



Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

ScienceDirect

journal homepage: [www.e-jds.com](http://www.e-jds.com)



Original Article

# Fostering globally competent dental students through virtual team-working, problem-solving and person-centred multi-disciplinary care planning

Yuna Kanamori <sup>a</sup>, Naoko Seki <sup>b,c\*</sup>, Richard Foxton <sup>c,d</sup>,  
Janelle Moross <sup>c</sup>, Yuriko Komagamine <sup>e</sup>, Koji Mizutani <sup>f</sup>,  
Keiichi Hosaka <sup>g</sup>, Manabu Kanazawa <sup>h</sup>, Takashi Hatayama <sup>i</sup>,  
Wataru Komada <sup>j</sup>, Ikuo Yonemitsu <sup>k</sup>, Masako Akiyama <sup>l</sup>,  
Paramaporn Chiewpattanakul Kaewmanee <sup>m</sup>,  
Nathawut Kaewsutha <sup>n</sup>, Hiroshi Nitta <sup>o</sup>, Noriyuki Wakabayashi <sup>p</sup>,  
Ikuko Morio <sup>b,c</sup>

<sup>a</sup> Oral Diagnosis and General Dentistry, Tokyo Medical and Dental University Hospital, Tokyo, Japan

<sup>b</sup> Dental Education Development, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>c</sup> Institute of Global Affairs, Tokyo Medical and Dental University, Tokyo, Japan

<sup>d</sup> Centre of Dental Education, Faculty of Dentistry, Oral & Craniofacial Sciences, King's College London, London, UK

<sup>e</sup> Gerodontology and Oral Rehabilitation, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>f</sup> Periodontology, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>g</sup> Regenerative Dental Medicine, Tokushima University Graduate School of Biomedical Sciences, Tokushima, Japan

<sup>h</sup> Digital Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>i</sup> Cariology and Operative Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>j</sup> Masticatory Function and Health Science, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>k</sup> Orthodontic Science, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>l</sup> Research Administration Division, Tokyo Medical and Dental University, Tokyo, Japan

<sup>m</sup> Department of Stomatology, Faculty of Dentistry, Srinakharinwirot University, Bangkok, Thailand

\* Corresponding author. Institute of Global Affairs, Tokyo Medical and Dental University, 1-5-45 Yushima, Bunkyo-ku, 113-8549, Tokyo, Japan.  
E-mail address: [nseki.edev@tmd.ac.jp](mailto:nseki.edev@tmd.ac.jp) (N. Seki).

<sup>n</sup> Department of Pedodontics and Preventive Dentistry, Faculty of Dentistry, Srinakharinwirot University, Bangkok, Thailand

<sup>o</sup> General Dentistry, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

<sup>p</sup> Advanced Prosthodontics, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University, Tokyo, Japan

Received 7 June 2022; Final revision received 6 July 2022

Available online 20 July 2022

## KEYWORDS

Cultural competency;  
Dental education;  
International  
educational  
exchange;  
Problem solving;  
Surveys and  
questionnaire

**Abstract** *Background/purpose*: Development and acquisition of communication, logical thinking, team-building, critical appraisal, critical thinking and person-centred multi-disciplinary care planning must be considered as skill sets and global core competencies for a dental professional. Therefore, an international online study course to foster undergraduate dental students' skill sets in these areas was established and this study aimed to report the perceptions of participants.

*Materials and methods*: An international online course consisting of three levels pertaining to the school year was delivered to dental undergraduates of Japan and Thailand from September to December in 2021. An online questionnaire survey was conducted to obtain feedback from the participants and assess the implementation of the course.

*Results*: In total, 64 responses were obtained from students who participated in all the assigned online sessions and completed the questionnaire (a response rate of 88%). More than 95% of students from each level felt that the programme increased their motivation to study clinical dentistry, and was beneficial for their future and made them appreciate the importance of participating in international exchange. The ratio of favourable respondents was more than 90% with a 95% confidence interval.

*Conclusion*: Fostering globally competent dental students is important and the acquisition of necessary skill sets could be enhanced through international virtual team-working, problem-solving and person-centred multi-disciplinary care planning activities. These are beneficial for undergraduate dental student training so that they graduate with a broader global perspective and an appreciation of the importance of delivering person-centred culturally sensitive dental care.

© 2022 Association for Dental Sciences of the Republic of China. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## Introduction

International collaboration, exchange and networking are great strategies for meeting the ever-changing global needs and their introduction into an undergraduate dental curriculum would broaden student skill sets and prepare them as professionals for the increasing globalization of dentistry.<sup>1</sup> Since the start of the COVID-19 pandemic, delivery of face to face lectures and tutorials has, in many countries, moved online and one of the impacts on dental education in Asian countries has been the need for dental educators to learn new IT skills.<sup>2</sup> Moreover, restrictions placed on international travel encouraged higher education institutions around the world to create online opportunities for students to engage with their compatriots in different countries without the need for them to leave their homes and has been termed "internationalization at home" whereby activities are provided "on-campus".<sup>3,4</sup> This mode of delivery does not necessarily negatively impact student experience as recent research has shown that in the area of medical and dental education, "on-campus" provision

could achieve internationalization in a student's home when access was provided to an online programme designed to encourage international peer networking and collaboration.<sup>4</sup> Moreover, this online programme was reported to be a more equitable and socially acceptable way of enabling students to participate in international exchange and was also found to improve the cultural competency of both medical and dental pre-clinical students.<sup>4</sup>

