A blended learning strategy in the ICU; a lesson in the law of unintended consequences

Enda O'Connor, Aisling McMahon, Gabor Zilahi
Intensive Care Unit, St James's Hospital, Dublin8
Trinity College Dublin

eLearnICU
EDUCATION & DISCUSSION IN INTENSIVE CARE

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Introduction

The intensive care unit is a challenging educational environment for postgraduate learners and teachers.

Challenges for learners:
- Shift-work patterns
- Time-poor doctors
- Unpredictable workload
- Breadth of learning (neurosurgery, gastroenterology, obstetrics)

Challenges for teachers:
- Core versus desirable learning topics
- Availability of/access to learners
- Breadth of teaching

Learning tends to focus on core intensive care topics such as shock, acute respiratory failure, kidney failure and sepsis. The broad case mix of ICU inpatients however means that trainee doctors must also learn details about a wide range of non-core medical and surgical conditions[1].

We designed and piloted a blended learning framework to address these educational challenges, with the objective of enhancing trainees' knowledge, understanding and management of a non-core problem (microbiology) in critically ill patients.

Methods

The project had its basis in adult learning theory with a blended learning strategy.

Postgraduate ICU doctors were asked to volunteer to undertake the following over an 8 week period:
1) Self-select a topic related to the chosen educational theme (Intensive Care Microbiology)
2) Design a pertinent evidence-based (EB) question using the PICO format (patient-intervention-control-outcome)
3) Perform a literature search
4) Post their summary answer on the bespoke website (www.elearnicu.com)[2] using 1-500-5-1 structure (1 EB question, maximum 500 words, maximum 5 references and 1 key supporting article)

Face-to-face discussions after daily ICU microbiology ward rounds were used to give guidance to learners throughout the exercise. Online discussion (using the bespoke website and email) moderated by EOC helped learners structure their EB questions, and search and grade relevant literature. The GRADE Working Group[3] and the IMRaD model (Introduction, Methods, Results and Discussion) were used for the project.
An 8-question online survey was used for evaluation.

Results

From a total of 11 trainees, 8 volunteered to participate. Seven completed the task and the teaching evaluation within the allocated time.

It was **popular**:
- All participants said they would join another similar exercise

There was evidence of **breadth of learning**:
- The 7 EB questions targeted bacterial, viral and fungal intensive care microbiology (figure 1)
- 30/35 (85.7%) references were from non-intensive care journals

Learning objectives were achieved:
- All participants agreed that their knowledge and management of infected ICU patients would improve following participation in the exercise

Participants gave **feedback about the process and outcomes** of the exercise (table 1)

There was **unintended learning of transferable skills** for trainees:
- Designing and constructing evidence-based questions
- Writing a structured abstract
- Searching and grading literature ("Found assessing the grade of article difficult")

There was **unintended learning for educational designers**:
- Bespoke website not used for online discussion
- Mobile phone email ("…part of our generation…") with moderator for most communication
- Whatsapp® discussion between learners without moderator involvement

There was **poor engagement** with bespoke platform:
- Inconvenience of separate login
- No automatic notifications when message received
- Software was not mobile phone-friendly

Figure 1: Discussion page on bespoke website www.elearnicu.com

Statement on evaluation form	Mean score
The project leader gave adequate instructions for the exercise	4.71
The project leader was helpful in response to any of my queries	4.71
I had sufficient resources to complete the exercise	3.71
I had sufficient time to complete the exercise	4.29
The exercise helped me learn how to perform a literature search	4.00
The exercise helped me learn how to construct evidence-based questions	4.57
The exercise assisted my learning in the subject area (microbiology)	4.86
My management of critically ill infected patients will change based on my participation in this exercise	4.29

Table 1: Mean Likert scores for comments about the learning exercise (1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree. Mean score maximum = 5)

Discussion

The pilot exercise demonstrated the value of blended learning for teaching about non-core aspects of intensive care practice.
An unintended benefit was the incidental learning *and demonstration* of transferable skills such as designing EB questions, searching and appraising literature, and abstract writing in the course of the exercise; so-called "learning to use learning resources"[4].
The current generation of junior doctors embrace eLearning. However, to optimise learner engagement, instructional designers should use contemporary technological platforms popular amongst millenial learners[5].

Conclusions

This strategy demonstrated some intended and unintended learning outcomes for both learners and educators.
Using lessons learned from this exercise, our blended learning has progressed to a combination of (a) scheduled thematic teaching sessions (eg. Critical Care Cardiology) with (b) a Whatsapp® ICU learning group chaired by two consultant moderators.

References

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Contact: Enda O'Connor, Consultant in Intensive Care Medicine/Clinical Lecturer
Department of Intensive Care Medicine, St James's Hospital, Dublin 8
01-4103000
oconnoen@tcd.ie