

# The Impact of Clinical Teacher: The Dental Students' Perception

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## ABSTRACT

**Aims:** This study aims to evaluate the impact of the clinical teachers and the effectiveness of their supervisory skills in clinical settings from the dental students' perception using the cognitive apprenticeship model. **Materials and Methods:** A total of 273 undergraduate clinical dental students, from Faculty of Dentistry UiTM, were asked to complete the modified and validated Maastricht Clinical Teaching Questionnaire (MCTQ) which consists of twenty-seven questions distributed on seven domains: Modelling, Coaching, Scaffolding, Articulation, Reflection, Exploration and General Learning Environment. The responses were descriptively analysed. **Results:** The clinical experience of 162 dental students, who responded, was evaluated. Overall, the students conveyed positive and neutral perceptions of their clinical experience in all criteria of the seven domains. Articulation domain showed the highest positive feedback (93.5%) while the general learning environment domain showed the highest negative feedback (28.1%). **Conclusions:** The clinical experience and the impact of the clinical teachers were mostly satisfactory. Further improvements of the clinical environment can be achieved regarding the areas of concern.

**Key words:** Clinical teacher; Dental students' perceptions; Dental education.

## INTRODUCTION

Education has always been an important factor for a successful future of an individual. Teaching and learning are part of the education system. A quality dental education can provide a quality platform for well-educated future dentists who can contribute to the society. Education in the dental clinical setting is an effective platform for dental students in order to prepare them for future clinical practice as dentists. Clinical supervision is an essential part in the process of learning and an effective way to train the dental students in a clinical setting. In general, dental clinical settings provide the most appropriate learning environment to enable students to integrate their knowledge of basic dental science and operative dental technique skills (Mullins et al., 2003). A good level of supervision and communication should be present in order to deliver safe and effective teaching in a clinical setting (Anderson et al., 2011). It is the clinical supervisors' role to build a good environment for students involved in a clinical setting to challenge themselves out of their comfort zone and at the same time encourage a "learning community" environment to achieve productive clinical teaching.



According to Gerzina et al. (2005), skilful guiding of clinical students, bridging teaching and learning as well as initiating appropriate changes in knowledge, communication, technical skills, attitudes and behaviours in daily practice should be practiced by the clinical teachers to be effective for the benefit of patients and communities. It is the clinical supervisors' role to produce a positive environment for clinical students to try new things and at the same time promote a "learning community" environment for effective clinical teaching (Carnell, 2007).

Lack of proper models addressing the teaching approach taken by clinical teachers was highlighted by Graffam (2008), he further suggested that specific teaching models could guide the clinical teachers to fulfil their role. The cognitive apprenticeship model was one of the models developed for clinical supervision. The main idea of the original cognitive apprenticeship concept was to bring the thinking to the surface, to make it visible through experts' internal cognitive processes that can guide the students in observing, performing and practicing clinical procedures under supervision (Collins et al., 1989). The six proposed teaching methods: modelling, coaching, scaffolding, articulation, reflection, and exploration of the cognitive apprenticeship, are designed to help students to obtain both cognitive and meta-cognitive skills (Collins et al., 1989). According to Stalmeijer et al. (2008), it is recommended to use a model as a useful instrument in studies focusing on evaluation, feedback, self-assessment, and faculty development in clinical teaching. The cognitive apprenticeship model in clinical practice, originally designed by Stalmeijer et al. (2008), was employed in a previous study conducted in Faculty of Dentistry, University of Malaya. The authors concluded that students' perception is essential to increase the quality of learning environment in dental education especially in clinical teaching (Shoaib et al., 2016). They also recommended further studies to be conducted in other universities and dental faculties in Malaysia to have more insight on dental students' perceptions of the impact of clinical teachers on their clinical training.

This study aimed to address this recommendation to identify the effect of clinical teachers on the learning environment in dental education. Furthermore, this study is an answer to a call by Universiti Teknologi Mara (UiTM) deputy vice chancellor during UiTM academic conference in 2016 to evaluate the role of clinical teachers with the aim of building a clinical conduct guideline for the teachers. The deputy vice chancellor addressed the clinical supervision in his speech. He highlighted that a clinical expert does not necessarily mean a great or good teacher and that adequate training in teaching need to be provided to the clinicians before they supervise students. His remarks were the motivation for this study with the objective of evaluating the impact of the clinical teachers and the effectiveness of their supervisory skills in clinical settings from the dental students' perceptions.

