



Bridging the Gap from Medical School to Residency:

A Pilot e-Learning Community

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Introduction

The education gap between the expectations upon completing medical school and the initiation of residency is well established.^{1,2} There have been various proposed solutions, and it remains unclear if the burden to address the situation falls on the medical school or the residency. This gap has been highlighted by the American Medical Association formation of a \$15 million grant in 2018.³ Highlighted issues include communication⁴, recognition of bias^{5,6}, and resident wellness.⁷ Creating targeted curriculum and engaging adult learners has proven a major challenge.⁸

Utilizing transformative learning theory, we sought to create a learning community that would allow participants to utilize a more functional and flexible curriculum. Transformative theory utilizes disorienting dilemmas to challenge the adult learners thinking. Critical thinking and questioning are foundational.⁹ E-learning has been a growing area with the newer generation of learners^{8,10}, this also provides for participants to begin learning prior to day one of residency, as they can fully participate as remote learners. Using an internet-based platform allows creation of users and classrooms that can be divided to fit the educator's need. This also allows for various strategies to be employed and capitalize on free open access medical education (FOAMed).

Methods

A 6-week e-learning community curriculum was developed for all incoming residents at one hospital. The project included a single hospital department of graduate medical education which includes a residency in Emergency Medicine (EM), Internal Medicine (IM), and a Traditional Rotating Internship (TRI). There were 23 new residents to the hospital in July 2018; 5 EM, 6 IM, 12 TRI (6 IM track and 6 EM track). Using the online classroom platform through Moodle, the course began 2 weeks prior to the start of residency and was completed at the end of the first month (July) of residency. Feedback was obtained to determine residency perception and utility of the course. The feedback and recommendations on the e-learning community will be used to further optimize the course going forward. The Hospital Research Ethics Board deemed the project as exempt.

Curriculum Major Learning Objective by week:

1. Development of community and team
2. Improved structure and plan for calling consultants
3. Knowing when and how to call for help/assistance
4. Improving patient handoff
5. Addressing personal bias, heuristics and cognitive error
6. Creation of a wellness strategy

Results

A participant survey with 100% response rate (Figure 1) was performed. Average responses were all positive toward this course. Scores of 50 equal neutrality with 100 being the most positive.



Figure 1. Questionnaire Response Averages with 95% CI

Discussion

The e-Learning Community was an addition to the in lecture-based month long intern orientation. Overall, the feedback was positive. Several residents indicated the class was "very helpful." The area of highest concern for participants was the timing of the course. Many indicated they wished the class started earlier. The orientation month can be very busy, and overwhelming with information.

Another opportunity for improvement based on participant feedback is improved application of the coursework into practice habits. The goal of the course is to positively impact residents' function. This may require an ongoing style curriculum that extends beyond the orientation period or revision of the curriculum to affect change. More research will be required to improve and measure outcomes in a meaningful way.

The total cost for the course was approximately \$500. The cost was calculated from hours spent developing and managing the course, and cost of a yearly subscription to Moodle.

Limitations

This single site, pilot study is limited by the number of participants. Additionally, it may not be generalizable to other residencies, as each one has different curriculum for orientation. Also the data collected was participant survey which falls under Kirkpatrick's outcomes hierarchy as lower level, reaction data.¹¹ It did not account for changes that may have been noted by attendings. Learners, and physicians specifically, have demonstrated poor insight on their own educational needs and improvement.¹² Further the course was a single six week instruction period with no included follow-up education model or formatted discussion afterwards. A single workshop may not prompt the desired change in perspective or behavior.⁹

Conclusions

The pilot study was deemed a success, and efforts are already in place for improvements moving forward. The strength of the current design is the easy of scalability as well as the low overhead cost at present. With more study the program can be refined and customized to best address various specialties, locales, as well as common areas of focus and concerns. Further, the course may be augmented at each local site for known difficulties are variations in practice. More specific research questions with novel approach methods will be needed to address the challenges facing graduate medical education, specifically the present gap in the pivotal transition from student to physician.

This pilot provides a new dynamic landscape of future study to determine improved methods of adult education in a modern time. With the transition points of education becoming a focus^{1,2} e-learning communities are a flexible viable option for transformative learning.

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