

## Case Report

# International Dental Education Course for Clinical Expertise at Tokyo Medical and Dental University Graduate School

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### Abstract

The aim of this report is to assess and introduce the new dental educational course on clinical expertise which has been established at Tokyo Medical and Dental University (TMDU), named “Essential Expertise for Clinical Dentistry” (EECD). Designed to offer lectures and hands-on learning experiences to dental professionals, it has been offered to graduate students at TMDU since 2016. Enrollment in the 4 hands-on sessions of the course in 2016 was 18, 13, 21, and 19; and in the 3 hands-on sessions of the course in 2017 was 14, 15, and 14, respectively. Post questionnaire-surveys were conducted following hands-on sessions to assess students’ overall satisfaction with the course, including explanations given by the instructors, session style, instructors’ English proficiency, materials and instruments, and the need for such

a course in the participants’ home countries. The respondents provided favorable feedback for all the survey items, which revealed their learning interests and needs regarding clinical dental education, and the possible demand for this type of course internationally. Therefore, we can say that there is a significant need for courses like EECD, which provide life-long learning opportunities for dental professionals worldwide. There are plans to make the EECD course available worldwide someday in the future.

**Key Words:** continuing dental education, clinical expertise, dental education, globalization, life-long learning.

### Introduction

In the interest of providing the best patient care possible, life-long learning is indispensable for healthcare professionals. Advances in science and technology, new discoveries, and changes in public need and demand are continuous. Just to give a few examples, periodontal microsurgery has innovated surgical procedures<sup>1)</sup>, which minimize surgical invasiveness, improve the healing process, and ensure

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the regeneration of periodontal tissue<sup>2</sup>; the range of application for direct composite resin restoration has expanded with the evolution of adhesive dentistry<sup>3</sup>; and dental treatments for elderly people should be comprehensive and involve interprofessional collaboration<sup>4</sup>. In order to stay abreast of these and other advancements, dental education must be continually evolving accordingly, and to improve oral health care provision, dental professionals must strive to update their knowledge and techniques throughout their careers. Thus, learning opportunities in dentistry are essential, and providing such opportunities should be one of the missions of dental educational institutions.

Tokyo Medical and Dental University (TMDU) has been engaging in academic cooperation with other educational institutions worldwide and conducting collaborative research, faculty/student exchange, and accepting international students both for short- and long-term study for decades. In terms of long-term study, as of May 2017, TMDU graduate school of dentistry had accepted 158 international students (graduate students and graduate research students) over the years from a variety of countries in the interest of spreading dental expertise and creating world-class leaders. Considering this context of global demand and the necessity for continuing education for dental professionals, a new project designed to offer learning opportunities to global/international dental professionals was established at TMDU. With the purpose of introducing or updating TMDU's expertise in research, clinical and dental education, the project was designed to offer dental education courses to 1) TMDU graduate students and 2) international dental professionals.

### **Essential Expertise for Clinical Dentistry (EECD)**

The course for TMDU graduate students is called "Essential Expertise for Clinical Dentistry" (EECD hereinafter). This course offers lectures/case-studies and hands-on sessions, especially regarding up-to-date clinical expertise, and aims to cultivate professional competitiveness in the international arena. It is the first course at TMDU to offer hands-on learning to every graduate student, regardless of department. It was established in 2016, and to date, two courses that included hands-on sessions (held in academic years (AY) 2016 and 2017) have been implemented. The aim of the present study was to assess and report on the EECD course's effectiveness and acceptability, with a focus on its hands-on sessions.