Global networking and cultural competency are indispensable skill sets for healthcare professionals to deliver person-centred culturally sensitive care.<sup>5,6</sup> Respecting a patient's culture and achieving a high level of cultural sensitivity may positively influence patient adherence to treatment and ultimately their health outcome and has been referred to as patient-centred culturally sensitive health care.<sup>6</sup> More recently, the concept of person-centred care has been proposed and takes into account not only the patient rights but also those of the care team looking after patients and the importance of the patient–staff relationship.<sup>7</sup> While it is now accepted that dental students must be taught culturally sensitive care, there is little consensus on how this

can be achieved.<sup>5,10</sup> Moreover, it has been pointed out that cultural competency should be studied not only in the clinical years of an undergraduate dental programme but also across the curriculum.<sup>8,9</sup>

In order to deliver culturally sensitive dental care, dental students should be taught multiple skill sets such as communication skills, being non-judgmental and open to whatever patients might want to talk about.<sup>10</sup> Linked to this is the fact that students need to develop skills that enable them to separate observations they might make during a patient encounter and learn to continually question the interpretation of these findings.<sup>10</sup> Therefore, employing pedagogical methods to nurture such skills via international online opportunities might be a promising strategy. Another particular pedagogical practice that might help students learn to question the interpretation of observations is the use of a problem-solving technique. Using problem-solving skills and collaborating in real-time on a clinical case might help dental students residing in different countries, appreciate the need to acquire and develop communication, logical thinking, virtual team-building, critical appraisal, and critical thinking abilities and to understand the importance of adopting a person-centred approach to plan multi-disciplinary care. Be it in a clinical or research field, such skill sets should be considered global core competencies for dental professionals who wish to develop a global mind-set.

However, during undergraduate training, opportunities to plan a patient's care with these aspects in mind are sometimes scarce, particularly those which might require a multi-disciplinary approach. Therefore, there is a need to increase the exposure of undergraduates to multi-disciplinary clinical cases in such a way that they are encouraged to adopt a critical perspective and at the same time expose them to cross-cultural competency and global team-working.

Thus, Tokyo Medical and Dental University (TMDU) developed an online international study programme, which aims to expose undergraduate dental students to cultural exchange, team-building, problem-solving, logical and critical thinking skills training. Moreover, opportunities are provided for real-time international collaboration on multi-disciplinary dental care planning, which takes into consideration the patient's culture thereby helping the students develop person-centred culturally sensitive care planning skills with a "global mind-set".<sup>11</sup>

The purpose of this article is therefore to report the perceptions of undergraduate dental students from one Japanese dental school and one Thai dental school who attended the online study sessions, which were developed to foster soft skills for global competency and introduce the basics of person-centred culturally sensitive care planning.

## Materials and methods

This study was approved by the Dental Research Ethics Committee of TMDU (No. D2021-049).

## Study population

Undergraduate dental students from dental schools in Japan and Thailand who registered for the online sessions

were invited to complete questionnaires. The answers of those who joined all the assigned online sessions were considered for this study. A maximum of 73 responses could be obtained. Participation was voluntary and consent was obtained via the online questionnaire.

## Online study programme (Fig. 1)

The online study programme<sup>11</sup> was held from September to December, 2021, and consisted of 3 levels: Level 1 (L1) was aimed at pre-clinical undergraduate dental students at the beginning of their training and provided cultural exchange opportunities. During the first exchange, students introduced their cultures, explored cultural norms and shared practices that were acceptable in their countries. In preparation for a second exchange, on-demand coursework on dental terminology and knowledge acquisition was provided beforehand. During the second exchange, the students were introduced to a dental topic through attendance at an interactive lecture and then explored the topic in depth by engaging in team-building, group discussion and problem-solving exercises using methods including the KJ method for groups to generate an idea and reach a consensus.<sup>12</sup>

Level 2 (L2) was aimed at undergraduate dental students in the latter stage of their pre-clinical training or initial phase of clinical training and provided more learning opportunities and exchange on clinically-related topics. *Interactive lectures* on the relationship between periodontology and systemic diseases, information gathering and essential writing techniques, were delivered and then the students were divided into smaller groups to collaborate in real-time using Google Docs on a related scientific writing activity requiring the use of literature searching, critical appraisal and critical thinking skills. Each group was then encouraged to work together to write a short article on a topic related to periodontology and systemic diseases in order to practice and reinforce these skills.

