

Peeragogy Teaching Method in Oral Pathology Course

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Abstract

Oral pathology is one of the subjects taught to undergraduate dental students. This study aimed to investigate the outcomes of different teaching and learning methods in Oral pathology.

47 3rd-year students of the 2017/2018 batch at the National University of Malaysia Dental Faculty participated. Results from two mini tests were evaluated and compared with the previous batch to identify any differences in students' achievement between peeragogy and conventional teaching methods. A questionnaire is then used to evaluate the students' perceptions.

46.6% of the control group and 48.9% of batch 2017/18 passed test 1, while all students passed test 2. 43.2% of students preferred peeragogy as compared to the conventional method (40.9%). The majority agreed that they learn best when participating in activities with friends (68.2%), having discussions with friends (52.3%), and best by practicing the activities with friends (74.4%).

In conclusion, students' performance does not depend exclusively on the teaching methods used. Other factors may affect the student's performance. However, peeragogy can be used to create more enjoyable and attractive teaching and learning methods to improve their understanding.

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Introduction

Ever since 1994, educators in Malaysia have been using pedagogy as the main concept of teaching, which was suggested by the Ministry of Education and is still being practiced with improvisation to include the Higher Order Thinking Skill (HOTS) apparatus¹. With the advancement of technology, peeragogy, or the peer-learning approach, has become the current trend in which it emphasized peer-learning in between students and how the connection between students can help stimulate the learning environment and provide a foundation for self-directed learning².

The new generation of students is blessed

with the advancement of technology and can assimilate the use of new gadgets into their daily activities, including learning. Unfortunately, most of these advanced tools had to be put away during conventional academic sessions. Moreover, for oral pathology, which is known as a difficult subject to learn or teach as it involves the identification of microscopic structures, unfamiliar pathology terms, and plenty of topics to cover, the traditional teaching method is still used. These include a series of lectures, tutorials, and examinations at the end of the semester.

The idea of converting the traditional teaching system could have an impact, especially in oral pathology and in dental education in general, since the lecturers can accommodate students' interest in learning the subject by incorporating learning activities that are reportedly favored by students. This method could increase their academic performance^{3,4,5}.

In our study, we compared the students' performance in two different batches in an oral pathology class between peeragogy and conventional teaching and learning approaches.

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Materials and methods

Ethical approval was obtained from the Research Ethics Committee of Universiti Kebangsaan Malaysia (RECUKM); UKM PPI/111/8/JEP-2018-514. A convenient sampling of 47 3rd-year dental students from the Faculty of Dentistry, The National University of Malaysia (UKM), was conducted. Informed consent was obtained from all the subjects.

1. Teaching material preparation and teaching Process

Various games and activities have been conducted in the class throughout the 3rd academic year of batch 2017/2018 dental students (n=47). Games such as *Kahoot!*, treasure hunts, charades, and crossword puzzles were used in this research. Students were arranged into small groups and encouraged to use mobile devices and to have discussions among themselves during the games.

To begin with, after each lecture, the students will present an impromptu summary of a particular topic. This was to assess their understanding of the given topic learned on that day. Meanwhile, the content of the games was created by the lecturers so that they tallied with the lecture topics and the syllabus provided by the Faculty of Dentistry. The games were done during additional sessions related to the topic learned.

The previous year's class (batch of 2016/2017) (n=57) was deemed an acceptable control group since they received the same number and content of lectures and tutorials conventionally.

2. Student Assessment

At the end of each semester, all students were assessed for their understanding of the topics learned in two mini-tests (Mini Test 1 and 2). In a year, there were semesters 1 and 2. Results of the two batches were compared to evaluate the differences in their performance. of the two batches were compared to evaluate the differences in their performance.

3. Students' Perception

Next, students were asked to complete a questionnaire to evaluate their perception of peeragogy and conventional teaching methods. The questionnaire was adapted from Farah and Maybury, 2009⁶ with modifications, and conducted on an online platform using Google Forms. It consisted of ten questions, each with

three possible answers: agree, undecided, and disagree (table 1). We classified the questionnaire into 3 parts, which are: part 1: Student's Perception (questions 1 and 2) in Figure 2; part 2: Attractive Learning Experience (questions 3, 4 and 5) in Figure 3; part 3: Impact on Learning Process (question 6, 7, 8, 9 and 10) in Figure 4.

