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Original Article

Blended learning approach for teaching and learning anatomy: Students' and teachers' perspective

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ABSTRACT

Introduction: Anatomy education is facing challenges mainly due to reduced curriculum time and lack of cadavers. In order to overcome these constraints, there is a need to introduce technology-assisted self-regulated learning methods such as blended learning along with the traditional face-to-face classroom teaching method.

The aim of the present study is to develop and implement blended learning module to support traditional didactic lectures for teaching/learning gross anatomy and to get students' and faculty perception regarding its usefulness.

Methodology: A blended learning module (BLM) comprising lesson plans for three topics in gross anatomy was developed and implemented. Feedback was taken from the students and faculty regarding their perception of BLM using separate semi structured, self-administered questionnaires.

Results: Majority of the students responded that BLM increased their interest in the subject, encouraged them in developing independent learning skills. They experienced better understanding of the subject and higher level of interaction with the teacher during face-to-face sessions. Most of the faculty members agreed that blended learning motivated students to do self-study, helped them in developing higher cognitive skills and enhances learning.

Discussion: Students' and faculty perception was that blended learning facilitates understanding of the subject, motivates students for self-directed learning and provides access flexibility to learning resources.

1. Introduction

It is a well known fact that anatomy has been a cornerstone of medical education for hundreds of years. Knowledge of anatomy is essential for clinical examination, surgical procedures and interpreting medical imaging. However, anatomy education faces challenges such as reduced curriculum time and lack of cadavers. With diminishing time and resources devoted to anatomical education, it is imperative to integrate technology based learning methods with the traditional classroom teaching methods to make the teaching of anatomy effective and efficient.

Combining the advantages of online learning and traditional classroom learning environments has led to a new learning environment often referred to as "blended learning". Blended learning (BL) integrates face-to-face interaction with technologically mediated interactions among students, teachers and learning resources.[1] Usually there is some element of self-directed learning and the learner has control over time, place, and/or pace of learning to some extent. Blended learning strategy shifts teaching from a largely teacher-centered activity to a more student-centered activity as it encourages students to be active in the experience of learning rather than being passive learners.[2] Other advantages of this approach include a better learning experience, more consistent content delivery, greater flexibility and student satisfaction.[3] It enables the students to become more motivated and more involved in the learning process, thereby enhancing their commitment.[4,5]

In the current literature, very few studies are available on the use of blended learning and its effectiveness in context of teaching anatomy to medical students.[6,7] The purpose of this study,

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therefore, was to (a) to develop and implement a blended learning module mainly focussing on using online learning to complement the traditional face-to-face teaching methods, (b) to obtain students' perception regarding usefulness and effect of blended learning method on their learning experience, (c) to assess the effectiveness of blended learning in terms of students' performance and (d) to take feedback from the faculty regarding usefulness and impact of blended learning method on students' learning.

2. Methodology

Approval for the study was obtained from the Institutional Ethics Committee. A blended learning module (BLM) based on rotation model was developed and implemented to teach gross anatomy to 2nd semester MBBS students ($n = 103$) at School of Medical Sciences & Research (SMS&R), Greater Noida, India. It comprised of three lesson plans from the region of the pelvis (bony pelvis, uterus and pelvic diaphragm). The content delivery mode for each lesson plan included both face-to-face and online learning sessions, the latter through the website. A website was created using 'WiX Html Editor' and used for the purpose of providing online learning resource material in the form of text, images, videos, quizzes and case based problems (Fig. 1). Faculty members ($n = 9$) of department of Anatomy at SMS&R also participated in the study to observe the usefulness and impact of BLM on students' learning and provide their feedback. One week prior to implementation of the BLM, students and the faculty were briefed about the details of the module, and how to use the website.

Lesson plan for each topic was divided into 3 parts:

Part 1: Online session (self-learning of basic concepts): Prior to each face-to-face session the students were asked to go through the learning resource material provided online under the heading Phase I so as to become familiar with the new terms and basic concepts pertaining to that particular topic (Fig. 1).