In level 3 (L3), undergraduate dental students who had begun clinical training, participated in online group discussions on multi-disciplinary treatment planning with dental professionals in different countries. Both the students, dental professionals and faculty staff then engaged in real-time discussion and planning of a multi-disciplinary clinical-case to formulate possible care plans, which took into consideration the patient's culture. Knowledge sharing between the dental professionals and dental students could take place when links were made between possible stages

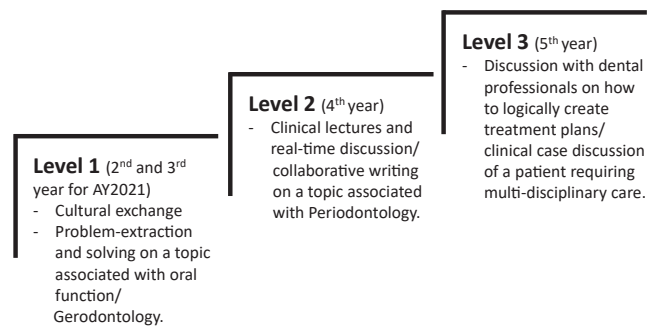


Figure 1 Course outline.

of treatment enabling understanding on how a multi-disciplinary care plan might be structured. All online live sessions were provided via a web conferencing system (Zoom Video Communications, Inc (ZM; San Jose, CL, USA)).

Students were asked to join the level, which corresponded to their school year, and the course was planned to take place throughout the undergraduate programme. Starting the course at level 1 was recommended not only because of the knowledge level of the steps but also for students to network with their colleagues throughout the undergraduate years and beyond. However, as this year was the first year of the programme, undergraduate students in the higher years were able to join the levels aimed at the lower years.

### Questionnaire to evaluate the programme

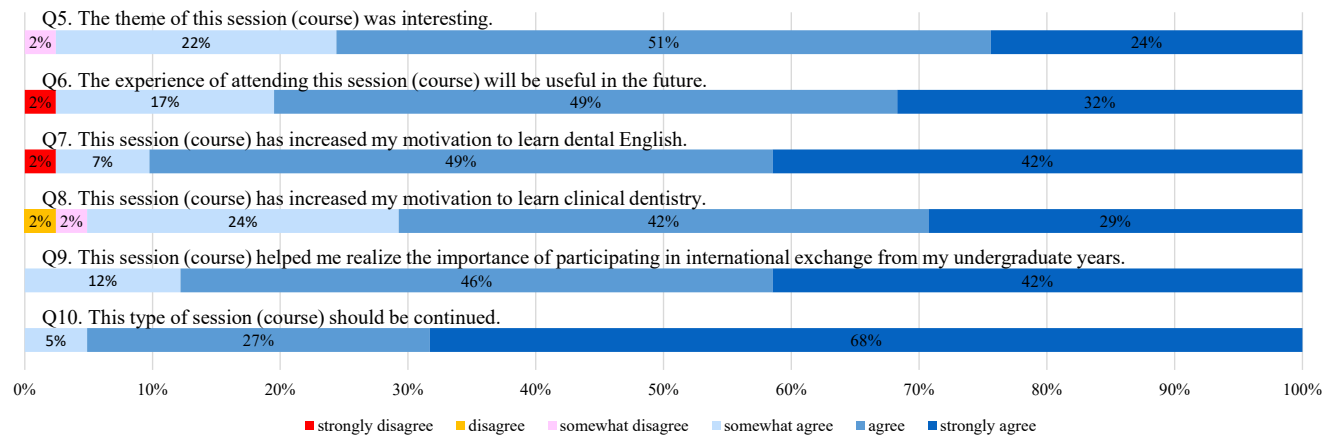
Self-administered questionnaires using Microsoft Forms (Microsoft 365), were used to capture the students' perceptions of each level of the programme and they were e-mailed a link at the conclusion of each level. The questionnaires were distributed in October and December 2021 and January 2022.

Questions 1 to 3 asked the students what they thought about the "level", "duration" and "number" of the sessions. Question 4 asked the students whether they had attended a similar course before or not. Questions 5 to 10 asked the students what they thought about the themes discussed, usefulness of the course, its impact on their motivation for learning English and clinical dentistry, their realization of the importance in participating in international exchange and whether the course should be continued in the future. For these questions, a 6-point Likert scale was used (strongly disagree, disagree, somewhat disagree, somewhat agree, agree, strongly agree). For question 11, the students were encouraged to write free comments.

### Statistical analysis

The data were expressed as percentages of each question by levels. For Q5-10, we summed the answers of students and divided them into favourable (somewhat agree, agree and strongly agree) or unfavourable (strongly disagree, disagree and somewhat disagree) answers, and the favourable rates were presented as proportions with 95%