## **Subjects and Methods**

### **Study Population and Survey**

EECD courses held in AY2016 (EECD16) and in AY2017 (EECD17) had enrollment restrictions of 45 participants per course to ensure appropriate student-teacher ratio for maximum learning potential. All participants were TMDU graduate school students (including those in advanced clinical training). Four hands-on sessions were held in EECD16 and three in EECD17. Tables 1 and 2 show the specifics of each session. These were tagged as 16-1, 16-2, 16-3, and 16-4 for EECD16 and 17-1, 17-2, and 17-3 for EECD17. The total number of survey participants following each hands-on session in EECD16 was 18, 13, 21, and 19 for 16-1, 16-2, 16-3, and 16-4 and in EECD17 was 14, 15, 14, for 17-1, 17-2, and 17-3, respectively. After each hands-on session, a questionnaire-survey was distributed and answers were collected from participants who had voluntarily given prior consent. The questions, qualitative and quantitative, covered their overall satisfaction with that session (including specific reasons, if applicable [open-ended questions]); the instructor's explanations; session style; the instructor's English proficiency; instructor's level; materials and instruments used; demand for the learning contents in the participant's home country (including the specific reasons why [open-ended questions]); general comments [open-ended]; and the name of participant's home country (if they were consenting). The responses were expressed in a 4-point Likert scale: very satisfied, satisfied, dissatisfied, and very dissatisfied (very useful, useful, not very useful and useless was used for "materials and instruments used"; and very much needed, needed, not so much and no demand was used for "demand for the learning contents in the participant's home country").

### **EECD held in AY2016 (EECD16)**

EECD16 consisted of two lectures and four hands-on sessions. Participants were able to join two hands-on sessions based on their requests. The type of lectures and hands-on sessions can be seen in Table 1.

The four hands-on sessions were: 1) the case of an upper right central incisor aesthetic restoration with flowable composites, titled "SPEEDY and SIMPLE: Direct restoration using flowable composites"; 2) "Flap operation: Basic training of periodontal surgery," an opportunity to learn and practice incision, flap elevation, debridement, and suturing techniques required in periodontal surgery on a swine jaw under the assumed clinical situation of deep periodontal pockets in the

Table 1: Schedule for EECD in AY2016

NO.	Title
Lectures	
1	Treatment planning for prosthodontics in a multiple tooth loss
2	Treatment planning for periodontics with advanced bone loss
Elective Hands-on Sessions	
1 (16-1)	<b>SPEEDY and SIMPLE Direct restoration using flowable composites</b>
2 (16-2)	<b>Flap operation: Basic training of periodontal surgery</b>
3 (16-3)	<b>Live: Border molding and impression for mandibular complete denture</b>
4 (16-4)	<b>Direct resin core build-up method using custom core form</b>
Extra Lecture	3 tips for making a dental clinical case presentation



Figure 1: Scenes from EECD16 "Live: Border molding and impression for mandibular complete denture."

lower molars; 3) the live session, "Border molding and impression for mandibular complete denture," a learning opportunity to observe how to attain border molding by either compound or silicone rubber material on a real patient; and 4) the chance to fabricate a glass-fiber reinforced composite resin post and core in "Direct resin core build-up method using custom core form". Figure 1 displays photos taken during EECD16-3.

#### EECD held in AY2017 (EECD17)

EECD17 was a two-week summer intensive course, where the participants could join three lectures and one of three (elective) hands-on sessions. Table 2 lists the lectures and hands-on sessions of the EECD17 course.

The three hands-on sessions were: 1) "How can we eliminate periodontal pockets?" to learn and practice SRP, incision, partial-thickness flap elevation, debridement, osteoplasty, and suturing techniques

Table 2: Schedule for EECD in AY2017

NO.	Title
Lectures	
1	Implantology
2	The current stream of implant overdentures
3	Endodontic microsurgery
Elective Hands-on Sessions	
1 (17-1)	<b>How can we eliminate periodontal pockets? (Different contents from EECD16, Intermediate-Advanced level)</b>
2 (17-2)	<b>Perfect Class II direct composite restoration</b>
3 (17-3)	<b>Direct resin core build-up method using custom core form</b>



Figure 2: Scenes from EECD17 "Direct resin core build-up method using custom core form."

required in apically repositioned flaps with osseous surgery on a swine jaw under the assumed clinical situation of deep periodontal pockets in the lower molars; 2) "Perfect Class II direct composite restoration," in which the participants practiced a perfect composite resin restoration on a lower right/left first molar with MO cavity; and 3) "Direct resin core build-up method using custom core form". Figure 2 displays photos taken during EECD17-3.

