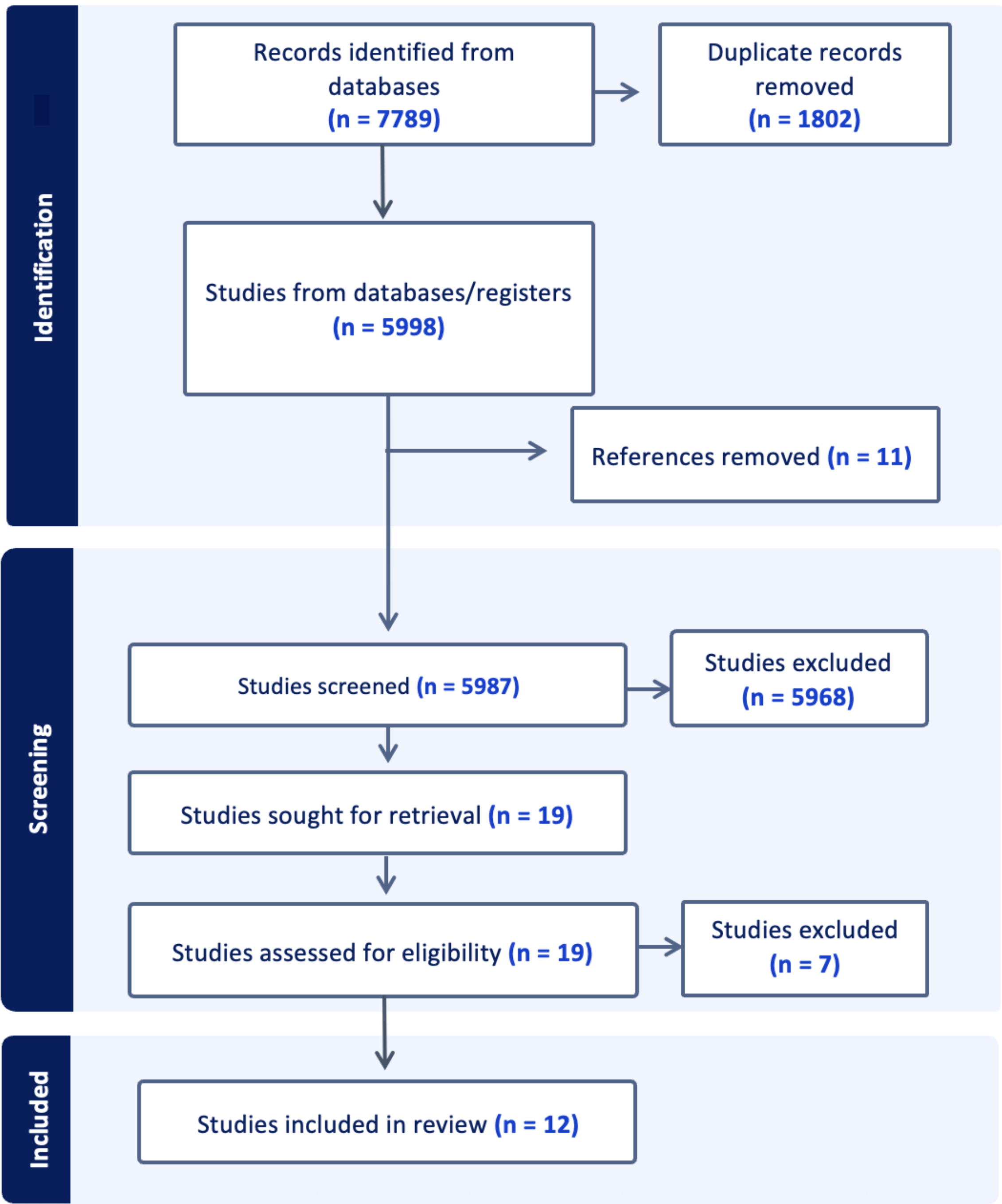
- Halsted’s model: “see one, do one, teach one” relies on observational learning.
- Observational learning: acquisition of knowledge or skills through watching others perform a task without direct physical practice.
- It is unclear if observation alone facilitates meaningful technical skill acquisition in surgical training.
- Identifying efficient and evidence-based training strategies is essential.
- Objective of this study was to determine the effectiveness of observational learning in surgical education.

Methods:

- A systematic review was performed and reported according to the PRISMA 2020 guidelines.
- PubMed (1946-present), Embase via Elsevier (1947-present), Education Source via EBSCO (1880-present), ERIC via EBSCO (1966-present), and Web of Science Core Collection (1945-present) were searched in March 2025.
- Inclusion criteria: surgery and surgical subspecialties at any level including medical students, residents, fellows, and attendings.
- Exclusion criteria: professions outside of surgery and non-English texts.



PRISMA Flow Chart



Results

- 9/12 papers demonstrated a benefit to observational learning.
- 3/12 papers showed worse performance in the observational group.

Data Extraction:

Non-VR Tasks					
Study	Learners	Task	Observation Effective?	Model Type	Assessment
Bjerrum et al 2013	Medical Students	Bronchoscopy	Y	Instructor (expert)	Simulator metrics
Chartrand et al	Surgical Residents	Bowel Anastomosis	Y	Expert Video	OSATS
Custers et al	Medical students	Skin lesion excision and closure	Y	Expert video	Task specific checklist and global rating scale
Malas et al	Medical students	Vascular Anastomosis	Y	Expert demo and didactic	OSATS + EPRS
Waters et al	Medical Students	Foley Insertion	N	Expert demo	OSCE

Simple VR Tasks					
Study	Learners	Task	Observation effective?	Model Type	Assessment
Harris et al (2017)	Medical Student	dVSS basic tasks	Y	Expert vs. novice vs. mixed	Performance score based on video analysis and wrist accelemeters and eye tracking
Harris et al (2018)	Medical students	dVSS Ring tower transfer	Y	Expert	Video analysis-based performance and accelerometry data

Complex VR Tasks					
Study	Learners	Task	Observation effective?	Model Type	Assessment
Chiu et al	Medical Students	Advanced dVSS	Y	Expert and novice	Peer reviewed checklist Performance analysis by dVSS
LeBel et al	Medical Students	VR arthroscopy	Y	Expert vs. novice	Performance analysis by dVSS
Schmitt et al (2018) -A	Surgical Residents	LapMentor cholecystectomy and hysterectomy	N	Novice	OSATS
Schmitt et al (2018)- B	Medical students	LabMentor skills	N	Novice	OSATS
Snyder et al	Medical students	Porcine model lap tasks	Y	Expert	Time to task completion

Conclusion:

- Observational learning confers a measurable benefit in surgical skill acquisition.
- Effectiveness of observational learning is related to task complexity, learner level, and instructional design.
- Additionally, there may be a benefit from observing novice or error-strewn performance, challenging traditional assumption that expert modeling is always superior.
- Integration of structured observation into surgical curricula may enhance skill acquisition but further investigation is needed.

References:

Please scan QR Code for References

