

Effectiveness of Peer-Assisted Learning - Perception of Dental Students in an Academic Institution in the UAE

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Abstract

Peer learning is the process of students learning with and from each other. It is a collaborative learning strategy that is based on the learning theories of social constructivism and cognitive congruence. The aim of this study was to evaluate the perception of dental students on the implementation of the peer-assisted learning experience in an academic institution in the UAE.

A retrospective cohort study was conducted at Gulf Medical University, College of Dentistry, for the evaluation of the perception of dental students on the implementation of the peer-assisted learning experience by administering an electronic questionnaire through Google Forms.

The majority of the PLs (Peer Learners) (68.8%) agreed that the match with their peer guides was appropriate, (59.4%) agreed that “the program helped them to achieve better results.”, and (65.7%) would recommend other students to join the program. The majority of PGs (Peer Guides) (81.3%) were satisfied with their work, (81.3%) believed that the program helped them improve their communication and leadership skills and (87.5%) would recommend the program to other students.

Peer-assisted learning is a beneficial teaching method that has been shown to be an effective strategy for boosting students' comprehension and retention of complicated content and for fostering a good learning environment in undergraduate dental schools.

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Introduction

Peer learning is the process of students learning with and from each other. It is a collaborative learning strategy that is based on the learning theories of social constructivism and cognitive congruence.¹ This is usually facilitated through teaching and learning activities such as student-led workshops, study groups, peer-to-peer learning partnerships, and group work. Some benefits include the development of student collaboration and communication skills, enhancement of student confidence, and the ability to take control of their own learning. Students feel more comfortable working with their

peers, so they may interact and engage in reflection and explore ideas more deeply than in a teacher-led environment.^{2,3}

With this background our study aimed at evaluating the perception of dental students on the effectiveness of peer-assisted learning in our academic institution.

Peer learning is a potentially powerful way of sharing knowledge among students. It recognizes that, ultimately, learning takes place between individuals, and it facilitates interpersonal interchanges that are well-matched and that are based on trust and commitment. Peer learning can be evaluated based on whether peer engagements and sustained individual contacts produced the right learning outcomes for the right individuals to achieve changes that matter.³

Peer learning is most effective when learning objectives are clear and peer engagements are structured to maximize these objectives. Peer learning is also optimized when

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individual peers have been matched appropriately and are authorized and empowered to engage effectively. Learning is best facilitated when peers do things together and reflect regularly on what they are learning. Another driving factors for successful peer learning are that peers engage with each other in an honest and committed manner.⁴

The learning gains of individual peers must be communicated back to those authorizing the engagement of these peers to ensure continued support for the learning process. Peers should be encouraged and empowered to share their learning back into their institutions. This process is facilitated if the institutions authorize peer guides to engage in active interaction with their peers. Facilitators need to simplify the process of peer engagement to ensure peers find this process as easy-as-possible. The many facets of peer learning gains have been evaluated—from initial engagement through individual learning to institutional learning (from the peers) resulting in an effective learning experience.⁵⁻⁷ There are several types of peer tutoring; same-age peer tutoring, cross-age peer tutoring, class-wide peer tutoring, incidental peer tutoring, and structured peer tutoring. While there is no magic recipe for peer learning, and indeed all peer learning initiatives will look different, the existing literature suggests the following common stages involved in the peer learning process. These stages combine into a peer learning process map and involve; firstly a pre-foundational engagement where consideration is given to basic questions about peer engagement, followed by a foundational event, then a period whereby peer engagement is sustained over time to build trust and sharing, accompanied by structured engagements to actually foster relevant learning outcomes in individuals, and lastly a period whereby learning is diffused from individuals to institutions to foster a scaled impact.⁸⁻¹⁰

Peer learning takes place among two or more learners who share common status. At the end of the learning experience, learners are competent enough in a task that they could not have accomplished individually. The success of the peer learning process depends on the teaching role of the peer guide and the student's readiness for peer learning. When peer learning and teaching opportunities are implemented properly by avoiding faults, it would work as one

of the most effective learning teaching methodologies due to its multi-functional approach.¹¹⁻¹³

Materials and methods

This study was performed at the College of Dentistry, Gulf Medical University, following the approval of the ethical committee (Ref. no. IRB-COD-FAC-35-MAR-2023).

Study design:

A retrospective cohort study was conducted at Gulf Medical University, College of Dentistry, for the evaluation of the perception of dental students on the implementation of the peer-assisted learning experience.

Population and sample size:

The peer-assisted learning was introduced by the College of Dentistry as a peer guide program (PGP) that included 40 peer learners (PLs) who represent the 10 low-performing students in each year group from Y2-Y5 and 40 peer guides (PGs) who represent the 10 high-performing students in the same year groups Y2-Y5; with a total of 80 students included in the program (N=80).