## **MATERIALS AND METHODS**

A total of 273 undergraduate clinical dental students (years 3, 4 and 5) from Faculty of Dentistry, UiTM were involved in this study. After ethics approval was obtained from Research Ethics Committee, Faculty of Dentistry, UiTM, a set of questionnaires which is the modified and validated Maastricht Clinical Teaching Questionnaire (MCTQ) (Stalmeijer et al., 2008) was distributed to all the clinical dental students. This questionnaire was adopted from cognitive apprenticeship model in clinical practice to assess students' learning environment in order to gain relevant information related to dental clinical teaching (Stalmeijer et al., 2008; Shoaib et al., 2016). The MCTQ contains twenty-seven multiple choice questions (items) divided on seven domains which are Modelling (four items), Coaching (four items), Scaffolding (four items), Articulation (four items), Reflection (two items), Exploration (three items) and General Learning Environment (six items) (Stalmeijer et al., 2010). The MCTQ was measured on a three-point Likert Scale from "disagree", "neutral" and "agree".

The questionnaire was administered among the clinical dental students after a short briefing, the students were informed that their responses will be anonymous. A satisfactory response rate of 59% was achieved, where total of 162 out of 273 undergraduate clinical dental students from UiTM completed and returned the questionnaire.

IBM SPSS Statistics 23 was used to analyse the data obtained and cross tabulation was used to summarise the obtained data for each year and domain. Pearson Chi Square was used to identify the significant difference among clinical years.

## RESULTS

The clinical experience of 162 out of 273 dental students, who responded, was evaluated. The response rate was 59%. The number of respondent students were 57 of year 5, 62 of year 4 and 43 of year 3. The results of all items in the questionnaire based on the apprentice cognitive model are shown in Table 1.

**Table 1: Student's responses in percentage to Maastricht Clinical Teaching Questionnaire (MCTQ)**

Domains	Year	N	Disagree %	Neutral %	Agree %
<b>Modelling.</b> The clinical teacher...					
Demonstrated how different skills should be performed	3	43	4.7	39.5	55.8
	4	62	4.8	37.1	58.1
	5	57	5.3	49.1	45.6
Explained while performing a task, which aspects were important and why	3	43	7	27.9	65.1
	4	62	1.6	32.3	66.1
	5	57	8.8	36.8	54.4
Created sufficient opportunities for me to observe him or her	3	43	9.3	53.5	37.2
	4	62	11.3	40.3	48.4
	5	57	10.5	36.8	52.6
Was a role model for me	3	43	4.7	53.5	41.9
	4	62	3.2	43.5	53.2
	5	57	17.5	42.1	40.4
<b>Coaching.</b> The clinical teacher...					
Observed me while I was performing a task	3	43	16.3	67.4	16.3
	4	62	14.5	48.4	37.1
	5	57	10.5	54.4	35.1
Provided me with constructive and concrete feedback during direct observation	3	43	2.3	32.6	65.1
	4	62	8.1	41.9	50
	5	57	14	40.4	45.6
Was willing to teach rather than doing it for you/leaving you alone to do it independently	3	43	11.6	32.6	55.8
	4	62	12.9	41.9	45.2
	5	57	10.5	50.9	38.6
Provided me better insight in areas of my performance that need to be improved	3	43	4.7	39.5	55.8
	4	62	11.3	27.4	61.3
	5	57	17.5	47.4	35.1
<b>Scaffolding.</b> The clinical teacher...					
Adjusted his/her teaching actives to my level of experience and competence	3	43	9.3	53.5	37.2
	4	62	14.5	46.8	38.7
	5	57	8.8	35.1	56.1