This study was approved by the Dental Research Ethics Committee of Tokyo Medical and Dental University (TMDU; approval no. D2016-062; Tokyo, Japan).

## Results

The response rates of EECD16 and EECD17 hands-on sessions were both 100%. Table 3 indicated the number of responses for each course. Of these, 96% reported that they were generally satisfied with the hands-on sessions in EECD16, while 98% reported the same satisfaction in EECD17 (Q1). Even though there was a slight overall dissatisfaction of 3% in EECD16, no specific reasons were given for Q1. The respondents reported that they were satisfied with session styles, materials and instruments, and instructors in both EECD16 and EECD17 (Q2), except for a dissatisfaction rating of 2% in EECD17 reported that they were dissatisfied with explanations given by the instructor. Although a small percentage, the reason given for dissatisfaction with the lecturers was based on the English levels and that the script of contents was read instead of delivered freely. The question regarding "need/demand among dental practitioners of your country" was considered favorably by 89% and 95% of respondents for EECD16 and EECD17 respectively, 11%

of EECD16 and 5% of EECD17 participants mentioned no need for some learning content, with the reason being "usually, a company will promote their product and give some hands-on demonstration (16-3, Cambodia)". Other students commented, "In my country, periodontal surgeries are performed by M.D.S. periodontists, and in undergraduate (B.D.S.) studies, we are not exposed much (17-1, India)," and "We receive a lot of training in this area when we are undergraduate students (17-2, no country specified)" (English was modified for grammar) (Q3). Specific reasons were not given but 1 in 16-1 (Thailand), 4 in 16-3 (3 no country specified/ 1 India) and 3 in 16-4 (2 no country specified/ 1 Cambodia) mentioned no demand for the information. Figures 3 and 4 display the results of Questions 1-3 for each course.

Table 3: Number of responses per country for each course

	EECD16	EECD17
Cambodia	2	0
China	3	3
Egypt	2	3
Haiti	2	0
India	2	2
Jordan	2	0
Kuwait	2	0
Mexico	2	2
Mongolia	0	1
Myanmar	23	14
Saudi Arabia	8	3
Thailand	2	0
Vietnam	3	3
Yemen	2	1
No country specified (no indication)	16	11
Total	71	43

