



King Saud University
The Saudi Dental Journal

www.ksu.edu.sa
www.sciencedirect.com



ORIGINAL ARTICLE

Dental students' perceptions of an online learning

Moshabab A. Asiry

Division of Orthodontics, Department of Pediatric Dentistry and Orthodontics, College of Dentistry, King Saud University, Building No 3500, Riyadh 12372-7051, Saudi Arabia

Received 31 October 2016; revised 5 February 2017; accepted 26 March 2017

KEYWORDS

Dental student;
Education;
E-learning;
Online learning

Abstract *Objectives:* To identify the readiness of students for online learning, to investigate their preference and perception, and to measure the quality of online tutorials.

Materials and methods: A 14-statement questionnaire was administered to fourth year undergraduate dental students in male campus at King Saud University who completed preclinical orthodontic course. The students responded to each statement by using Likert scale.

Results: The results reveal a high agreement of students (27.8–31.5% agree and 38.9–50% strongly agree) on a possession of necessary computer skills and access to internet. 59.2% and 64.8% of the students replied that online flash lectures and procedural videos were helpful to their learning, respectively. With respect to students' learning preferences, few students preferred online flash lectures (31.5%) and procedural videos (17.1%). Most students (38.9% agree and 31.5% strongly agree) preferred a combination of traditional teaching methods and online learning.

Conclusion: Overall, student attitudes were positive regarding online learning. The students viewed online learning helpful as a supplement to their learning rather than a replacement for traditional teaching methods.

© 2017 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Online learning saves time, reduces costs, offers various multi-media matching different learning styles, allows students to learn anywhere at any time outside classroom, overcomes shortage of faculty, and has the potential to shift the learning process from passive teacher-centered learning to active

learner-centered learning (Pahinis et al., 2007; Ruiz et al., 2006; Ramlogan et al., 2014). Therefore, most of higher educational institutions considered online learning as an important part of their educational strategy (Allen and Seaman, 2011).

Parsazadeh et al. (2013) considered that the success factors in using online learning is defined in terms of ease of access for students and teachers, student's satisfaction and the provision of a variety of online tools. Teachers expertise in online teaching, students readiness to move online, and quality of online contents and design are also defined as online learning success factors (Oliver, 2001). Furthermore, the political, cultural and economic factors influenced the success of online learning within the education systems (Alshare et al., 2003). More research is required to uncover and understand the success

E-mail address: masiry@gmail.com

Peer review under responsibility of King Saud University.



Production and hosting by Elsevier

<http://dx.doi.org/10.1016/j.sdentj.2017.03.005>

1013-9052 © 2017 The Authors. Production and hosting by Elsevier B.V. on behalf of King Saud University.

This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Asiry, M.A. Dental students' perceptions of an online learning. The Saudi Dental Journal (2017), <http://dx.doi.org/10.1016/j.sdentj.2017.03.005>

factors that are critical to implement successful online learning (FitzPatrick, 2012).

Students' appraisal of the tools and value of online learning and evaluation of their attitudes are important factors that are essential to judge the success of any online learning system (Pahinis et al., 2007). The learning environment within college of dentistry at King Saud University has not yet adopted a well-organized online learning structure and tools. Therefore, this study was conducted after the implementation of first online learning attempt within the preclinical orthodontic course to identify the readiness of students to move online, to investigate their preference and perception, and to measure the quality of online tutorials.

2. Methods

During the fourth year of undergraduate dental study at King Saud University, the preclinical orthodontic course is given through an academic year over two semesters. A combination of didactic and practical sessions is undertaken on a weekly basis throughout a period of 30 weeks. The lectures cover a wide range of orthodontic topics, while, the practical sessions expose the students to practical management of different orthodontic appliances. During the academic year 2014–2015, the course director implemented online flash lectures in addition to procedural videos illustrating laboratory steps in addition to traditional face to face lectures and live laboratory demonstrations. Online tutorial links were provided for student through Twitter. Further, Twitter and Google Moderator were utilized as a source of communication to enhance the interaction between students and teachers and to provide a constant and immediate feedback. At the end of the academic year, a 14-statement questionnaire was administered to fourth year undergraduate dental students in male campus ($n = 70$) to assess; students' computer skills and accessibility to computer and internet (statement 1–3), the usefulness of online learning (statement 4–7), quality of online tools and tutorials (statement 8–10), and students' learning preferences (statement 11–14). In response to each statement, the following scoring for Likert scale was used: strongly agree (5), agree (4), uncertain (3), disagree (2), and strongly disagree (1). The questionnaire link was sent to each student via email and the results were collected anonymously on SurveyMonkey (www.surveymonkey.com). Descriptive statistics of students' response to different statements were assessed using SPSS program for Windows (version 16 SPSS Inc., Chicago, IL, USA).