Allowed me to perform tasks independently	3	43	7	30.2	62.8
	4	62	1.6	17.7	80.6
	5	57	8.8	47.4	43.9
Was supportive when I experienced difficulties with a task	3	43	7	51.2	41.9
	4	62	8.1	35.5	56.5
	5	57	12.3	47.4	40.4
Gradually decreased the amount of guidance in order to bolster my independence	3	43	11.6	67.4	20.9
	4	62	3.2	37.1	59.7
	5	57	12.3	36.8	50.9
<b>Articulation.</b> The clinical teacher...					
Asked me to explain my reasoning and actions	3	43	4.7	32.6	62.8
	4	62	3.2	16.1	80.6
	5	57	14	38.6	47.4
Alerted me to gaps in my knowledge and skills	3	43	2.3	44.2	53.5
	4	62	3.2	38.7	58.1
	5	57	7	50.9	42.1
Asked questions to increase my knowledge and understanding	3	43	7	27.9	65.1
	4	62	3.2	3.2	93.5
	5	57	5.3	33.3	61.4
Stimulated me to ask questions to increase my knowledge and understanding	3	43	2.3	37.2	60.5
	4	62	9.7	22.6	67.7
	5	57	3.5	31.6	64.9
<b>Reflection.</b> The clinical teacher...					
Stimulated me to think about my own strengths and weaknesses	3	43	4.7	37.2	58.1
	4	62	4.8	24.2	71
	5	57	7	33.3	59.6
Stimulated me to reflect on the profession of a dental student	3	43	2.3	39.5	58.1
	4	62	6.5	21	72.6
	5	57	7	31.6	61.4
<b>Exploration.</b> The clinical teacher...					
Stimulated me to formulate my own goal	3	43	9.3	46.5	44.2
	4	62	11.3	41.9	46.8
	5	57	15.8	43.9	40.4
Stimulated me to achieve my goals	3	43	11.6	41.9	46.5
	4	62	12.9	33.9	53.2
	5	57	7	35.1	57.9
Challenged me to explore new tasks and possibilities	3	43	7	46.5	46.5
	4	62	9.7	25.8	64.5
	5	57	10.5	47.4	42.1

<b>General learning environment. The clinical teacher...</b>					
Established an environment where I felt free to ask questions or make comments	3	43	4.7	37.2	58.1
	4	62	1.6	25.8	72.6
	5	57	7	50.9	42.1
Showed an interest in me as a student	3	43	11.6	53.5	34.9
	4	62	12.9	41.9	45.2
	5	57	15.8	47.4	36.8
Treated me and my patient with respect	3	43	9.3	65.1	25.6
	4	62	9.7	54.8	35.5
	5	57	12.3	45.6	42.1
Took enough time to supervise me	3	43	4.7	53.5	41.9
	4	62	3.2	58.1	38.7
	5	57	26.3	38.6	35.1
Is constantly available in the clinic	3	43	18.6	53.5	27.9
	4	62	12.9	56.5	30.6
	5	57	28.1	52.6	19.3
Is punctual for clinical session	3	43	11.6	60.5	27.9
	4	62	16.1	64.5	19.4
	5	57	22.8	59.6	17.5

- Modelling domain:** Based on the data analysis, most of year 3 and year 4 responded with agreement (55.8% and 58.1% respectively) for the criteria of “*clinical teacher demonstrated how different skills should be performed*”. However, year 5 students mostly responded as neutral (49.1%) for the same criteria.
- Coaching domain:** Neutral score was the highest for all clinical years with 67.4% for year 3, 48.4% for year 4 and 54.4% for year 5 for the criteria of “*observed me while I was performing my task*”. For the criteria of “*provided me with constructive and concrete feedback during direct observation*”, most of the students agree with the criteria with 65.1% of agreement from year 3 followed by 50% from year 4 and 45.6% from year 5. A high percentage for the neutral score in year 5 (50.9%) compared to year 3 and year 4 who have a high percentage for the agree score of 55.8% and 45.2% respectively for the criteria of “*was willing to teach rather than doing it for you or leaving you alone to do it independently*”. A similar trend was observed for the criteria for “*provided me better insight in areas of my performance that need to be improved*”, where 47.4% of year 5 have a high score for neutral while 61.3% and 55.8% from year 4 and year 3 respectively agree with this criteria.
- Scaffolding domain:** 56.1 % from year 5 agree with the criteria of “*adjusted his or her teaching activities to my level of experience and competence*”. However, 53.5% from year 3 and 46.8% from year 4 have a neutral response for this criterion.
- Articulation domain:** Majority of students agree with “*asked questions to increase my knowledge*” with year 4 having the highest percentage (93.5%) followed by year 3 (65.1%), and year 5 (61.4%). “*Stimulated me to ask questions to increase my knowledge and understanding*” also showed the highest percentage of agree among all students which was 60.5% of year 3, 67.7% of year 4 and 64.9% of year 5.
- Reflection domain:** All items in this domain showed that majority of students have highest percentage of agree responses and lowest percentage of disagree responses. Year 4 have the highest percentage of agree (71%) on “*stimulated me to think about my own strengths and weakness*”. The criteria of “*stimulated me*

*to reflect on the profession of dental student*” also have the highest percentage of agree among all students (58.1% of year 3, 72.6% of year 4 and 61.4% of year 5). The aforementioned criteria had the lowest percentage of disagree among year 3 students (2.3%).

