Taibah University

Journal of Taibah University Medical Sciences

Educational Article

Shifting from traditional lecturing to interactive learning in Saudi dental schools: How important is staff development?

CrossMark

Safa Jambi, Ph.D [a], Ayman M. Khalifah, MPHEd [b] and Hani T. Fadel, Ph.D [c],[*]

[a] Department of Pediatric Dentistry and Orthodontics, Taibah University College of Dentistry, Almadinah Almunawwarah, Kingdom of Saudi Arabia
[b] Department of Dental Education, Taibah University College of Dentistry, Almadinah Almunawwarah, Kingdom of Saudi Arabia
[c] Department of Preventive Dental Sciences, Taibah University College of Dentistry, Almadinah Almunawwarah, Kingdom of Saudi Arabia

الملخص

أهداف البحث: يشكل تطوير قدرات أعضاء هيئة التدريس أحد أهم التحديات عند التخطيط لإدخال أساليب تعليمية جديدة على المناهج الدراسية. وفي هذه الدراسة إلى تسليط الضوء على آراء وردود أفعال أعضاء هيئة التدريس بكلية طب الأسنان حول ورشة عمل عن التعليم التفاعلي، والتأكد من فائدة إجراء مثل هذه الورشة قبيل تنفيذ أساليب تعليمية حديثة في تعزيز الوعي، وتحفيز المشاركين على تطبيق تلك الأساليب.

طرق البحث: تم إعداد ورشة عمل مكثفة تعنى بطرق التعليم التفاعلية لأعضاء هيئة التدريس بكلية طب الأسنان، بجامعة طيبة في المدينة المنورة، وذلك في شهر نوفمبر من العام ٢٠١٤م. وشملت الورشة التعرف على مبادئ طريقة القاعة الدراسية المعكوسة، والتعليم المعتمد على حل المشكلات. كما تخلل الورشة تمارين محاكاة لمحاضرات دراسية فعلية باستخدام هذه الأساليب التعليمية الحديثة وفي نهاية الورشة، طلب من المشاركين تعبئة استبانة خاصة تم توزيعها الكترونيا. وشملت الاستبانة أسئلة مغلقة وأخرى تسمح بالإجابات المفتوحة.

النتائج: اعتقد ٨٩٪ من أصل ٢٧ مشاركا أن ورشة العمل كانت تجربة مفيدة بشكل عام (ب > ٠٫٠١). وبالمثل فقد كانت الردود المتعلقة بأهمية، وشمولية، وسهولة الورشة إيجابية بالعموم. وأظهر المشاركون استمتاعهم بالمشاركة والتفاعل في أنشطة الورشة، إلى جانب ذلك، أصبح الحضور أكثر معرفة بالأساليب التعليمية الحديثة ومع ذلك، فقد عبّر بعض المشاركين عن مخاوفهم من إمكانية تطبيق هذه الأساليب التفاعلية على أرض الواقع، وذلك بسبب ضيق الوقت المخصص للمحاضرات الدراسية.

  * Corresponding address: Assistant Professor of Periodontology, Department of Preventive Dental Sciences, Taibah University College of Dentistry, Madinah, Kingdom of Saudi Arabia.
  E-mail: hani.fadel@yahoo.com (H.T. Fadel)

ELSEVIER | **Production and hosting by Elsevier**

الاستنتاجات: أظهر أعضاء هيئة التدريس بكلية طب الأسنان بجامعة طيبة ردود فعل إيجابية، فيما يتعلق بورشة عمل التعليم التفاعلي. كما ارتفع وعيهم بالمبادئ الخاصة بأساليب هذا النوع من التعليم. ولكن لوحظ كذلك قلق بعض المشاركين من القدرة على تطبيق تلك الأساليب على أرض الواقع.

الكلمات المفتاحية: تعليم طب الأسنان؛ التعليم المعتمد على حل المشكلات؛ المملكة العربية السعودية؛ تطوير أعضاء هيئة التدريس؛ التعليم.