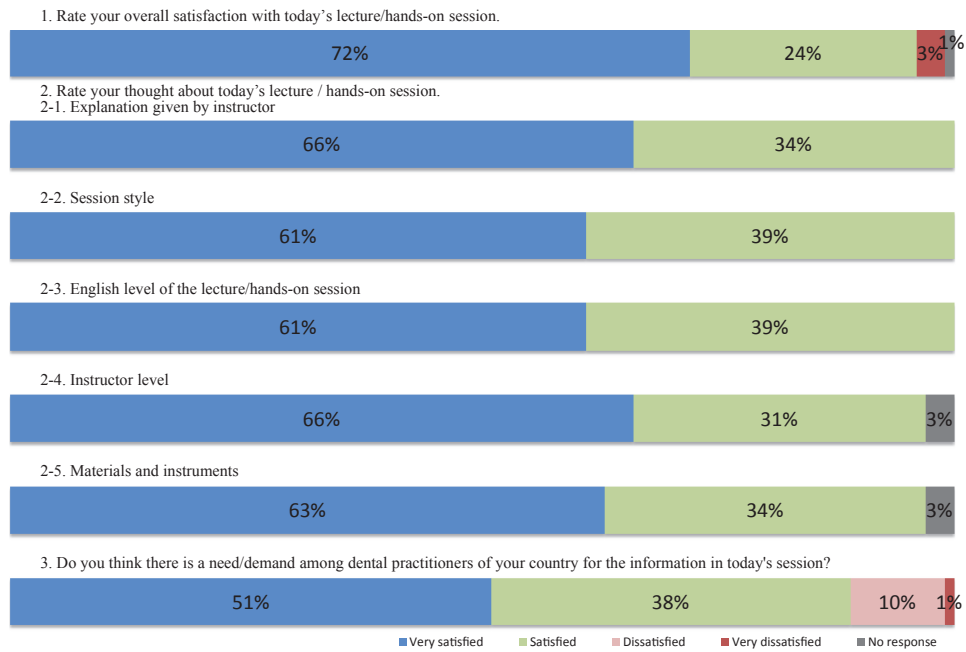


Figure 3: Post-questionnaire of EECD hands-on session in AY 2016

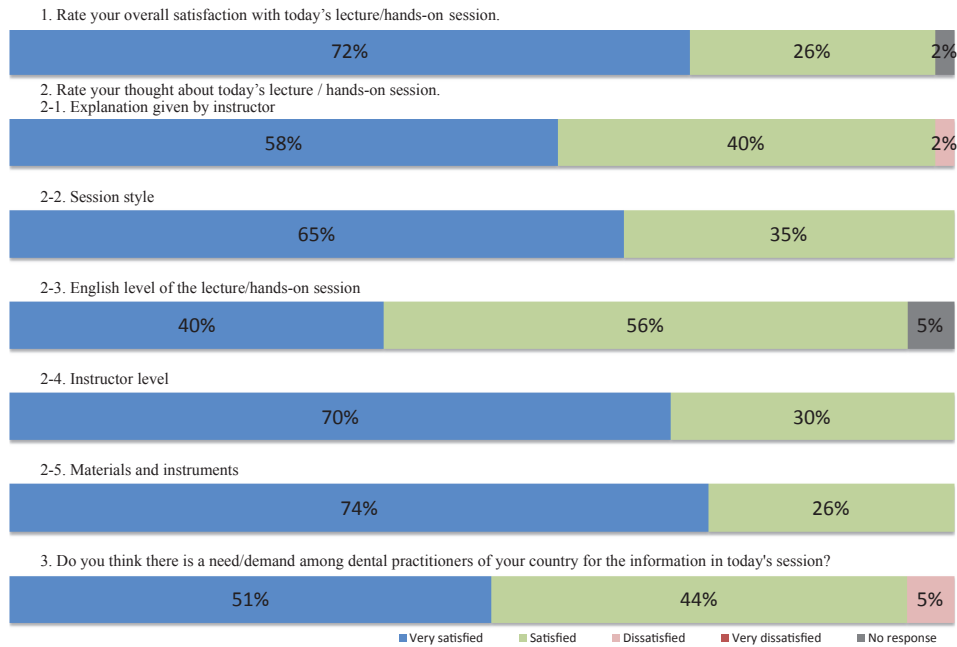


Figure 4: Post-questionnaire of EECD hands-on session in AY 2017

Table 4: Free comments from the questionnaire on EECD16 (English was modified for grammar). The comments for negative feedback/rating are in bold.

