E−learning to supplement and synergise practice−based learning in the emergency department

Fatimah Lateef[*]

Dept of Emergency Medicine, Singapore General Hospital, Singapore

ARTICLE INFO

ABSTRACT

Practice−based learning involves on− the−job learning as well as learning 'of−the job' in its realistic setting. It gives trainees and interns the exposure to a diversity of encounters as well as an understanding of the different workplace models, strategies and capabilities. It is now very commonly utilized in teaching and training in medical disciplines. The whole process emphasizes active learning, with collaboration between learners and supervisors, for the eventual delivery of best clinical care to patients.

1. Introduction

Practice−based learning started being popular in vocational−based education, where there is a necessity to integrate theory and didactic coursework with practical workplace skills and learning. It was quite similar to the apprenticeship model of learning. Industry placement and job attachments also represent some form of Practice−based learning. In short, it involves on− the−job, hands−on learning as well as learning 'of−the job' in its realistic setting. It helps to prepare the person for the workplace and plans to give them exposure to a wide range of encounters possible, as well as an understanding of the different workplace models and capabilities. The trainee will also get an idea of the organization structure, hierarchy and reporting line[1−3].

Today, Practice−based learning curriculum is made even more structured and detailed, with proper documentation and logs to ensure the most enriching and beneficial experience for the trainee or apprentice.

In medicine, Problem−based learning has become one of the strategic thrusts of medical education and training, both at the undergraduate and post−graduate levels. In planning the programmes, it is essential to ensure they are pedagogically sound, operationally effective and provide quality skills training. At the same time, it must be learner driven and not so much a top−down approach. The focus must also not be just on specific knowledge but the application of the knowledge to improve specific practice performance and of course, clinical outcomes[4].

2. The concept of practice−based learning

Physicians work in highly complex organizations and they need to understand how to evaluate and improve the systems

*Corresponding author: Fatimah Lateef Dept of Emergency Medicine Singapore General Hospital, Block 1 B sement 1, Office B, Outram Road, Singapore 169608.
Tel: 65 63213558/ 4972
Fax 65 63214873
Email: fatimah.abd.lateef@sgh.com.sg

they are involved in. Understanding how Problem–based learning works and how it fits into individual physician's continuing professional development is important. According to the Accreditation Council for Graduate Medical Education (ACGME), Practice based learning and improvement requires the physician to investigate and evaluate their care of patients, appraise and assimilate scientific evidence, and to continuously improve patient care, based on constant self evaluation and life–long learning. They are expected to develop skills and habits to be able to[5-6]:

Identify strengths and limits in their knowledge and expertise;

Set learning and improvement goals;

Identify and perform appropriate learning activities;

Analyze practice and implement changes with the goal of practice improvement;

Incorporate formative evaluation feedback into daily practice;

Use evidence–based practice and information technology to optimize learning;

Participate in the education of patients, families, students, residents and other health professionals..

This is a comprehensive list that is all encompassing for a young physician's education which will also have to be tailored to the specialty they are training in. The practice of Emergency Medicine is one dealing with the prompt stabilization, diagnosis and management of acute illnesses and injuries. Emergency physicians require a broad base of knowledge and skills, cutting across many different specialities and disciplines *e.g.* airway management (anaesthesia), fracture management (orthopaedic), wound management (general surgery and plastics surgery) and delivery of a baby in emergency setting (obstetrics and gynaecology) among others. Thus, the education and training of the emergency physician need to be well planned and comprehensive, with the right mix of didactic as well as practical knowledge and skills.

With such a variety of information and skills to master, it is important to plan and structure a comprehensive implementation of the training and exposure. Initial hand–holding and close supervision is essential. There will also be exposure to a variety of teaching tools and format *e.g.* case conference, mortality and morbidity rounds, journal clubs, interactive lectures, life support and simulation training.

3. Incorporating e–learning as a practice–based learning tool

Clinical teaching and learning in the Emergency Department is unique as there is always the consideration of waiting times, high patient load or numbers, manpower constraints and changing public's expectations. These factors may tend to limit education time when handling acute, emergent cases. It was thus decided that the department would embark on a more formal and structured e–learning programme to supplement and integrate with Practice–based learning.

The blackboard is a management system which offers an interactive e–learning platform, accessible to both students / trainees and faculty / trainers / supervisors. Using the Blackboard system, the e–learning is implemented to enhance the learning experiences of trainees. It represents yet another learning tool. It allows faculty and trainers to post materials, tests, surveys, questions, interactive lectures, video of practical skills and other course materials onto the system, which are then accessed by trainees and students in their learning process. Blackboard training and assignments ensures a continuous 'dialogue' with the learners. In making a decision to use this modality, it is important to bear in mind that not everyone is comfortable with technology and in fact, a few may not even have access to a computer. Thus, the availability of shared computers in the department is important. Also, the training and case materials on the Blackboard need to be planned and tailored to a range of learner capabilities.

Upon making the decision to implement this system, it is necessary to ensure participation and buy–in from all stakeholders as all teaching materials will be disseminated through the system. This also included handing in of assignments .

The first step involves Training and Familiarisation. This is where hands–on trial classes and sessions are held to introduce Blackboard e–learning to the learners / trainees . However, even before rolling out the classes to the learners, the teachers and trainers (in this case the supervisors are the senior doctors) had to go through the same processes themselves. As the supervisors utilizing the Blackboard, they too have to be comfortable with the system and know how to utilise it to put up assignments, course work and communicate with their learners.