#### The first session of level 1



#### The second session of level 1

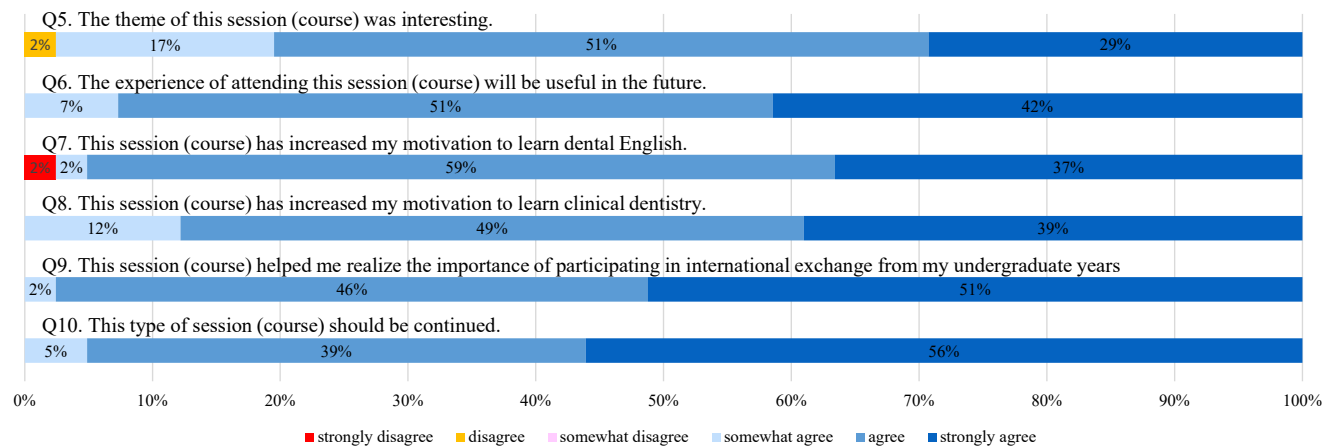


Figure 2 Questionnaire survey results of the L1.

confidence intervals (Clopper-Pearson methods). The statistical analyses were conducted using IBM SPSS Statistics for Windows (version 26.0. IBM Corp., Armonk, NY, USA).

**Results**

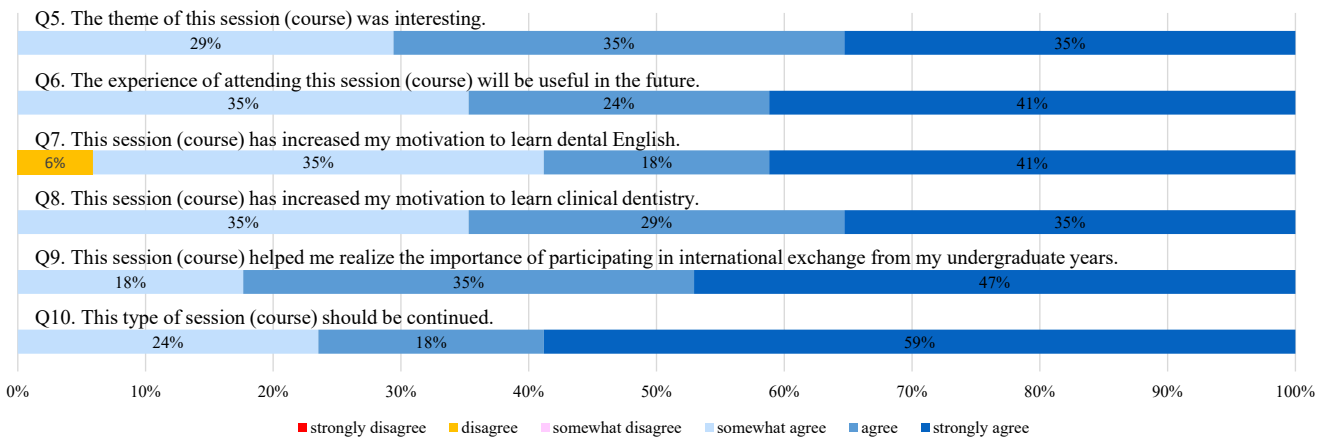
Altogether, 64 responses were obtained with a response rate of 88%. In L1, 49 students registered and 11 Japanese and 30 Thai students completed all the assigned online sessions and questionnaires, giving response rates of 92% and 81% respectively. 17 students registered for L2 (5 Japanese and 12 Thai) and all of them joined the assigned online sessions and answered the questionnaire giving a response rate of 100%. Of the 7 who registered for L3 (4 Japanese and 3 Thai), 4 Japanese and 2 Thai students completed both the online session and questionnaire, giving response rates of 100% and 67%, respectively. Some students took more than one level in 2021, and so they answered the questionnaire for each level they attended. More than 90% of the responses in each level were positive for questions 5–10 (Figs. 2 and 3), and over half of the respondents felt that the course “level”, “duration” and “number” were appropriate and gave favourable answers (Table 1). The results of the interval estimation for the

ratio of favourable respondents at each question were 0.981 (95%C.I., 0.933–0.998) (Q5), 0.990 (95%C.I., 0.948–1.000) (Q6), 0.971 (95%C.I., 0.919–0.994) (Q7), 0.981 (95%C.I., 0.933–0.998) (Q8), 0.990 (95%C.I., 0.948–1.000) (Q9, 10) respectively. Their free comments are shown in Table 2.