Abstract

Objectives: Staff development is one of the main challenges when planning to introduce new educational methods into existing curricula. The aim of this study was to ascertain whether conducting a workshop prior to the implementation of new educational methods would help to enhance the participants' awareness of new educational strategies and motive them to use those strategies.

Methods: A comprehensive workshop was developed and delivered to staff members at the Taibah University College of Dentistry, Almadinah Almunawwarah, KSA, during November 2014. The workshop explained the concepts of the flipped classroom and problem-based learning methods and provided exercises and simulation of actual classroom sessions. A questionnaire including closed- and open-ended questions was electronically distributed to participants after the workshop.

Results: Of the 27 participants, 89% thought that the workshop was a useful experience ($p < 0.01$). Similarly, responses to questions concerning the relevance, comprehensiveness and ease of the workshop were

generally positive. The staff was now aware of these new methods and enjoyed the participation and interaction the workshop provided. However, concerns arose about the applicability of the proposed methods in real-life settings. This was mainly attributed to time constraints.

Conclusion: Dental staff at Taibah University gave positive feedback about the workshop on interactive learning. Although staff awareness of the concepts was increased, scepticism and concerns related to the applicability of interactive learning methods to real-life settings were noted.

Introduction

Dental education requires the acquisition of a certain amount of knowledge and skills. Traditional lecturing has been criticized for not being able to hold student's (or learner's) attention throughout teaching sessions and has been associated with relatively low grades and reduced attendance rates.[1] The implementation of interactive learning is well documented in dental curricula worldwide.[2] Many benefits of this type of learning strategy have been proposed, including but not limited to, the development of problem-solving skills, the promotion of life-long learning and attention to some of the disadvantages of the traditional method.[3–5]

Several challenges may arise during attempts to shift the teaching/learning method from traditional lecturing to a more interactive learning style. Challenges can be related to the organization, resources, staff and/or the students. As consistently demonstrated, staff development forms an important and integral part of any project that concerns the educational process.[6] In a study involving 56 North American Dental School deans, 88% considered faculty development to be the most important resource needed to support reforms and changes in educational strategies.[7] However, the majority of available reports concentrate on educational effectiveness and challenges from the students' perspective.[1,8] Reports related to challenges facing staff members and their perception regarding the paradigm shift from traditional to interactive learning are relatively rare.[9,10]

The administration at Taibah University in Madinah, Saudi Arabia has been directing its efforts towards implementing more interactive learning methods in the various colleges, attempting to follow an emerging trend in universities across Saudi Arabia.[11,12] The majority of courses included in the Bachelor of Dental Surgery (BDS) program are conducted in a traditional manner, with lectures being the primary mode for delivering scientific content. The Academic Affairs Vice-deanship at the Taibah University

College of Dentistry (TUCOD) has recently begun to promote the gradual incorporation of interactive learning methods, such as the flipped classroom[13] and problem-based learning (PBL),[5] into the various courses. To initiate the process, the Academic Affairs Vice-deanship designated a number of target areas to be addressed: staff development, student orientation and adequacy of the learning environment and resources. In the final years of the BDS program, two of the currently running courses are already using some form of interactive learning, specifically problem-based learning. However, no form of staff training or formal student orientation has been carried out in advance. The aim of this report is to briefly describe the perceptions of the TUCOD staff regarding a workshop on interactive learning, which was conducted as an initial step in staff development prior to the introduction of interactive learning in the dental curriculum.

Rationale

Introducing and clarifying the concept of interactive learning to staff members will promote their active participation in the development of an interactive curriculum and appropriate methods of assessment and feedback and will decrease overall resistance to the change associated with the introduction of new methods of teaching and learning.