The sessions for the medical officers and residents were done in controlled classroom setting. They were told about access, password usage, etiquette on the Blackboard, forms of interaction and communications as well as the do's and don't's. Several classes were planned and those who required supplemental sessions, could arrange for them as well. During these classes, many of the senior doctors/ supervisors attended together with the medical officers and residents, in order to interact with their learners and have live trial sessions[7-9].

Once the mock classroom training was over, the next stage was to Deepen Understanding. This is where the formal teaching sessions were conducted in real time using the Blackboard system and simulated examples. This is also when they get to know the system, its capabilities and details as well as more complex case–handling, in the real day to day setting. The medical officers were told of the new uploads and assignments to be done. The latter was important to assess learning and understanding. Of course some assessment were suitable to be done online whilst with others, 'real' supervisor–medical officer / resident

contact was required and these were planned by the pair accordingly. The latter is similar to the concept of on–the–job training[7].

After the programme had been implemented for 6 weeks, the Feedback phase was next. This is where both supervisors and medical officers / residents gave their inputs on the system, utilisation and partnership in training. This is important in order to assess if the system needs fine–tuning or changes, whether the medical officers and residents found the method of learning to be effective and also if the teachers could carry out the 'teaching' with ease. As the system must be user friendly, it was crucial to ensure the stakeholders involved were comfortable with it. New knowledge was shared with everyone and as the confidence level of users increased, they became capable of expanding the usage of the system, incorporating research proposals, reference elements and techniques to make knowledge sharing more dynamic[10–11].

With all the new found enthusiasm, the final stage is the Assimilation and Integration of learnt information and skills into clinical practice. With strong buy–in, the whole department can now use this system. There are also further plans to introduce future teaching and training programmes as well as continuing education programmes using the system. The utilization of Information Technology in the processes involving teaching and learning is a dynamic one and will continue to evolve. Thus users must be prepared to face this so as not to feel handicapped or helpless, and are able to make it an effective learning tool in medicine[11–12].

4. Discussion

This paper discusses the steps involved in using new technology to assist in the execution of Practice–based Learning concepts. It also helps to inculcate a new understanding and adaptation to the changing teaching and learning culture. From the more formal instruction type format, the learning process is moving towards a more self–directed one with focus on experiential learning to enhance competence. During the process of implementation , it was observed that there was progression from the initial nervousness and anxiety to that of competence and confidence when understanding was achieved. The latter was obvious as users came forth with suggestions to fine–tune and enhance the system, as well as new tools and curriculum to be covered on the Blackboard system. This is the result of the process of reflection by the users, where they have systematically gone through a conscious effort thinking of their practice of medicine. This exercise also allows the facilitation of the collaborative model of adult learning where learners and supervisors come to the same learning platform to teach and learn from each other.

A preliminary evaluation of the programme will be carried out in the next few months after several cohorts of junior doctors are put through it. Each cohort of junior doctors is made up of about 40 physicians.

5. Conclusion

This paper shares an example of a Practice–based learning model, using the Blackboard system that emphasizes self directed, active learning with elements of reflection and collaboration. It utilises the model to help residents and medical officers enhance their knowledge and skills and eventually, execute effective clinical care. Continuous monitoring is also essential to ensure the system evolves and is kept up to date.

Conflict of interest statement

The authors declare that there is no conflict of interest.

References

[1] Moore DE Jr, Pennington FC. Practice–based learning and improvement. *J Contin Edu Health Prof* 2003; **23** (Suppl 1): S73–80.

[2] Donen N. No to mandatory continuing education, yes to mandatory practice auditing and professional educational development. *CMAJ* 1998; **158**(8): 1044–1046.

[3] Cleghorn G, Baker G. What faculty need to learn about improvement and how to teach it to others *J Interprof Care* 2000; **14:** 147–159.

[4] Baker G, Gelmon S, Headrick LA et al. Collaborating for improvement in health professions education. *Qual manag Health Care* 1998; **6:** 1–11.

[5] Varkey P, Karlapudi S, Rose S et al. A systems approach for implementing PBL and improvement and systems–based practice in Graduate Medical Education. *Academic Med* 2009; **3:** 335–339.

[6] Advancing Education in Practice–based learning and Improvement. An Educational Resource from ACGME Outcome Project. 2005 ACGME. Available at http://www.acgme.org/outcomes/implement/complete_PBLIBooklet.pdf.

[7] Reznick RK, Macrae H. Teaching surgical skills– changes in the wind. *New Engl J Med* 2006; **255:** 2664–2669.

[8] Haluck RS, Krummel TM. Computers and virtual reality for surgical education in the 21st century. *Arch Surg* 2000; **135:** 786–792.

[9] Cauraugh JH, Martin M, Martin KK. Modelling surgical expertise for motor skill acquisition. *Am J Surg* 1999; **177:** 331–336.

[10]Edmonson A, Bohmer R, Pisano G. Speeding up team learning. *Harvard Business Review* 2001; 125–132.

[11] Merriam S. Updating our knowledge of adult learning. *J Contin Edu Health Prof* 1996; **16:** 136–143.

[12]Garcia R, Newsome R. Learning and change among emergency physicians. *J Contin Edu Health Prof* 1996; **16:** 33–41.