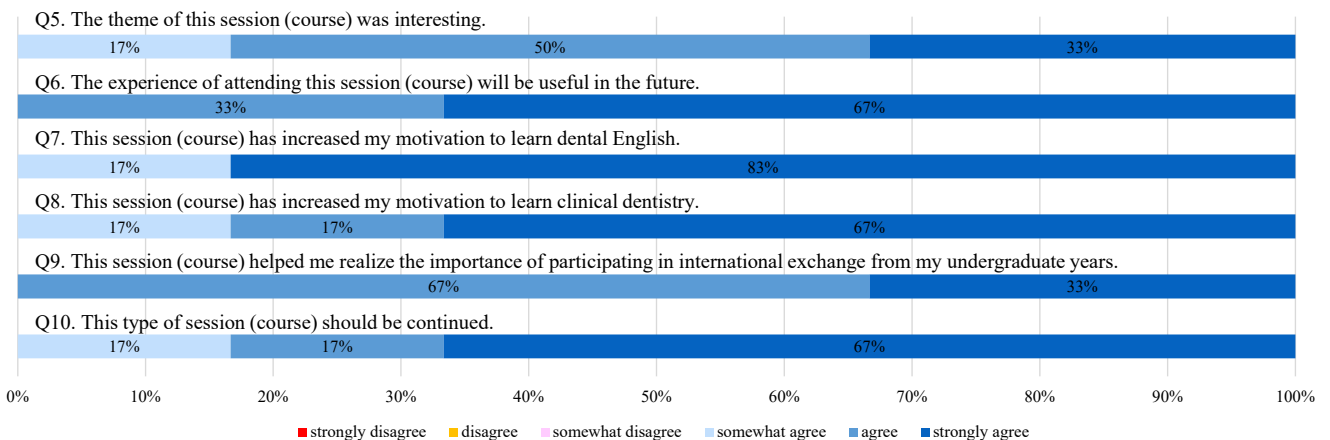
**Discussion**

The delivery of dental education has been heavily impacted by the COVID-19 pandemic and stimulated educators in dental schools to think creatively about how teaching is delivered. As a result, many institutions throughout the world have been faced with the challenge of both students and staff needing to rapidly adapt to online learning and therefore sharing these experiences among the dental community is worthwhile.<sup>13</sup> This article reports on the experiences of students who participated in an online education programme through the use of online questionnaires to evaluate the overall satisfaction and effectiveness of this new programme. In this study, more than 95% of the participating students, felt that the programmes were beneficial and realized the importance of participating in international exchange during their undergraduate training

**Level 2**



**Level 3**



**Figure 3** Questionnaire survey results of the L2 and L3.



**Table 1** Questionnaire survey results of Q1-4 from all the levels.

Level 1:	1 <sup>st</sup> session (%)	2 <sup>nd</sup> session (%)
Q1. The level of this session (course) was		
too easy	0	0
appropriate	100	95
too difficult	0	5
Q2. Duration of each session was		
too short	24	17
appropriate	76	83
too long	0	0
Q3. The number of sessions was		
too few	10	15
appropriate	88	83
too many	2	2
Q4. Have you ever attended lectures or seminars with similar content as this session (course)?		
Yes	34	29
No	66	71
Level 2:		(%)
Q1. The level of this session (course) was		
too easy		0
appropriate		94
too difficult		6
Q2. Duration of each session was		
too short		41
appropriate		53
too long		6
Q3. The number of sessions was		
too few		18
appropriate		82
too many		0
Q4. Have you ever attended lectures or seminars with similar content as this session (course)?		
Yes		18
No		82
Level 3:		(%)
Q1. The level of this session (course) was		
too easy		0
appropriate		67
too difficult		33
Q2. Duration of each session was		
too short		0
appropriate		100
too long		0
Q3. The number of sessions was		
too few		0
appropriate		100
too many		0
Q4. Have you ever attended lectures or seminars with similar content as this session (course)?		
yes		17
no		83

(Figs. 2 and 3). Starting the course at level 1 was recommended not only to match knowledge requirements, but also to network/build relationships with colleagues throughout the undergraduate years, if they then take

Levels 2 and 3, which is an important concept and possible with online connectivity. Dental education has always been influenced by technological advances. These have also provided global networking opportunities, which are sometimes difficult to become accustomed to initially, but have been reported to deliver very beneficial outcomes.<sup>1,14–16</sup> While traditional teaching methods cannot be replaced in their entirety by virtual teaching, online platforms can be genuinely worthwhile for providing an arena to facilitate global dental education networking.<sup>1,14,17,18</sup>

Sometimes it is challenging for faculty staff to share their expert knowledge with dental students in a way that might facilitate learning and scaffold knowledge acquisition and understanding. Several problem-solving methods have been introduced and we adapted some of these to facilitate their use online.<sup>12,19,20</sup> Online collaboration using software applications such as Google Docs and video-conferencing applications such as Zoom can now be undertaken in real-time and therefore help facilitate virtual team-working.<sup>2,21</sup> Our results showed that communication, logical thinking, and virtual team-building could be developed and practiced to a certain degree of satisfaction during this course.

Cultural competency has been reported to describe ways of improving the accessibility and effectiveness of health-care services for people who come from racial and ethnic minorities and can result in a tailoring of care to meet patients' needs.<sup>5</sup> Higher education institutions with diverse student populations are now considering cultural competency as a necessary and essential skill for staff involved with student activities.<sup>22</sup> It has also been reported that cultural competency should now be termed transformative cultural responsiveness, which has been defined as a continuous process where learning is actively occurring and leads to an ability to respond effectively to challenges and opportunities presented by culturally diverse people and communities.<sup>22</sup> Cultural competency is also continuously evolving into different concepts, one of these being the concept of cultural humility.<sup>23</sup> This is considered a dynamic process whereby the healthcare worker seeks to understand patients' cultural differences or similarities while treating them with dignity and respect; this skill can be applied to person-centred care.<sup>23</sup> Person-centred care requires healthcare professionals to consider each patient as unique and trying their best to put their patients' needs first.<sup>23</sup>