Materials and Methods

Staff members at Taibah University College of Dentistry (TUCOD), Madinah, Saudi Arabia were invited to participate in this study. Participation was open to staff members who were serving as coordinators for courses in any level within the BDS program. Approximately 45 courses are offered by the seven departments at TUCOD, with 49 assigned course coordinators. Some staff members are listed as coordinators for more than one course.

Staff members who accepted the invitation attended a staff development workshop on interactive learning, and subsequent questionnaires were administered to gain insights into their perceptions of the subject and workshop.

The staff development workshop was conducted at the University Conference and Exhibition Centre in the first semester of the 2014–2015 academic year (in November 2014). The 5-h workshop focused on interactive learning methods, particularly on flipped classroom and PBL. The first half of the workshop started with an introductory presentation on interactive learning and problem-based learning, which provided a brief overview of the methods and their benefits. The introduction was followed by a description of the origins and logistics of the flipped classroom method. A simulation exercise of the flipped classroom was performed by providing a previously selected neutral topic and motivating the staff members to interact with each other through peer instruction.[14] The second half of the workshop focused on PBL in two parts. Part 1 consisted of a simulation of a PBL session. A case scenario was used in which all but one of the staff members played the role of active learners; the remaining staff member's role was to facilitate the session. Part 2 consisted of an exercise in which the staff members were asked to develop a case scenario for a PBL session.

Frequent breaks were scheduled within the allocated time of the workshop.

After concluding the workshop, participants were requested to provide their feedback concerning the workshop. A standard self-administered electronic questionnaire, which is used following continuing education events at TUCOD, was distributed by the TUCOD Continuous Education Unit via email. Disclosure of participant identity was optional. The questionnaire comprised 20 questions, including 18 questions using a four-point Likert scale and two open-ended questions. The questions were related to satisfaction with the registration process, the workshop venue, the workshop content, the home material including videos and handouts, the workshop facilitators, the allocated breaks and the workshop as a whole. This report presents findings only from the questions related to satisfaction with the workshop content and the workshop as a whole.

Data from the closed-ended questions are presented as frequency distributions and percentages. Chi-square was used to test for significance, and the IBM® SPSS® statistical software (version 20) was used for the analysis (IBM, Armonk, New York, USA). Data from the open-ended questions were analysed through the grouping of responses by themes.

Results

Of the 49 listed course coordinators, 33 registered and attended the workshop, and only 27 completed the feedback questionnaire, for a response rate of 82%.

Figure 1 presents the participants' responses to the closed-ended questions concerning the relevance, comprehensiveness, ease of understanding the content, and usefulness of the workshop. Participants' agreement with those items ranged between 85 and 96%, with the highest level of agreement for the relevance of the workshop and the lowest level of agreement for the ease of understanding the content. The majority of participants (89%) found the workshop to be a useful learning experience ($p < 0.05$).

Table 1 presents the primary themes found in the responses to the open-ended questions regarding the strengths and weaknesses of the workshop. Participants generally agreed that the information provided was interesting and that promoting participant interaction and working as a team were the workshop's strongest points. Participants also reported that the workshop has presented new material in the field of learning. In addition, some participants expressed concerns about the applicability of the proposed methods in actual classroom settings due to time constraints.

Discussion

This report has described the perceptions of TUCOD staff regarding a workshop on interactive learning. Responses to the open-ended questions show clearly that the concepts introduced and explained in the workshop were new to some of the participants, which indicates that the workshop had a positive role in increasing the awareness of the participants to these concepts. Despite the new learning concepts presented and the comprehensive nature of the workshop, notably, 85% of the participants found the workshop easy to understand. This result may be due to the sequence in which the information was presented. For example, a simulation of an actual PBL session was scheduled first in the workshop to give staff an opportunity to experience first-hand the actual logistics of the session; then, participants were given the opportunity to discuss the activity, and the final part of the PBL workshop was the development of a PBL case scenario. Although the workshop was conducted primarily in English, the trainers giving the workshop were bilingual and were able to communicate in the mother tongue of the participants, which could have been an important factor in helping the participants to easily understand the workshop content.

