Twelve Tips for Enhancing Student Learning Experience in the Operating Room

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ABSTRACT

Student learning within the Operating Room (OR) is complex and challenging especially for the medical students who heavily rely upon structured learning plans. Presently, medical students’ OR-based surgical learning experience is heterogenous, unstandardized and inadequate owing to many reasons. There is a growing need to evaluate the learning modalities and models that we currently use for medical graduates’ OR-based learning process, create a balance between structured and opportunistic learning encounters and incorporate previously identified factors that have been known to positively influence the quality of OR-based learning. In continuation with our previous work on OR-based learning, here we argue for a structured OR-based learning plan that embodies appropriate learning models and teaching methodologies and focuses on a comprehensive plan that justifies a local needs analysis, and addresses factors influencing the quality of OR-based student learning to produce enhanced learning outcomes.

Keywords: Operating Room, Operation Theater, Learning, Student, Resident, Simulation Lab, Quality of Learning Experience, Structured Learning, Structured Clinical Encounters, Structured Surgical Encounter Template

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INTRODUCTION

Operating Room (OR), focuses on almost all learning forms such as spatial, aural, verbal, physical, logical, interpersonal and intrapersonal. Currently, various models of teaching and learning are being used for residency training in the OR setting. It is necessary to customize them according to their perspectives, needs and the graduates’ learning outcomes.

OR-based student learning is influenced by a number of factors which include organizational, socio-environmental and emotional factors apart from factors related to educational relevance and surgical educator. Weinberg et al. and Lyon et al. have previously stressed the need for a student-driven learning process, however, a standardized learning process in the OR-setting where the teacher has a more responsible role despite the learning process being student-centered may be more practical. Here, we aim to provide an overview of some of the measures that can be taken to enhance the theatre experience for our future undergraduate medical students.

1. Structure and standardize course and lesson plans: Tie up loose ends!

Weinberg et al. and Lyon et al. have proposed for student-driven measures, however, they are neither standardized nor ensure the acquisition of knowledge and skills in all graduates. Therefore, Roberts et al. have argued for a more deliberate and structured learning process in the operating room setting. Structured learning positively influences student learning within the OR environment. The learning within the OR-based environment should be structured and not opportunistic. The lessons, teaching/learning methodologies, and the assessment process should be planned before introducing the course.

There is a consensus among experts that there should be a collaborative content selection by the teacher and the student, keeping in view the required skill set for a standardized graduate.

2. Construct ‘SMART’ Learning Objectives through a shared approach:

The learning objectives of OR-based learning should be clear, practical, synchronized with concomitant teaching, and need to be defined and circulated prior to sessions in an effective manner. The teacher/s should develop the learning objectives with student input for essential components of standardized learning. However, the students should be given the liberty to follow their learning objectives for enhanced learning at an individual level.

3. Teacher’s pivotal role: Train your faculty!

Students value surgeons as positive role models, which may influence their career choices. Zundel et al. have identified six effective strategies that an educator can employ to enhance student-learning experience in the OR, which include:
1. Clarifying who the teacher is
2. Signposting so the theater staff knows when teaching is happening and applying time frames
3. Acknowledging when critical incidents are happening
4. Clarifying expectations of students
5. Providing a continuous commentary and asking students questions

Because of the demanding situations and time constraints faced by senior surgeons, the junior faculty were more effective teachers within the OR setting, according to many students.

4. Transform Operating Room learning with technology: synchronize Operating
Room learning with a simulated environment!
Organizational support remains a critical component of OR-based learning. Lack of adequate visualization of procedures has been cited as the most detrimental aspect of OR-based learning. The theatre complex should be transformed into a learning hub for medical students, with enhanced visualization of procedures through technology (e.g., LED Screens, simulated operating suite (SOS) and microscopes etc.1

5. Focus on psychomotor skills through a simulated environment:
The operating room's pressurized dynamics, expanding class sizes, and ethical concerns curtail students' opportunities to practice psychomotor skills in the OR setting. A simulated environment can therefore be quite helpful. A range of simulations from low fidelity to high fidelity is available and has been found to be productive.

6. Choose Appropriate assessment & render constructive feedback:
Surgical skill development requires time and practice. Appropriate evaluation involving the assessment of psychomotor and affective skills apart from cognitive skills remains a high priority. Furthermore, receiving feedback has been shown to promote skill development and higher levels of expertise. OSCEs, formative objective structured clinical exams (F-OSCEs) and other such methods of evaluation can facilitate the acquisition of psychomotor skills.