Students attending L1 of the programme reported that "It was good and interesting to be able to get to know cultures of our countries from each other." and "the cultural exchange part of the session was very interesting" (Table 2). These findings therefore appeared to indicate that attending the programme could assist in attaining transformative cultural responsiveness and better prepared them for not only managing the dental care of patients from different backgrounds but also for working with their colleagues and hospital staff from diverse backgrounds. Providing dental care for patients should be "culturally sensitive" and the term "patient-centred culturally sensitive" healthcare has been described as providing care, which is relevant to what the patient requires and expects.<sup>6</sup> If a clinician lacks cultural sensitivity then they may not be able to communicate effectively.<sup>6</sup> While it is now accepted that dental schools must prepare their students to deliver

**Table 2** Free comments from the participants. The students were encouraged to give suggestions such as good points, points for improvement, requests for future sessions, thoughts, and impressions of the course. Those originally written in Japanese were translated into English by the authors. English language was slightly revised to convey the meanings. Faculty and university names were changed into “Thai university” “Japanese university” and “Faculty members”.

Level 1:

**The first session of level 1**

1. I enjoyed talking with many people in other university. I could get to know the situation in Thailand and could feel as if I traveled there actually.
2. Talking time was not enough because we were too many in Zoom. I would like to have more time to get to know our cultures and each other.
3. It was a precious opportunity to be able to have relationship with seniors. Thank you.
4. Sometimes it did not work to exchange online, but it was good because I could have rare experience.
5. As the quality of presentation by Thai students was high, Japanese university students should try harder.
6. Interacting with many people is important but it would also be good to have fixed groups.
7. It was good and interesting to be able to get to know cultures of our countries from each other. However, I think there is a point which should be improved, because it took time to make contact with different year students. I did not know how to make presentation. I found that there were cultural differences between Thai and Japanese students on how to make presentation.
8. The size of breakout rooms was too big and we could only introduce ourselves.
9. Japanese professors really have excellent English speaking. On first day, I was so nervous. I didn't know how to start the conversation in the breakout room and then, Japanese professors started the topic about the culture and foods that made me feel more relaxed and encouraged me to improve my English speaking.
10. Everything was nice.
11. Time for each talking session is too short. Student hadn't communicated enough but the session was over, maybe have more time for talking and more sessions to keep in touch with others
12. I really like the session in which we were able to choose the breakout room based on our interests!
13. I enjoyed the session very much, especially when we are grouped together according to our years, it made conversation easier and more relaxed since we're learning the same subjects or have experienced similar lab classes. Moreover, the cultural exchange part of the session was very interesting; I really enjoy learning new things especially Japanese culture.
14. The Ice breaking was great.
15. I really love the activities that we have together but I think the number of people is too many when we are in breakout room (have a chat to get to know each other) the time is not enough to talk with each other.
16. This course is really inspiring me to study aboard, Also I love section of group discussion in day 1 that's about hobby music etc. That made for a good relationship between Thai and Japanese students to discuss about dental students life or the difference in each culture. In my opinion, section of group discussion is too short due to the number of the participants.
17. I wish I had had a little bit more time in each break out rooms. And I think it be would better if there was a host in each rooms to encourage students to talk since it was the first time meeting each others and I was honestly nervous.
18. Separated activity group session (ex. hobbies music) is a little bit too short
19. Time in each part is too short to speak with new friends.
20. It's good to meet new friends from different country but it might be better if there is more time to talk to each other in breakout rooms.
21. I love hearing the experiences from Japanese friends and we got a chance to separate into breakout room by the topic that we have interest, so we have something to talk to each other and everyone got a chance to talk. Thank you for making such a great activity!:) I'm looking forward to the next one:)
22. I liked all the activities but hope we could have more time to talk in each session and hope we could keep in touch between Thai university and Japanese university friends.
23. Interesting! It must be great to know more about Japanese culture. For example, to know more about a common mainstream of thought in Japan.
24. The activities is very interesting
25. I like how TMDU manage the activities schedule and it was fun that day. I really enjoyed.

16 Nonresponses

**The second session of level 1**

1. I think that I spent very useful time, because I could communicate using many English words while having English conversation and making presentation slides.
2. Discussion time was appropriate. I could realize that environment surrounding aged people in Japan was different from that of Thailand.
3. It was interesting to think using classification of cards.
4. It was difficult to tell my opinion in the group work with exchange students, because my basic English abilities were not enough.

(continued on next page)

Table 2 (continued)

