Collaborative Learning Exercise to Establish Scope and Content for a Web-based Tutorial for a Second Year Module in Dentistry

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Extended Abstract

Background
Web-based tutorials have multiple advantages over traditional face-to-face seminars. One of these benefits is facilitating a self-directed approach to learning, in which the learner is not restricted by time or classroom space (Nattestad & Attstrom, 2002). Web-based tutorials also present challenges, including time required for development, technical knowledge, and support (Schonwetter & Reynolds, 2012). However, even “sophisticated technology will not compensate for inadequate educational methods or inappropriate programme content” (Nattestad & Attstrom, 2002).

The efficacy of web-based compared to traditional tutorials is inconsistent. Some studies show web-based tutorials are equally effective compared to traditional seminars (Al-Riyami et al., 2010), while others found conventional methods to be more effective (Hobson et al., 1998). The inconsistent results may be explained by generational differences of the students or slight differences in pedagogy between computer-assisted and traditional tutorials. Kossioni et al. (2013) described several factors related to the design of e-learning tools. Of particular importance is that the pre-existing knowledge, needs and expectations of adult learners should be assessed before developing the educational material.

Previous reflection on the second year prosthodontic module “Restoration of Endodontically Treated Teeth” suggested that a web-based tutorial may be a useful tool to inspire more self-directed learning, and present clinical scenarios which illustrate the module’s core concepts. However, the exact scope and content of the web-based tutorial was not yet established. This project thus utilised a face-to-face learning session in order to test the proposed content and scope of the web-based version.

Goals
The specific aims of this study were: (1) To establish the scope and content for a web-based tutorial to compliment the second year module “Restoration of Endodontically Treated Teeth;” (2) to develop a face-to-face collaborative learning exercise (CLE) as a pilot for a web-based tutorial; (3) to examine the utility of a published prognostication system to facilitate students’ understanding of the module’s
core concepts and applying them to a clinical scenario; (4) to evaluate student perceptions of the CLE and solicit feedback for subsequent revision; and (5) to develop a draft of the web-based tutorial based on findings from the CLE.

Methodology

Structure: The collaborative learning exercise consisted of (1) a pre-session reading assignment, (2) a pre-session individual assessment, (3) self-allocation into small groups (3 students per group), (4) guided learning using a clinical scenario and exercise workbook, (5) staff discussion with the student groups, and (6) post-exercise reflection.

Pre-session Reading Assignment: A single peer-reviewed journal article which included a proposed prognostication system was provided to students in PDF format (Samet & Jotkowitz, 2009). This article was selected for its potential to serve as a bridge between the didactic lecture material for the second year course and the clinical scenarios that students will encounter in Year 3.

Pre-session Individual Assessment: The pre-session individual assessment was designed to determine compliance with the pre-session reading assignment. The assessment consisted of 5 (MCQ or T/F) questions.

Clinical Scenario and CLE Workbook: The CLE workbook described a clinical scenario, including relevant colour photographs and radiographs. A series of 7 guiding questions followed the clinical scenario in order to stimulate discussion amongst group members. Group members were then asked to establish a classification for each item described by Samet and Jotkowitz (2010). A slide of the clinical scenario was presented, and again the students were to apply the classification criteria.

Staff Discussion with Student Groups: After each group (18 total) had completed the workbook, they were to indicate this to one of 4 available staff. The staff then reviewed each question, and provided any comments or clinical experience for relevant discussion. Each staff was also to establish a classification for each item for the two clinical scenarios.

Post-exercise Reflection: Following the discussion with staff, the group members were asked to provide feedback about the CLE, as well as suggestions for improvement.

Post-exercise Draft: A draft of the web-based tutorial was created by the author using Google Sites. The scope and content mirrored that of the CLE. The site structure was designed to allow for addition of supplemental clinical scenarios. The web-based tutorial will be assessed in subsequent cycles of the module.

Results

Pre-session Individual Assessment: The mean score was 77%.

Post-exercise Reflection: All 18 student groups were able to express the perceived purpose of the CLE, and all agreed that the intended purpose had been achieved. All 18 student groups felt that the CLE was effective in illustrating application of the Samet and Jokowitz classification system. Thirteen groups felt that staff responses were consistent with their group’s assessment. The groups that felt staff answers differed from their own attributed these differences to clinical experience. They also expressed appreciation for the discussion with staff that ensued. Ten out of 10 student groups recommended that the CLE be used in subsequent terms. Groups cited clinical relevance, the
engaging nature of the CLE, and effective learning as the reasons to continue its use. Suggestions for improvement included a 3-D model of the clinical situation, or specific dimensions of the tooth in question. One group criticised the questions in the workbook as being too “vague”. Two groups recommended an increase in the number of staff available for subsequent runs of this exercise.

Reflection
The author’s discussions with the small groups revealed several critical findings related to student’s pre-existing knowledge, needs and expectations. It was previously unknown that students did not have previous instruction in endodontic diagnosis. It was also noted that students had difficulty with the concept of occlusal plane as described in the selected reading.

Although the CLE was intended as a pilot for a web-based tutorial, its success supports its continued use as either an independent activity or as part of a blended learning session, to supplement the web-based tutorial. This is consistent with recommendations that blended tutorials may aid in overcoming barriers to online learning in dental education (Faraone et al., 2012; Schonwetter & Reynolds, 2012).

In order to alleviate the problem of student-staff ratio, students enrolled in the module will be divided into two groups, to complete the CLE on separate sessions. This will double the number of staff-student ratio for each session. In addition, a closing session will be added, in order to summarise the learning and share any new discoveries resulting from the CLE.

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References