6. **Exploration domain:** Both year 3 and year 5 have higher score of neutral for “*stimulated me to formulate my own goal*” (46.5% and 43.9% respectively). For “*stimulated me to achieve my goals*”, all students showed highest percentage of agree response with year 5 being the highest at 57.9%. Among year 4 students, 64.5% agreed with “*challenged me to explore new tasks and possibilities*”, the agree response was less in year 3 and 5 (46.5% and 42.1% respectively). Only 7% of year 3 disagreed with this criterion.
7. **General learning climate domain:** Based on the data analysis, all criteria in this domain have a higher score in neutral responses among all students except for the criteria of “*established an environment where I felt free to ask questions or make comments*” where the agree responses were highest. The criterion of “*constantly available in the clinic*” showed the highest disagree percentage compared to other criterion, which was 28.1% of year 5 followed by 18.6% of year 3 and 12.9% of year 4.

Pearson Chi square test results: The Pearson chi square was used to identify significant differences between responses of year 3, year 4 and year 5. The modelling domain showed significant differences in responses for the item “*was a role model for me*” ( $p=0.037$ ). There was also significant difference in domain coaching for item “*provided me better insight in areas of my performance that need to be improved*” ( $p=0.026$ ). In the scaffolding domain a significant difference was detected in “*gradually decreased the amount of guidance in order to bolster my independence*” ( $p=0.001$ ) and the general learning environment domain also showed significant difference for item “*took enough time to supervise me*” ( $p=0.001$ ).

## DISCUSSION

The purpose of this study was to evaluate the perceptions of dental students on their clinical teachers in the clinical setting using MCTQ questionnaire based on the cognitive apprenticeship model. The results of this evaluation can be presented and discussed at the faculty to serve as a guidance in drafting a clinical conduct guideline and to identify possible pathways to a more effective clinical teaching. The response rate in the current study was 59%. Prior studies on response rate suggested a benchmark of 35-40% as being an acceptable response rate (Rogelberg & Stanton, 2007; Weiner & Dalessio, 2006). In the current study the students were reminded to respond to the questionnaire at three separate times after it was initially handed to them. It was reported in a previous study that possible reasons given by non-respondents include over-surveying where subjects are flooded with questionnaires which results in fatigue, other given reasons were that they were busy or that they considered the questionnaire irrelevant (Weiner & Dalessio, 2006). It seems possible that the previously reported reasons could have affected the response rate in the current study.

In this study, the results showed that overall, the dental student perceptions were positive in all domains. The lowest score for agreement was 16.3% and the highest score for disagreement was 28.1%. It was observed that whenever the score of agreement was less than 50%, high percentage of neutral score were seen. This observation is consistent with that of Shoaib et al. (2016), in a study conducted in Faculty of Dentistry, University of Malaya using the same model of the present study. The results where high score for neutral were seen could be due to the students’ tendency to show reservation in expressing their opinion which may be due to cultural background of East Asian people as suggested by previous studies (Shoaib et al., 2016; Wong & Niu, 2013; Frambach et al., 2014). The neutral score could also be due to their positive experiences with clinical teachers that may balance out their negative experiences. Overall, for all students and all domains the agree and neutral responses were higher than the negative responses. The criteria from the coaching domain that has high disagreement score was “*observed me while doing my task*”. The highest score is from year 3 followed by year 4 and year 5 with a score of 16.3%, 14.5% and 10.5% respectively. This could be due to the teacher /student ratio in clinical settings where one clinical teacher is usually assigned to supervise 8-12 students. Another likely cause for disagreement score of 16.3% for year 3, is their need for more guidance than other senior students.



Based on the articulation domain, the criteria for asking questions received a high percentage of agree for all students especially year 4 which could be attributed to their increased interest in clinical tasks as they become more efficient in clinical performance. In the current study, items in the articulation domain demonstrated a high percentage of agreement which corroborates the findings of Shoaib et al. (2016).