<b>1. Specific reasons for overall satisfaction with that session (open-ended question)</b>
<p>Very easy and super fast (Jordan).            Clinical practice is important to earn experience (Mexico).            Very well-organized and interesting session (Saudi Arabia).            Well-done preparation, beautiful and specific hands-on (Vietnam).            The session should be longer (Haiti).            Convenient and got valuable knowledge through the lecture (Myanmar).  <b>Very easy to understand (Yemen).</b>            In this section there are 4-lecture courses and only two are hands-on (Myanmar).            Hands-on is always a good way of learning (Egypt).            Very comprehensive, great explanation and supervision (Cambodia).            Careful preparation, informative lesson, kind instructor (No country specified).            Live show (Myanmar).            Know thoroughly about border molding for complete denture (Myanmar).            Enthusiastic lecture (No country specified).            Knowing about materials, how to use and apply (Myanmar).            Everything is well organized (Saudi Arabia).            Detailed (No country specified).            Brushing up my knowledge on techniques (India).            I really liked it that I got to learn by working myself (Saudi Arabia).            I can learn material and p+c method (Myanmar).            Very practical and very useful (Jordan).            Really useful (No country specified).            Very detailed and demonstrative (Cambodia).            Very nice and new tech (Kuwait).</p>
<b>2 (Q3). Specific reasons for demand for the learning contents in the participant's home country (open-ended question)</b>
<p>Everyone knows how to fill the cavity but sometimes we didn't know how to make it beautiful (No country specified).            Composite resin is more common these days. Materials and instruments are variety, need to update (Vietnam).            Lack of standardized treatment protocol (Haiti).            There are many patients suffering from periodontitis, and we are reading advanced techniques of periodontal disease (Myanmar).            Many cases with periodontitis need such treatment (Yemen).            To improve the dental professional in every subject (Myanmar).            We need to consider more attention on the application at perio surgery (Egypt).            I think improvement and long life training is good for dentist (Cambodia).            Very important (Myanmar).            Useful (No country specified).            Update in the new materials and techniques (India).            Not many practitioner use resin posts (Jordan).            We need this kind of models, feels like doing in real patient (Myanmar).  <b>Usually, a company will promote their product and give some hands-on demonstration (Cambodia).</b>            Many cases need such kind of treatment (Yemen).</p>
<b>3. General Comments</b>
<p>Thank you. It was an amazing course (Jordan).            Very satisfied with the results of the lecture (Mexico).            I hope we can have more time to practice. The hands-on is very good (No country specified).            Everything was prepared carefully (Vietnam).            The camera record the instructor's demonstration should have laser red beam to indicate the focus center. Because the image sometime not clear (blur) because the instructor moving away from the focus center (Vietnam).            Thank you very much for very valuable and useful hands-on course (Myanmar).            Thank you for your teaching (Myanmar).            It was very useful for GP and periodontal surgery (Myanmar).            Only one thing: that every hands-on course is at the same time with Borderless classes (Myanmar).            Thanks a lot for that useful workshop (Egypt).            I'm not dealing with the price. Sorry (Myanmar).            I would like to attend to many hands-on courses in TMDU (Myanmar).</p>

Table 5: Free comments from the questionnaire on EECD17 (English was modified for grammar). The comments for negative feedback/rating are in bold.

<b>1. Specific reasons for overall satisfaction with that session (open-ended question)</b>
The trainers explained in detail and patiently (Myanmar). Careful preparation, useful clinical skills, enthusiastic teacher and assistants (No country specified). Good explanation, written materials with all content, available materials (Egypt).
<b>2 (Q3). Specific reasons for demand for the learning contents in the participant's home country (open-ended question)</b>
<b>In my country, periodontal surgeries are performed by M.D.S. periodontists, and in undergraduate (B.D.S.) studies, we are not exposed much (India).</b> No updated material and technique (Myanmar) In my country, we do not have these kinds of innovative materials, what we have studied is much out of date (Vietnam). <b>We receive a lot of training in this area when we are undergraduate students (No country specified).</b> I have been away from clinical practice more than 2 years (China). Because today's session is very common line of treatment of dentistry (Egypt).
<b>3. General Comments</b>
It is valuable hands-on course (Myanmar). I really like we have the opportunity to learn about Japanese new techniques they use in clinic with their materials. I wish we can have more hands on seminars (Mexico). Because I have such long time do research, I am not familiar with those machine (China). <b>Lecturers read instead of free talking (Saudi Arabia).</b> Thank you (Egypt).