## Level 1:

5. It would be great if we could have more time speaking freely and interacting.
6. I felt interacting time was short throughout the session. It would be great if we could have a little bit more time for presentation preparation with the same group members.
7. The theme was very interesting, which was related with dentistry, and it was very new and worth challenging to classify factors, risks, and importance per each group.
8. I could do fruitful group work, because group members were fixed and the number of members was appropriate.
9. There was a silent moment in online group working but overall, it was fun and I could make more friends in this course.
10. There are the sessions that's super awkward e.g., the free conversation part if there's no extrovert there to start the conversation. We're a bit nervous talking to strangers and have no idea what to talk about. Can it switch to be some kind of topics or discussion like how to deal with stress in dental school (it might be really useful), introducing each of our hobbies or some creative activity to do together.
11. As same as September 8th session.
12. Maybe extending the time in the discussion section for a little bit will be great!
13. The course let us put our knowledge to use and brainstorm, which I am very happy to do so since it allows us to see a bigger picture of the topic and review what we have learned from our classes. Moreover, the topic is very interesting and I find the presentation very intriguing considering Japan and Thailand are going on to be an aging society, this will be very useful in the future. However, during the brainstorming session in the breakout rooms, there were some silence, this may be because we don't know each other very well. In my opinion, if there were a session where group members get to know each other and introduce themselves before the brainstorming session, we will be more comfortable with each other and there may be more interactions. Overall, the event is very delightful. Thank you again.
14. Same as before, I think number of people is too many so sometimes we don't have much time to exchange our story and get to know each other. But I really enjoy these activities, last year I also attend Japanese and Thai universities activities and there's 8 of us (4 from Japanese university and 4 from Thai university). I was so happy and I even get a very good friends from that activities and we can talk with each other with a perfect amount of time. Thank you for giving us an opportunity to get to know each other cultures and dental life.
15. The topic was pretty interesting. It was digestible and relatable. I love that such critical thinking activity.
16. Time in each part is too short to make the presentation and speak with new friends.
17. This session is very interesting and useful. I have learned how to rearrange my ideas and discuss them with my team in a very short period of time. I think that it was good to introduce students to new techniques to study or work efficiently, so I hope that you will continue doing this session in the future.
18. The topic was very interesting! but somehow the time is little too short because we haven't met and worked with each other before and somehow we need time to make sure that we understand in the same thing. Anyway, the activity was fun and interesting! Thank you for making this activity!
19. Everything was great! It was my pleasure to work with Japanese university friends.
20. I am interested in this topic and it is a good idea to exchange and work together with Japanese university.
21. I like that we have talk in a small group and have good lectures
22. The time of each breaking rooms activities were too short

19 Nonresponses

## Level 2:

1. I relied on Thai students a lot, so I would like to become more confident of my English abilities to speak actively.
2. It was hard to start writing a report right after online interaction.
3. I felt it more difficult to discuss during the online exchange session. In addition, writing a report using google drive was difficult to cooperate.
4. Wish group members had more ice breaking activity.
5. I think it's a good activity to do a group essay and learn to discuss ideas together. However, it might better if we have more time in preparing the essay and discussion session. By the way, it was fun to join this event.
6. They were very good activities, Thank you to the faculty members and also many other professors and Japanese university staff for creating these useful activities. I so appreciated that so many professors join our group discussion and help us with what should we do and how can we started the report. At first, it's a bit hard to communicate with each other due to the weak Internet connection and a language barrier. But at the end we can deal with it and complete a report together. Thank you Japanese and Thai universities for this international exchange activities again.
7. English should be used continuously to improve the skill.
8. Maybe more people in each group would be great.
9. Love how we had breakout room before starting the lecture so we can introduce ourselves first with the group and can start the work immediately at the second breakout room. I was impressed how the professor tried to guide us to work in the right way or when we were in silence, they help us figured out way to work.



Table 2 (continued)

Level 2:	
10. I really like to have a discussion like this. This actually gave me lots of things I ever known from my ordinary class. The more I searched articles for this session, the more I got new knowledge that I might have to use in the future.	
11. I would like to comment on the shortness in amount of time for each session. It affected how team members from different university could genuinely bond with others and speak up their mind. My belief on the potential of every participant was high, but without encouragement and feeling a sense of involvement they might have lost a chance to bring up some outstanding aspects to the group. For this reason, duration of each session should be considered more for bringing the most efficient outcome.	
	6 Nonresponses
Level 3:	
1. I think it would be great if we could discuss with Thai university students a little bit more.	
2. It would be great if number of words and range of the vocabulary book would become extended,	
3. It was good to know what postgraduate students would do.	
	3 Nonresponses

culturally sensitive care to diverse patient populations, there is no widespread agreement on the best way of doing this,<sup>10</sup> and it has been reported that countries such as Japan, need to educate their students more in this area.<sup>24</sup>

Moreover, it has been reported in countries such as the UK, that dental students lack skills in planning and providing complex treatments upon graduation.<sup>25</sup> L2 and L3 of the online programme provided students from different countries opportunities to discuss with senior faculty staff, medical conditions, which could affect dental care and participate in the planning of complex dental treatment, which required a multi-disciplinary approach. L2 was designed to prepare students for delivering evidence-based dentistry and so elements required to understand the hierarchy of scientific evidence were included. Instructors carefully guided undergraduate students on how to read for example, a literature review, to help them avoid leaping from presented facts and to understand cause-and-effect relationships. However, as the discussion of L3 was led by and conducted with dental professionals, the content might have been challenging for the undergraduates, which may have been reflected in their answer that 33% of them considered the session was “too difficult” (Table 1). Nevertheless, all the respondents of L3 evaluated the session positively, and the ratios of the respondents of L3 who chose “strongly agree” were noteworthy: more than 65% of them chose “strongly agree” in Q6-8, especially Q7 where 83% of them selected “strongly agree” in increasing their motivation to learn dental English (Fig. 3). Free comments from the students such as “I really like to have a discussion like this. This actually gave me lots of things I never know from my ordinary class” showed that they appreciated and enjoyed this exercise and that attending this programme had been beneficial for their education. Therefore, even though the content was slightly challenging, which is the reality of the treatment planning, this session may have provided positive motivation for the participants. These findings indicate that this programme might be a model for facilitating person-centred culturally sensitive dental care.