Part 2: Face-to-face session: The face-to-face session started by quizzing the students about the basic concepts (10 min) of the topic. This was followed by 25–30 min of didactic lecture to explain in details some of the important and clinically relevant aspects of the topic. The session concluded by answering student's queries if any, and summarisation of the topic by the students (10–15 min).

Part 3: Online session (self-assessment and application of knowledge): Students were asked to refer to the online resource material under the heading Phase III (MCQs, quizzes) to test, reinforce and apply the anatomical knowledge learnt in previous

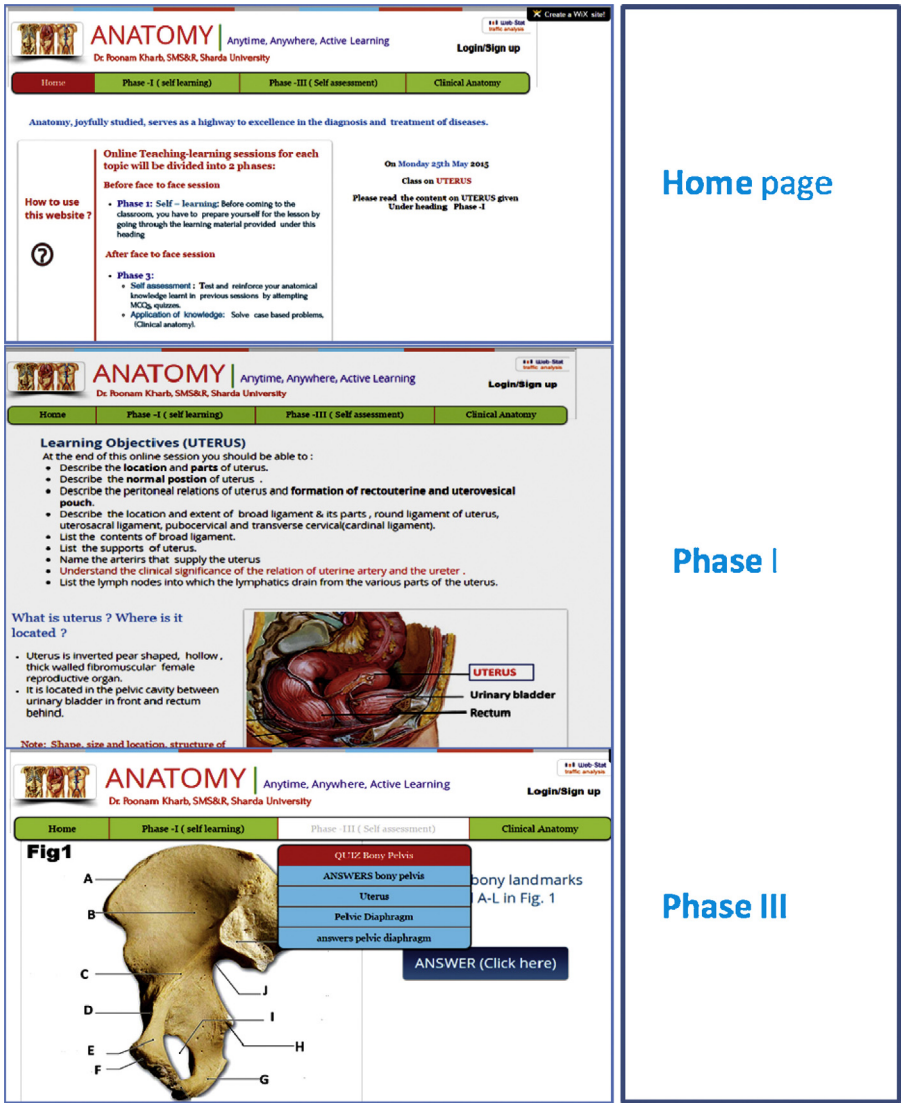

Fig. 1. Screenshot of website showing home page, page from Phase I and Phase III.