3. Results

Among the 70 students, 54 students completed the questionnaire. This represents a response rate of 77.14%. The results (Table 1) shows that most students have computer and daily internet access (27.8% agree and 50% strongly agree), agreed that they know how to open, modify, and upload online documents (31.5% agree and 38.9% strongly agree), and checked the internet daily or weekly for course announcements, and online tutorials (27.8% agree and 38.9% strongly agree). Overall, the frequency distribution shifted to the right indicating a high frequency of agreement on the availability of students' necessary computer skills and access to computer and internet. 59.2% and 64.8% of the students replied that online flash

lectures and procedural videos were helpful to their learning, respectively. In addition, 77.7% and 73.9% of the students agreed that Twitter and Google Moderator were helpful to their learning and communication with teacher and other students, respectively.

81.4% of students felt comfortable exploring online tutorials while 72% reported that they found online tutorial links and uploaded them easily on Twitter. However, most students felt that the quality of online tutorials needs further improvement (51.9% agree and 9.3% strongly agree).

With respect to students' learning preferences, few students preferred online flash lectures (31.5%) and procedural videos (17.1%) over traditional face to face lectures and laboratory live demonstrations, respectively. Fewer students (11.1% agree and 3.7% strongly agree) agreed to replace traditional lectures and live demonstrations by online tutorials. While most students (38.9% agree and 31.5% strongly agree) preferred a combination of these teaching methods.

4. Discussion

The ease of access and use of online tools are extremely important for the successful implementation of online learning (Alhomod and Shafi, 2013). Further, the students should have the necessary technical skills and good quality of internet services to utilize efficiently an online contents (Soong et al., 2001). Furthermore, the effective online learning requires the suitable hardware and software in addition to easy content navigation tools (FitzPatrick, 2012). The results of the present study showed that most of students had the necessary computer skills and access the internet. Majority of students also reported that exploring, finding, and uploading online tutorials were easy and comfortable. There are several resources that may be useful when considering a way to deliver online contents such as learning management systems (LMS), virtual classrooms, email, and Web 2.0 or social networking. Web 2.0 or social networking (mainly Twitter and Google Moderator) has been chosen to deliver the online contents in the first online learning attempt within the preclinical orthodontic course at King Saud University. Social networking apps available for all mobile devices, tablets and laptops, enable the teacher to reach his students anywhere at any time inside and outside classroom. Twitter was utilized in this study to deliver online tutorials links and course announcements, and to provoke a reaction and initiate discussion among students. Google Moderator was also used to allow the course director to create a series about any topic and open it up for discussion. Students can visit the site and submit a question, idea, or vote which provides immediate feedback to the course director and encourage further discussion outside the classroom. In the current study, most of the students found Twitter (77.7%) and Google Moderator (73.9%) helpful tools for online tutorials delivery and for communication with teacher and other students.

Overall positive responses were reported when the students were asked to assess the usefulness of online tutorials in their learning. However, few students preferred online flash lectures (31.5%) and procedural videos (17.1%) over the traditional teaching methods, and fewer students (11.1% agree and 3.7% strongly agree) agreed to replace traditional lectures and live demonstrations by online tutorials. While most

Table 1 Student response to the questionnaire.