This study required the inclusion of more countries to increase its global perspective. However, fostering globally competent dental students is now considered important

and the acquisition of necessary skills could be enhanced through the international programme described in this report. Further investigations such as longitudinal evaluation and actual skill acquisition are necessary for more detailed understanding on how dental undergraduates can be trained to be culturally competent and to be able to deliver person-centred care. However, within the limitations of this study, the creation of this educational course and its implementation was beneficial for graduating undergraduates with a broader global perspective and an appreciation of the importance of delivering person-centred culturally sensitive dental care.

## Declaration of competing interest

The authors have no conflicts of interest relevant to this article.

## References

1. Botelho M, Oancea R, Thomas HF, Paganelli C, Ferrillo PJ. Global networking: meeting the challenges, facilitating collaboration. *Eur J Dent Educ* 2018;22:3–9.
2. Chang T-S, Hong G, Paganelli C, et al. Innovation of dental education during Covid-19 pandemic. *J Dent Sci* 2021;16:15–20.
3. Knight J. Internationalization remodeled: definition, approaches, and rationales. *J Stud Int Educ* 2004;8:5–31.
4. Wu A, Maddula V, Singh J, et al. Alternatives to student outbound mobility - improving students' cultural competency skills online to improve global health without travel. *Med Sci Educ* 2021;31:1–11.
5. Truong M, Paradies Y, Priest N. Interventions to improve cultural competency in healthcare: a systematic review of reviews. *BMC Health Serv Res* 2014;14:99.
6. Tucker CM, Marsiske M, Rice KG, Jones JD, Herman KC. Patient-centered culturally sensitive health care: model testing and refinement. *Health Psychol* 2011;30:342–50.
7. Meranius MS, Holmström IK, Håkansson J, et al. Paradoxes of person-centred care: a discussion paper. *Nurs open* 2020;7:1321–9.
8. Ivanoff CS, Yaneva K, Luan D, et al. A global probe into dental student perceptions about philanthropy, global dentistry and international student exchanges. *Int Dent J* 2017;67:107–16.

9. Mariño R, Ghanim A, Morgan M, Barrow S. Cultural competency and communication skills of dental students: clinical supervisors' perceptions. *Eur J Dent Educ* 2017;21:e101–8.
10. Donate-Bartfield E, Lobb WK, Roucka TM. Teaching culturally sensitive care to dental students: a multidisciplinary approach. *J Dent Educ* 2014;78:454–64.
11. Tokyo Medical, Dental University. *International course for clinical dentistry*. <https://www.tmd.ac.jp/english/international/events/iccd/>. [Accessed 8 March 2022]. Accessed.
12. Scupin R. The KJ-Method: a technique for analyzing data derived from Japanese ethnography. *Hum Organ* 1997;56:233–7.
13. Herr L, Jih MK, Shin J, et al. The perspective of undergraduate dental students on web-based learning in survey. pediatric dentistry during the COVID-19 pandemic: a Korean multicentre cross-sectional survey. *BMC Med Educ* 2021;21:505.
14. Donaldson ME, Gadbury-Amyot CC, Khajotia SS, et al. Dental education in a flat world: advocating for increased global collaboration and standardization. *J Dent Educ* 2008;72:408–21.
15. Dragan IF, Dalessandri D, Johnson LA, Tucker A, Walmsley AD. Impact of scientific and technological advances. *Eur J Dent Educ* 2018;22:17–20.
16. Dragan IF, Walji M, Vervoorn M, et al. ADEA-ADEE shaping the future of dental education III: the impact of scientific technologies and discoveries on oral health globally. *J Dent Educ* 2020;84:111–6.
17. Evans L, Hanes PJ. Online cultural competency education for millennial dental students. *J Dent Educ* 2014;78:867–75.
18. Wu A, Maddula V, Kieff MR, Kunzel C. An online program to improve international collaboration, intercultural skills, and research knowledge. *J Dent Educ* 2021;85:948–51.
19. Kinchin IM, Cabot LB. An introduction to concept mapping in dental education: the case of partial denture design. *Eur J Dent Educ* 2009;13:20–7.
20. Nesbit JC, Adesope OO. Learning with concept and knowledge maps: a meta-analysis. *Rev Educ Res* 2006;76:413–48.
21. Mansor AZ. Google docs as a collaborating tool for academicians. *Procedia - Social and Behavioural Sciences* 2012;59:411–9.
22. Comeaux E, Grummert SE, Mireles DC. A critical review of the literature on cultural competency in student affairs: toward transformative cultural responsiveness. *J Divers High Educ* 2021, December 9. <https://doi.org/10.1037/dhe0000363>. Advance online publication.
23. Kelsall-Knight L. Practising cultural humility to promote person and family-centred care. *Nurs Stand* 2022, January 17. <https://doi.org/10.7748/ns.2022.e11880>. Online ahead of print.
24. Oka H, Taji T. How school life with international students develops the intercultural competence of domestic dental students. *Eur J Dent Educ* 2022:1–11.
25. McGleenon EL, Morison S. Preparing dental students for independent practice: a scoping review of methods and trends in undergraduate clinical skills teaching in the UK and Ireland. *Br Dent J* 2021;230:39–45.