7. Focus on individualized interaction with students:
The students aspire for an individualized interaction to have a more meaningful learning process. Students achieve the highest participation levels when they are involved in actual tasks within the OR and other clinical settings. Schwind et al. in their study, demonstrate that students highly value consultant-led interaction with students. Adequate and individualized interaction is key to enhanced OR-based learning.

8. Arrange an orientation Session-sensitization with environment:
An orientation session about the theatre complex, staff, teaching provisions, theatre working, basic concepts of sterilization and biomedical ethics should be arranged to alleviate student’s anxiety and nervousness.

9. Prime your students with relevant educational material:
Priming students with pertinent educational material prior to lessons improves students’ participation and understanding. This cognitive portion, in the form of videos, vignettes, and other educational innovations should be executed.

10. Ensure affective skill training in Operating Room setting:
Training to handle the OR environment through affective skill training is essential for students’ optimal participation in OR lessons. The students should be oriented and trained to overcome their anxieties to improve their participation within this dynamic environment. For effective skill training in OR the strategy of role modeling can be used.

11. Provide a welcoming environment for the students: Extend support!
Bullying, intimidation, victimization and a harsh attitude negatively affect the students’ participation in OR learning. It is important to train our faculty to avoid such a conduct and ensure a mechanism for accountability.

12. Train your students for Self-regulation
Students seek out “student-friendly” surgeons, whereas surgeons look for students capable of promoting themselves to create a symbiotic relationship. Students who manage this interaction establish credibility, become recognized as legitimate team members and are eventually encouraged to participate in the team’s “community of practice”.
CONCLUSION

The application of OR-based learning models should be realistically achievable, effective, and aligned with the methodology, assessment and outcomes. Faculty training remains a high priority. Adequate organizational support and OR-enhancement through simulation and technology can create abundant and valuable learning opportunities.

Conflicts of interest

The authors report no conflicts of interest.

REFERENCES

1. Hexter AT, O’Dowd-Booth C, Hunter A. Factors that influence medical student learning in the operating room. Med Teach. 2019; 41(5): 555–560. Available from: http://www.ncbi.nlm.nih.gov/pubmed/30253684

2. Monkhouse S. Learning in the surgical workplace: necessity not luxury. Clin Teach. 2010; 7(3): 167–170. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21134176

3. Croghan SM, Phillips C, Howson W. The operating theatre as a classroom: a literature review of medical student learning in the theatre environment. Int J Med Educ. 2019; 10: 75–87. Available from: http://www.ncbi.nlm.nih.gov/pubmed/31012867

4. Waseem T, Munir Baig H, Yasin R, Ahmad Khan R. Exploring Operating Room-Based Student Learning Experience: Perils & Pitfalls? A Narrative Literature Review. Arch Surg Res. 2020; 1(2): 25-34. Available from: http://www.archivessr.com/index.php/asr/article/view/34

5. Lyon P. A model of teaching and learning in the operating theatre. Med Educ. 2004; 38(12): 1278–1287. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15566539

6. Weinberg D, Saleh M, Sinha Y. Twelve tips for medical students to maximise learning in theatre. Med Teach. 2015; 37(1): 34–40. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24984710

7. Lyon PMA. Making the most of learning in the operating theatre: student strategies and curricular initiatives. Med Educ. 2003; 37(8):680–688. Available from: http://www.ncbi.nlm.nih.gov/pubmed/12895247

8. Roberts NK, Williams RG, Kim MJ, Dunnington GL. The briefing, intraoperative teaching, debriefing model for teaching in the operating room. J Am Coll Surg [Internet]. 2009; 208(2): 299–303. Available from: http://www.ncbi.nlm.nih.gov/pubmed/19228544 DOI: 10.1016/j.jamcollsurg.2008.10.024

9. Cope A, Bezemer J, Sutkin G. Models of Teaching and Learning in the Operating Theatre. 2019; 171–182. Available from: http://link.springer.com/10.1007/978-981-13-3128-2_16

10. Maggio LA, Cate O Ten, Irby DM, O’Brien BC. Designing evidence-based medicine training to optimize the transfer of skills from the classroom to clinical practice: applying the four component instructional design model. Acad Med. 2015; 90(11): 1457–1461. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25993279

11. Ravindra P, Fitzgerald JEF, Bhangu A, Maxwell-Armstrong CA. Quantifying factors influencing operating theater teaching, participation, and learning opportunities for medical students in surgery. J Surg Educ. 2013; 70(4): 495–501. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23725937

12. Zundel S, Wolf I, Christen H-J, Huwendiek S. What supports students’ education in the operating room? A focus group study including students’ and surgeons’ views. Am J Surg [Internet]. 2015; 210(5): 951–959. Available from: http://www.ncbi.nlm.nih.gov/pubmed/26072189