Frequency distribution (%) and response frequency

	Strongly disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly agree (5)	Rating average	Response count
1. I have a computer and daily Internet access	8 14.8%	2 3.7%	2 3.7%	15 27.8%	27 50%	3.94	54
2. I know how to open, modify, and upload online documents	7 13%	4 7.4%	5 9.3%	17 31.5%	21 38.9%	3.76	54
3. I access the internet daily or weekly to check course announcements and online tutorials	6 11.1%	3 5.6%	9 16.7%	15 27.8%	21 38.9%	3.78	54
4. Online flash lectures were helpful to my learning	6 11.1%	5 9.3%	11 20.4%	18 33.3%	14 25.9%	3.54	54
5. Procedural videos were helpful to my learning	6 11.1%	4 7.4%	9 16.7%	20 37%	15 27.8%	3.63	54
6. Twitter was helpful to my learning	7 13%	3 5.6%	2 3.7%	20 37%	22 40.7%	3.87	54
7. Google Moderator was helpful in communication and interaction with teachers and other students	6 11.1%	4 7.4%	4 7.4%	21 38.9%	19 35%	3.79	54
8. I feel comfortable exploring online tutorials	6 14.8%	2 3.7%	2 3.7%	20 37%	24 44.4%	4	54
9. I can find online tutorial links and upload them easily on Twitter	7 13%	3 5.6%	5 9.3%	19 35%	20 37%	3.77	54
10. Online tutorials need further improvement to support my learning	3 5.6%	8 14.8%	10 18.5%	28 51.9%	5 9.3%	3.44	54
11. Online flash lectures were more useful than traditional lectures	7 13%	10 18.5%	20 37%	12 22.2%	5 9.3%	2.96	54
12. Procedural videos were more useful than live demonstrations during lab sessions	7 13%	16 29.6%	22 40.7%	5 9.3%	4 7.4%	2.69	54
13. Online tutorials should replace traditional lectures and live demonstrations	11 20.4%	18 33.3%	17 31.5%	6 11.1%	2 3.7%	2.44	54
14. I prefer a combination of traditional teaching and online tutorials	9 16.7%	3 5.6%	4 7.4%	21 38.9%	17 31.5%	3.63	54

students (38.9% agree and 31.5% strongly agree) preferred a combination of these teaching methods. Several factors can influence student learning preferences including: gender, age, academic achievement, brain processing, culture and creative thinking (Nuzhat et al., 2011). Many studies evaluated online learning in orthodontics and concluded 4 different results: a significant advantage for online learning over traditional methods (Smith et al., 2012), no significant difference between the two methods (Aly et al., 2004; Clark et al., 1997), a significant advantage for traditional methods (Hobson et al., 1998; Rosenberg et al., 2010), or online learning should be considered as a supplement to learning rather than a replacement for traditional teaching methods (Rosenberg et al., 2010; Linjawi et al., 2009). These variations could be explained by the differences in research methods, quality of online contents, learning environment, teachers' expertise in online teaching, or students' attitude. In addition, the political, cultural and economic factors can influence students perception and attitude (Alshare et al., 2003).

Regarding the quality of online tutorials, most of students (61.2%) were not satisfied with the quality of flash lectures and procedural videos and they agreed that further improvement was required. High quality of online tutorials is an important success factor for effective online learning system. This quality may be influenced by students' learning style preferences, multimedia design, quality of image and audio, internet speed, or delivery method. Further, online tutorials should match intended learning objectives and facilitate achieving

student learning goals (Peslak, 2003). Therefore, all of these factors should be considered carefully in order to produce efficient online tutorials and consequently to gain students' satisfaction. Fitzpatrick (2012, p 794) concluded that the key success factors need to be addressed and understood before evaluate the quality of online education (FitzPatrick, 2012). In addition, He outlined the critical factors for successful online learning in relation to five domains: (1) technology: availability, connectivity, and reliability; (2) human: pedagogy, attitude, and communication; (3) design: content, interface, and framework; (4) support: feedback, resources, and training; and (5) evaluation: assessment, usability, and quality.

The current study has two limitations. First, this study investigated only the subjective outcome measures which limited to reflect students' perception and satisfaction with online learning. Second, the present study was conducted in male campus, hence no female students were included in the study sample. Therefore, more studies are needed to investigate success of online learning in relation to knowledge gain, student's performance, teacher attitude, technological-related factors, and gender differences.