At the end of the academic year, links to questionnaires which included both closed-ended and open-ended questions were sent to all students included in the program to evaluate their experience.

Informed consent was implied by participants' completion and submission of the questionnaire. Prior to taking the questionnaire, participants were informed of the purpose of the study and their voluntary participation. They were also made aware that their responses would be anonymous and confidential. By submitting their responses, participants indicated their understanding of the study's purpose and their willingness to participate. The questionnaire was validated by two subject matter experts.

A total of 64 students responded to the questionnaire (N=64), 32 PLs and 32 PGs.

The following open-ended questions were included in the questionnaire:

- What did you like most about the experience?
- What would you suggest for improvement?

Inclusion criteria:

Y2 – Y5 BDS students

10 students with the highest CGPA in each year group

10 students with the lowest CGPA in each

year group

Exclusion criteria:

Y1 BDS students

Students who didn't consent to participate in the questionnaire.

Procedure:

10 students with a low performance from each year group (year 2 - year 5) were identified according to their CGPA. A student is identified with low performance if his/her CGPA is less than 2.5. Any student who has a CGPA of more than 3 but is identified by the year coordinator to have some difficulties was also included in the program.

Each of these students had a peer guide chosen according to his/her performance and willingness to participate in the program. The students were then matched together by the program director.

Meetings were conducted for students of each year group. Each meeting included: the low-performing students, their mentors, their peer guides, and the program director. During the meetings, the students were paired and oriented about the whole process.

The assigned mentors for low-performing students were instructed to monitor the meetings between the students and their peer guides during their mentor-mentee meetings and document them.

At the end of the Academic year, the students were asked to complete a survey about their perception of the PGP.

Statistical data processing

The data are presented in the form of arithmetic mean and standard deviation in the form of frequency and percentage. A comparison of age between groups was performed by t-test. The categorical variables were compared using the Chi-square test or the Fisher Exact test. The hypothesis was tested with a significance threshold of $p < 0.05$. Statistical analysis was performed in the R statistical language (version 4.1.3).

Results

Thirty-two PLs and PGs participated in the research. The average age of the surveyed PLs was 21.91 ± 1.78 (Min 19, Max 25). The average age of the surveyed PGs was 21.47 ± 1.39 (Min 19, Max 24). The number of males PLs was higher (59.4%) as compared to

female PLs (40.6%). The number of female PGs was higher (90.6%) as compared to male PGs (9.4%). According to the year of study, the majority of PLs were fifth-year students (37.5%) and there was a uniform distribution of the PGs across the academic years. (Table 1).

| | Peer learners (PLs) | | Peer Guide (PGs) | |
|---------------|---------------------|------|------------------|------|
| | Count | % | Count | % |
| Students | | | | |
| Gender | | | | |
| Male | 19 | 59.4 | 3 | 9.4 |
| Female | 13 | 40.6 | 29 | 90.6 |
| Age | | | | |
| 19 | 2 | 6.3 | 3 | 9.4 |
| 20 | 5 | 15.6 | 6 | 18.8 |
| 21 | 9 | 28.1 | 5 | 15.6 |
| 22 | 5 | 15.6 | 11 | 34.4 |
| 23 | 4 | 12.5 | 5 | 15.6 |
| 24 | 3 | 9.4 | 2 | 6.3 |
| 25 | 4 | 12.5 | 7 | |
| Year of Study | | | | |
| Year 2 | 8 | 25.0 | 8 | 25.0 |
| Year 3 | 8 | 25.0 | 7 | 21.9 |
| Year 4 | 4 | 12.5 | 8 | 25.0 |
| Year 5 | 12 | 37.5 | 9 | 28.1 |

Table 1. Demographic characteristics of students and peer guides.

| Peer-Learners (PLs) | | | Peer-Guides (PGs) | | |
|---|-------|------|--|-------|------|
| I believe that the process of matching students with their peer guides was appropriate. | | | I am satisfied with my role as a peer guide. | | |
| Strongly disagree | 1 | 3.1 | Strongly disagree | 0 | 0.0 |
| Disagree | 1 | 3.1 | Disagree | 0 | 0.0 |
| Neutral | 8 | 25.0 | Neutral | 6 | 18.8 |
| Agree | 11 | 34.4 | Agree | 18 | 56.3 |
| Strongly agree | 11 | 34.4 | Strongly agree | 8 | 25.0 |
| The program helped me in achieving better results | | | The program helped me improve my communication and leadership skills | | |
| Strongly disagree | 2 | 6.3 | Strongly disagree | 0 | 0.0 |
| Disagree | 1 | 3.1 | Disagree | 0 | 0.0 |
| Neutral | 10 | 31.3 | Neutral | 6 | 18.8 |
| Agree | 10 | 31.3 | Agree | 22 | 68.8 |
| Strongly agree | 9 | 28.1 | Strongly agree | 4 | 12.5 |
| I Would recommend that other students join the program | | | I Would recommend the program to other students | | |
| Strongly disagree | 2 | 6.3 | Strongly disagree | 0 | 0.0 |
| Disagree | 1 | 3.1 | Disagree | 0 | 0.0 |
| Neutral | 8 | 25.0 | Neutral | 4 | 12.5 |
| Agree | 10 | 31.3 | Agree | 23 | 71.9 |
| Strongly agree | 11 | 34.4 | Strongly agree | 5 | 15.6 |
| | Count | % | | Count | % |