13. Hampton BS, Magrane D, Sung V. Perceptions of operating room learning experiences during the obstetrics and gynecology clerkship. J Surg Educ. 2011; 68(5): 377–381. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21821216

14. Chatterjee D, Corral J. How to Write Well-Defined Learning Objectives. J Educ Perioper Med JEMP. 2017; 19(4): E610. Available from: http://www.ncbi.nlm.nih.gov/pubmed/29766034

15. O’Neill R, Shapiro M, Merchant A. The Role of the Operating Room in Medical Student Education: Differing Perspectives of Learners and Educators. J
16. Schwind CJ, Boehler ML, Rogers DA, Williams RG, Dunnington G, Folse R, et al. Variables influencing medical student learning in the operating room. Am J Surg. 2004; 187(2): 198–200. Available from: http://www.ncbi.nlm.nih.gov/pubmed/14769304

17. Flannery T, Gormley G. Evaluation of the contribution of theatre attendance to medical undergraduate neuroscience teaching—a pilot study. Br J Neurosurg. 2014; 28(5):680–684. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24628113

18. Callcut RA, Rikkers L, Lewis B, Chen H. Does academic advancement impact teaching performance of surgical faculty? Surgery. 2004; 136(2): 277–281. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15300191

19. Fernando N, McAdam T, Cleland J, Yule S, McKenzie H, Youngson G. How can we prepare medical students for theatre-based learning? Med Educ. 2007; 41(10): 968–974. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17908114

20. da Cruz JAS, Dos Reis ST, Cunha Frati RM, Duarte RJ, Nguyen H, Srougi M, et al. Does Warm-Up Training in a Virtual Reality Simulator Improve Surgical Performance? A Prospective Randomized Analysis. J Surg Educ. 2016; 73(6): 974–978. Available from: http://www.ncbi.nlm.nih.gov/pubmed/27233673

21. Wayne DB, Didwania A, Feinglass J, Fudala MJ, Barsuk JH, McGaghie WC. Simulation-based education improves quality of care during cardiac arrest team responses at an academic teaching hospital: a case-control study. Chest. 2008; 133(1): 56–61. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17573509

22. Agha RA, Fowler AJ. The role and validity of surgical simulation. Int Surg. 2015; 100(2): 350–357. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25692441

23. Aggarwal R, Mytton OT, Derbrew M, Hananel D, Heydenburg M, Issenberg B, et al. Training and simulation for patient safety. Qual Saf Health Care. 2010; 19 Suppl 2: i34-43. Available from: http://www.ncbi.nlm.nih.gov/pubmed/20693215

24. Paige JT, Garbee DD, Kozmenko V, Yu Q, Kozmenko L, Yang T, et al. Getting a head start: high-fidelity, simulation-based operating room team training of interprofessional students. J Am Coll Surg. 2014; 218(1): 140–149. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24183570

25. Bernard AW, Ceccolini G, Feinn R, Rockfeld J, Rosenberg I, Thomas L, et al. Medical students review of formative OSCE scores, checklists, and videos improves with student-faculty debriefing meetings. Med Educ Online [Internet]. 2017; 22(1):1324718. Available from: http://www.ncbi.nlm.nih.gov/pubmed/28521646

26. Dornan T, Tan N, Boshuizen H, Gick R, Isba R, Mann K, et al. How and what do medical students learn in clerkships? Experience based learning (ExBL). Adv Health Sci Educ Theory Pract. 2014; 19(5):721–749. Available from: http://www.ncbi.nlm.nih.gov/pubmed/24638146

27. Barnum TJ, Salzman DH, Odell DD, Even E, Reczynski A, Corcoran J, et al. Orientation to the Operating Room: An Introduction to the Surgery Clerkship for Third-Year Medical Students. MedEdPORTAL J Teach Learn Resour. 2017; 13:10652. Available from: http://www.ncbi.nlm.nih.gov/pubmed/30800853

28. Burgess A, Wright C, Qasabian R, O’Mara D, Mellis C. Surgical teaching program for our senior medical students: room for improvement. Adv Med Educ Pract. 2014; 5: 369–375. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25337002

29. Chapman SJ, Hakeem AR, Marangoni G, Raj Prasad K. How can we enhance undergraduate medical training in the operating room? A survey of student attitudes and opinions. J Surg Educ. 2013; 70(3): 326–333. Available from: http://www.ncbi.nlm.nih.gov/pubmed/23618441

30. Lave J, Wenger E. Situated Learning. Cambridge University Press; 1991; Available from:https://www.cambridge.org/core/product/identifier/9780511815355/type