In the reflection domain a tendency for positive responses for all clinical years was detected. Year 4 students recorded higher agree scores than year 3 and 5, which shows a similar trend to that of the articulation domain which could be attributed to their increased interest and efficiency in the clinical tasks. The results of the reflection domain seem to be consistent with the previous Malaysian study by Shoaib et al. (2016). The general learning environment domain showed most of the criteria with highest percentage of neutral responses. However year 5 students expressed their need for more time given to them by the clinical teachers, this could be attributed to the fact that most year 5 students were trying to accomplish their required tasks of clinical assignments to be able to sit for the final exam. These findings are consistent with those of previous studies by Shoaib et al. (2016) and Polyzois et al. (2010), which indicates that this is a common problem in most dental schools. Moreover, these results highlight the need for improvements in this area. The aforementioned general similarities between the findings of this study and that of Shoaib et al. (2016), could be attributed to the fact that both studies were conducted in a public Malaysian university, however, it is important to bear in mind that these results cannot be generalized and that more studies are needed in other public and private dental schools in Malaysia. According to Fugill (2005), clinical teachers' punctuality, consistency, availability, understanding, and respect were important aspects highlighted by students. Students' evaluation on identifying the characteristics of effective clinical teachers are important in drafting guidelines for teachers' conduct in clinical settings for a comprehensive and effective way to educate and create an effective learning environment for the students. Moreover, the result of this study and other similar studies could aid in establishing an effective clinical conduct guideline.

## CONCLUSIONS

The clinical experience and the impact of the clinical teachers were mostly satisfactory in faculty of dentistry, UiTM. Further improvements of the clinical environment can be achieved regarding the areas of concern.

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## REFERENCES

- Anderson VR, Rich AM, Seymour GJ. Undergraduate dental education in New Zealand:2007- 2009 final- year student feedback on clinical learning environments. *NZ Dent J.* 2011; 107:85–90.
- Carnell E. Conceptions of effective teaching in higher education: extending the boundaries. *Teach High Educ.* 2007; 12:25–40.
- Collins A., Brown JS, Newman SE. Cognitive apprenticeship: teaching the crafts of reading, writing, and mathematics. In: Resnick LB ed. *Knowing, Learning, and Instruction: Essays in Honor of Robert Glaser.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, Inc; 1989:453–494.
- Frambach JM, Driessen EW, Beh P, van der Vleuten CPM. Quiet or questioning? Students' discussion behaviors in student- centered education across cultures *Stud High Educ.* 2014;39:1001–1021.

- Fugill M. Teaching and learning in dental student clinical practice. *Eur J Dent Educ.* 2005; 9:131–136.
- Gerzina TM, McLean T, Fairley J. Dental clinical teaching: perceptions of students and teachers. *J Dent Educ.* 2005; 69:1377–1384
- Graffam B. Deriving better questions: creating better clinical instruction. *Clin Teach.* 2008; 5:98–102.
- Mullins G, Wetherell J, Robbe I. Learning in the clinical environment. In: Sweet J, Huttly S, Taylor I, eds. *Effective Learning and Teaching in Medical, Dental and Veterinary Education.* London: Kogan Page; 2003:164–179
- Polyzois I, McLoughlin J, Kelly A, Claffey N. Clinical teaching in restorative dentistry and the variation between students' and supervisors' perceptions of its effectiveness. *Eur J Dent Educ.* 2010;14: 92–98.
- Rogelberg, S. & Stanton, J. Understanding and dealing with organizational survey nonresponse. *Organizational Research Methods*, 2007, 10, 195–209.
- Shoaib et. al. Dental students' perceptions on the contribution and impact role of a clinical teacher. *Eur J Dent Educ.* 2016;22: e26–e34.
- Stalmeijer RE, Dolmans DHJM, Wolhagen IHAP, Muijtjens AMM, Scherpbier AJJA. The development of an instrument for evaluating clinical teachers: involving stakeholders to determine content validity. *Med Teach.* 2008;30: e272–e277.
- Stalmeijer, Renee & Dolmans, Diana & Wolhagen, Ineke & Muijtjens, Arno & Scherpbier, Albert. The Maastricht Clinical Teaching Questionnaire (MCTQ) as a Valid and Reliable Instrument for the Evaluation of Clinical Teachers. *Academic medicine: journal of the Association of American Medical Colleges.* 2010; 85. 1732-8.
- Weiner, S.P. & Dalessio, A.T. Oversurveying: Causes, consequences, and cures. In A.I. Kraut (Ed.), *Getting action from organizational surveys: New concepts, methods, and applications.* San Francisco, CA: Jossey-Bass, 2006, pp. 294–311.
- Wong R, Niu W. Cultural difference in stereotype perceptions and performances in nonverbal deductive and creativity. *J Creat Behav.* 2013; 47:41–59.