Table 2. Answers of peer learners and peer guides.

avoiding bias. At the Gulf Medical University, implementation of the peer-assisted learning (PAL) program was based on those students who were at risk (< than 2.5 CGPA) and were enrolled in the program alongside PGs who attained a CGPA of more than 3.5.

The PAL program received positive feedback from peer guides (PG) and learners (PLNs). Concurrent with other studies, the present study also found PAL to be a constructive measure of teaching and learning, thereby enhancing self-directed learning. In the present study, more than 50% of the PLNs agreed that the PAL program helped them achieve their targeted goals. These results could be attributed to the foundation of PAL, which is based on the cognitive congruence between the same level of PGs and PLNs, creating an informal student-friendly learning environment, and thereby fostering a sense of community. This allows the PLNs to ask questions, volunteer to perform tasks, and discuss their ideas and concerns with colleagues without hesitation in a relaxed environment encompassing the constructivist social theories alongside the cognitivist learning theory. In a recently reported systematic review, the authors concluded that the learning experience of medical students could be enhanced by incorporating PAL strategies through educational interventions in the curriculum. PAL is also known to inculcate leadership and teamwork skills in students.¹⁵⁻¹⁷

According to the survey results, 81.3% of the PGs were satisfied with their role. PGs tutored the PLNs both in the theoretical and practical aspects, thereby improving their medical knowledge and pedagogical skills. For example, in the 5th year, PLNs and PGs worked as a team during clinical postings, which helped both the PGs and PLNs to improve their clinical skills. PGs also guided the PLNs in organizing studying schedules and following up with submission deadlines of practical/clinical logbooks and assignments. In a recently reported randomized control trial, it was observed that peer teaching positively affected both the theoretical knowledge and procedural skills of both tutors and tutees.¹⁸

PAL promotes a positive learning environment by creating a sense of community among students. It encourages active learning and student engagement. This was evident from students' responses to their opinion about the experience, many students replied that it gave them

opportunities for "interaction" and "better communication" with their peers. It improved their leadership as well as their communication skills, and the program allowed them to make more friends and boosted their self-confidence. These responses are in accordance with many studies which showed positive perceptions of PAL from the students' perspectives.¹⁹⁻²²

Participation in PAL allowed students to form mutually-beneficial networks, which increased their social connections and made learning more attractive. These social connections fostered a feeling of belonging that served as the foundation for a supportive education process. The perception of PAL's success was largely attributed to its welcoming, easygoing "safe place" setting, which allowed learners to raise questions without fear of being reprimanded.²³

Moreover, the act itself of peer tutoring is thought to provide a rich learning opportunity for students to revise their own knowledge and skills. Additionally, PAL offers resource-saving measures for universities and hospitals. Participation in PAL activities provides additional support in preparation for assessments and may address gaps in curriculum delivery.²⁴

Despite the many benefits of PAL, several obstacles must be addressed. One of the greatest obstacles is ensuring that every student participates and contributes to teamwork. It might be challenging to guarantee that every learner participates and that everyone works efficiently together. This was evident through the students' responses to their suggestions for improvement; many students responded that they needed more frequent meetings with their peers and highlighted the importance of the mentor role in following up on the sessions. This indicates the need for students to share their clinical experiences with colleagues and supervisors, which enables them to boost their self-confidence. Mutual interaction enables a better cognitive perception of the clinical aspect of a certain clinical procedure.

Conclusions

Peer-assisted learning is a beneficial teaching method that has been shown to be an effective strategy for boosting students' comprehension and retention of complicated content and for fostering a good learning

environment in undergraduate dental schools.

Challenges such as equal participation among learners must be addressed. To overcome these obstacles, strategies to increase engagement and inclusivity should be explored, with an emphasis on the role of mentors to work in collaboration with peer guides to maximize the benefits of peer-assisted learning.

Given the limited sample size in the current study, future research including a larger population should be conducted to gain a more comprehensive and accurate understanding of the effectiveness of the PAL program.

Declaration of Interest

The authors report no conflict of interest.

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