5. Conclusion

Overall positive responses were reported by the students regarding the acceptability and usability of online learning. The students viewed online learning helpful as a supplement

to their learning rather than a replacement for traditional teaching methods. Further studies are recommended to evaluate both subjective and objective outcome measures of online learning with consideration of other factors that should be recognized in order to implement a successful online learning model.

Conflict of interest

We have no conflict of interest to declare.

References

- Alhomod, Sami, Shafi, Mohd Mudasir, 2013. Success factors of E-learning projects: a technical perspective. *Turk. Online J. Educ. Technol.* 12, 247–253.
- Allen, E., Seaman, J., 2011. Going the Distance Online Education in the United States Sloan consortium. http://sloanconsortium.org/publications/survey/going_distance_2011.
- Alshare, K., Al-Dwairi, M., Akour, I., 2003. Student instructor perception of computer technologies in developing countries: the case of Jordan. *J. Comp. Inform. Syst.* 43, 115–123.
- Aly, M., Elen, J., Willems, G., 2004. Instructional multimedia program versus standard lecture: a comparison of two methods for teaching the undergraduate orthodontic curriculum. *Eur. J. Dent. Educ.* 8, 43–46.
- Clark, R., Weekrakone, S., Rock, W., 1997. A hypertext tutorial for teaching cephalometrics. *Br. J. Orthod.* 24, 325–328.
- FitzPatrick, Thaddeus, 2012. Key Success Factors of eLearning in education: a professional development model to evaluate and support eLearning. *US-China Educ. Rev.* 9, 789–795.
- Hobson, R.S., Carter, N.E., Hall, F.M., Atkins, M.J., 1998. A study into the effectiveness of a text-based computer-assisted learning program in comparison with seminar teaching of orthodontics. *Eur. J. Dent. Educ.* 2, 154–159.
- Linjawi, A.L., Hamdan, A.M., Perryer, D.G., Walmsley, A.D., Hill, K.B., 2009. Students' attitudes towards an on-line orthodontic learning resource. *Eur. J. Dent. Educ.* 13, 87–92.
- Nuzhat, A., Salem, R.O., Quadri, M.S.A., Al-Hamdan, N., 2011. Learning style preferences of medical students: a single-institute experience from Saudi Arabia. *Int. J. Med. Educ.* 2, 70–73.
- Oliver, R., 2001. Assuring the quality of online learning in Australian higher education. In: Wallace, A.E.A.D.N.M. (Ed.), *Moving Online II Conference*. Southern Cross University, Lismore, pp. 222–231.
- Pahinis, Kimon, Stokes, Christopher W., Walsh, Trevor F., Cannavina, Giuseppe, 2007. Evaluating a blended-learning course taught to different groups of learners in a dental school. *J. Dent. Educ.* 71, 269–278.
- Parsazadeh, N., Zainuddin, N.M.M., Ali, R., Hematian, A., 2013. A review on the success factors of e-learning. In: *The Second International Conference on e-Technologies and Networks for Development*, pp. 42–49.
- Peslak, A.R., 2003. Teaching computer information systems via distance education: a researched and personal perspective. *Inform. Syst. Educ. J.* 1, 1–18.
- Ramlogan, S., Raman, V., Sweet, J.A., 2014. comparison of two forms of teaching instruction: video vs. live lecture for education in clinical periodontology. *Eur. J. Dent. Educ.* 18, 31–38.
- Rosenberg, H., Posluns, J., Tenenbaum, H.C., Tompson, B., Locker, D., 2010. Evaluation of computer-aided learning in orthodontics. *Am. J. Orthodont. Dentofac. Orthopedics* 138, 410–419.
- Ruiz, J.G., Mintzer, M.J., Leipzig, R.M., 2006. The impact of e-learning in medical education. *Acad. Med.* 81, 207.
- Smith, W., Rafeek, R., Marchan, S., Paryag, A., 2012. The use of video-clips as a teaching aide. *Eur. J. Dent. Educ.* 16, 91–96.
- Soong, B.M., Chan, H.C., Chua, B.C., Loh, K.F., 2001. Critical success factors for on-line course resources. *Comp. Educ.* (36) 101–120.