Regarding their feedback on the actual implementation of the interactive learning methods, participants were concerned about the time commitment required to implement such methods. This degree of scepticism concerning the applicability of the given strategies in real classroom settings is related to the realities of limited lecture time and the extensive scientific content to be covered in TUCOD courses. Such concerns are valid because the preparation of a PBL topic for a single session, course or curriculum requires an
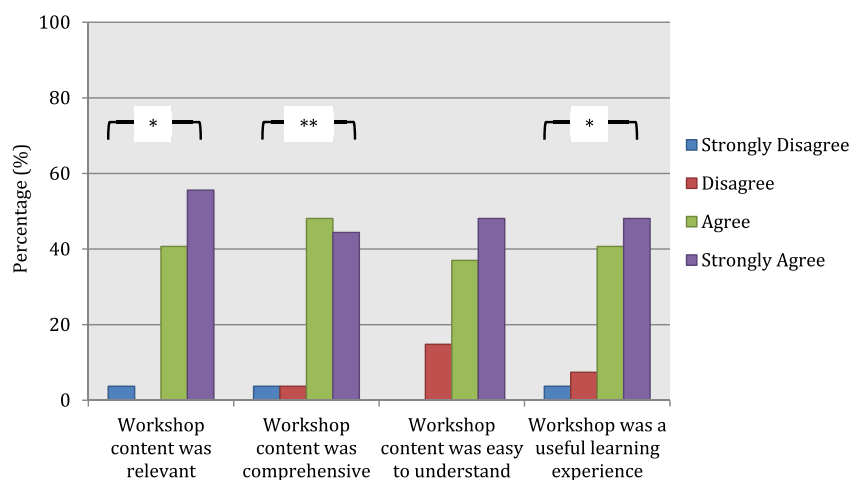

Figure 1: Frequency distribution of participant responses (n = 27) to the four-point Likert scale statements concerning the interactive learning workshop. (Statistical significance at the *0.01 and **0.001 levels using single-sample chi-square test).

Table 1: Staff perceptions concerning the interactive learning workshop according to the primary themes found in responses to the open-ended questions (N = 18).[a]

Q: What did you like *best* about the workshop? (Strong points)	Q: What did you like *least* about the workshop? (Areas of improvement)
"Introduction of new material in the field of learning"	"Timing in actual situation may not permit practicing what was given in workshop"
"The interaction between the facilitators and participants and between the participants themselves"	"More clear explanation for participant roles during activities is required"
"Promotes teamwork"	"Time and date of the activity was not optimal"
"Well organized workshop and well prepared and knowledgeable facilitators"	"Activity was somewhat lengthy"

[a] Only 18 out of 27 participating staff answered the open-ended questions.

additional time commitment and often collaboration between staff members. This need for increased time and collaboration should be taken into account when planning a shift to these learning methods.

The scepticism expressed by participants can also be attributed to a resistance to change, which is recognized as one of the most frequent challenges faced in organizations attempting to implement new strategies.[15] Such resistance may be driven by the educational background and past experiences of the staff, a fear of failure and unwillingness to make the extra effort in the absence of incentives. Several scholars have advocated the gradual introduction of changes, along with the use of clear instructional methods, as the means for overcoming this resistance.[16,17] Notably, the general positive feedback from the staff regarding the workshop may suggest a decreasing level of "resistance to change," on condition that provisions are made for any requirements related to settings and resources.

Finally, due to the general positive feedback related to the workshop content, we consider it important to orient staff (in addition to students) prior to incorporating any new learning strategy. This orientation could be in the form of a workshop to introduce and then train staff members in the relevant concepts, perhaps over a two-day period. However, some scepticism remains regarding the applicability of the methods in real classroom settings, which may have a negative impact on motivation.