## Discussion

Until now, at TMDU, department-based courses were available, but EECD is the first course with lecture including hands-on practice open to every graduate student. So far, EECD has been shown to be popular; not only because of the participants' positive feedback to the survey (Figures 3 and 4), which shows participants' interests and the need for such clinical dental education, but also because the courses reached maximum enrollment quickly after registration was opened. Considering the response rate, satisfaction rate, and popularity, we can say that there is a high demand for courses like EECD.

There is always advancement in clinical expertise following developments in scientific research, discoveries, materials, and techniques. For example, the evolution of adhesive dentistry over recent years has expanded the range of applications of direct composite resin restoration and modern restorative treatments. Nowadays, the first treatment for posterior teeth restoration should be a direct composite restoration<sup>3</sup>, which EECD17-2 ushered in. Not only the aesthetic aspects like those provided in EECD16-1, the clinical outcomes of composite resin restoration are outstanding when properly applied. EECD integrates the up-to-date clinical dental knowledge and techniques that are often publicized in journals or books into its course.

In this study, a majority of the participants and

responses were from Asian countries. As the numbers from each country were limited, except Myanmar, it is difficult to conclude whether the opinions were true representations of that country's dental professionals' beliefs, nevertheless updates in skills/knowledge/materials are appreciated in any country as long as those techniques are required to practice dentistry in that country. Generally, skills required of dental professionals are universal, and even though dentistry has professional majors and specialties, each field is interconnected and cross-specialty knowledge is indispensable for quality care. Also, the positive results for questions 1 and 3 demonstrated the high demand at TMDU for a course offering clinical expertise and possibility of demand in other countries (i.e., the participants' home countries). Some countries have made life-long learning a mandatory requirement for dental professionals while others have yet to do so<sup>5,6</sup>. Either way, life-long learning is essential for dental professionals in any country<sup>5-8</sup>. Another advantage of this course is that TMDU can provide world-class dental education in Japan's areas of strength. For example, Japan is an aging society, and thus one strength for course provision might be in the field of gerodontology. One example is the ongoing research on dysphagia. Such education must be included in dental education, a field in which Japan has some advantages. It is beneficial for dental professionals worldwide to have an opportunity to study up-to-date knowledge and skills

from forerunners in such a field. We plan to implement that concept more in the courses to follow. EECD can be a life-long learning opportunity for world learners, clinicians, educators and researchers. Now, there are plans in action to make it available worldwide. The first EECD for overseas dental faculty and professionals was held for Myanmar dental professionals in 2017 (data has not been released yet).

Although most participants were satisfied with the curriculum of the EECD courses, a few pointed out some areas for improvement and disparities with what is available in their home countries. For example, in the open comments section of the survey, as well as from verbal comments made by the students during the courses, the participants stated their concerns regarding the different materials used and dental device availability in their home countries. Another concern was the cost-demand balance of the procedures performed. As for instruction, the participants were mostly satisfied with the course content, but a few stated that they would like the instructors to have a higher level of English competency and to be able to confidently present their information in English instead of reading from a script. In order to strive toward 100% overall satisfaction rates, consideration must be made on requiring a certain criteria for lecturers' presentation skills and methods. Provision of outstanding presentations or lectures in English is still a difficult hurdle for many Japanese native speakers, and currently the training for that specific purpose is very limited. Training or workshops to improve these skills are another project under consideration for further development in the near future. In addition, course provision based on detailed participants' needs is required. As the free comments showed, content level (difficulty) and dental professionals' operational scope slightly differ from country to country. However, this study is limited by the fact that the participants' demographic information was limited and based on self-reporting. Thus, further studies and analyses including but not limited to the participants' professional clinical experiences, specialties, and level of education, are anticipated for improvement of future EECD courses.

## Conclusion

Based on the findings of this report, we can say that there is a significant need for courses like EECD that provide life-long learning opportunities for dental professionals around the world. Considering the global need for continuing education, providing continuing education opportunities should be regarded as one of the principal aims of any world-class educational institution.

Conflicts of Interest: All the authors of this report certify that they have no conflict of interest to declare regarding the preparation of this manuscript.

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