Limitations

Data for this report were collected using a standard feedback questionnaire, with the majority of questions being closed-ended in nature. Although this format generated important and useful information, the authors recommend the addition of more comprehensive and workshop-specific questions in future research. The incorporation of qualitative research methods, namely in-depth one-on-one interviews and focus groups, would provide more meaningful feedback regarding the challenges faced by participants and a more focused view of the PBL and other interactive learning experiences.

Conclusion

To conclude, the perception concerning the dental staff development workshop on interactive learning was generally positive, and the workshop raised awareness regarding interactive learning methods. Concerns and scepticism related to the applicability of interactive learning methods to real classroom settings were noted.

Conflict of interest

The authors declare no conflict of interest related to this report.

Acknowledgements

References

1. Hmelo C. Problem-based learning: effects on the early acquisition of cognitive skill in medicine. **J Lear Sci 1998**; 7(2): 173−208.

2. Winning T, Townsend G. Problem-based learning in dental education: what's the evidence for and against... and is it worth the effort? **Aust Dent J 2007 Mar**; 52(1): 2−9.

3. Lim LP, Chen AY. Challenges and relevance of problem-based learning in dental education. **Eur J Dent Educ 1999 Feb**; 3(1): 20−26.

4. Wenwei P. Self-directed learning: a matched control trial. **Teach Learn Med 1989**; 1(2): 78−81.

5. Wood DF. Problem based learning. **BMJ 2003 Feb 8**; 326(7384): 328−330.

6. Gates P, Ubu N, Smithey L, Rogers J, Haden NK, Rodriguez T, et al. Faculty development for underrepresented minority dental faculty and residents. **J Dent Educ 2013 Mar**; 77(3): 276−291.

7. Kassebaum DK, Hendricson WD, Taft T, Haden NK. The dental curriculum at North American dental institutions in 2002-03: a survey of current structure, recent innovations, and planned changes. **J Dent Educ 2004 Sep**; 68(9): 914−931.

8. Kong LN, Qin B, Zhou YQ, Mou SY, Gao HM. The effectiveness of problem-based learning on development of nursing students' critical thinking: a systematic review and meta-analysis. **Int J Nurs Stud 2014 Mar**; 51(3): 458−469.

9. Das M, Mpofu DJ, Hasan MY, Stewart TS. Student perceptions of tutor skills in problem-based learning tutorials. **Med Educ 2002 Mar**; 36(3): 272−278.

10. Haghparast N, Sedghizadeh PP, Shuler CF, Ferati D, Christersson C. Evaluation of student and faculty perceptions of the PBL curriculum at two dental schools from a student perspective: a cross-sectional survey. **Eur J Dent Educ 2007 Feb**; 11(1): 14−22.

11. Al Sheikh MH. Educational environment measurement, how is it affected by educational strategy in a Saudi medical school? A multivariate analysis. **J Taibah Univ Med Sci 2014**; 9(2): 115−122.

12. Telmesani A, Zaini RG, Ghazi HO. Medical education in Saudi Arabia: a review of recent developments and future challenges. **East Mediterr Health J 2011 Aug**; 17(8): 703−707.

13. Bergmann J, Sams A. *Flip your classroom*. Eugene, Oregon. 1st ed. Washington, DC: International Society for Technology in Education (ISTE); 2012.

14. Mazur E. *Peer instruction: a user's manual*. Upper Saddle River, NJ: Prentice-Hall; 1997.

15. Bloom SW. Structure and ideology in medical education: an analysis of resistance to change. **J Health Soc Behav 1988 Dec**; 29(4): 294−306.

16. Zilbovicius C, de Araujo ME, Botazzo C, Frias AC, Junqueira SR, Junqueira CR. A paradigm shift in predoctoral dental curricula in Brazil: evaluating the process of change. **J Dent Educ 2011 Apr**; 75(4): 557−564.

17. Spallek H, O'Donnell JA, Yoo YI. Preparing faculty members for significant curricular revisions in a school of dental medicine. **J Dent Educ 2010 Mar**; 74(3): 275−288.