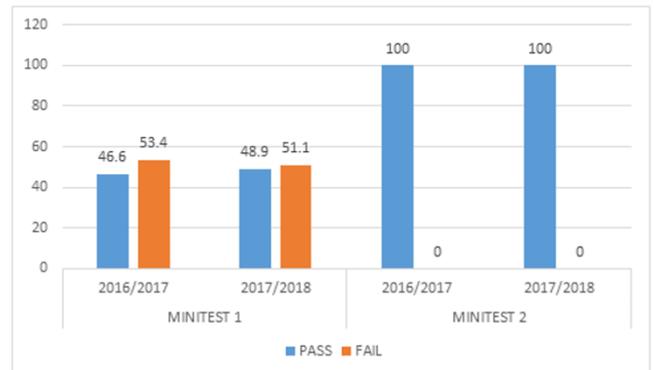


Figure 1. Percentage of Student Passing Their Tests.

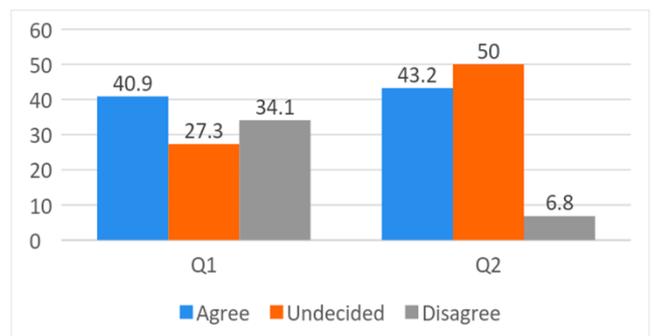


Figure 2. Students' Perception on Teaching Methods.

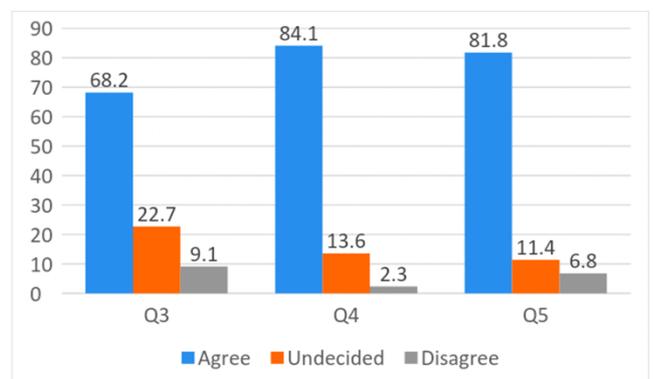


Figure 3. Students' Perception on Learning Experience.

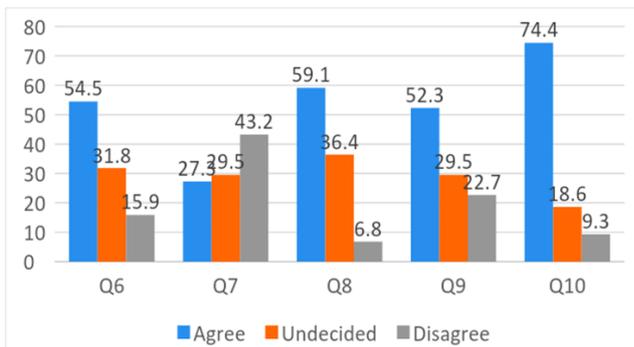


Figure 4. Students' Perception of the Impact of the Learning Process.

Results

In Mini Test 1, 46.6% of students in the control group passed, while 48.9% of students from batch 2017/2018 passed. The average scores were (48.34 ± 7.01) and (48.06 ± 8.88) respectively for the batches of 2016/2017 and 2017/2018. The maximum and minimum marks for both batches were also almost equal, where the minimum marks for the batch of 2016/2017 was 32 and 22 for the batch of 2017/2018. While the maximum mark for the 2016/2017 batch was 65, the maximum mark for the 2017/2018 batch was 62 (table 2).

For Mini Test 2, all students from both batches passed their test, with the control group's average mark being (72.96 ± 6.29) , and the test group's average score being (71.27 ± 6.09) , as shown in Figure 1 and Table 2. There was an improvement for both batches, where the minimum marks for the batch of 2016/2017 were 61 and 59 for the batch of 2017/2018. While the maximum marks for the batch of 2016/2017 were 84 and 88 for the batch of 2017/2018.

Tests of simple main effects for both batches across the two assessments revealed that, for Mini Tests 1 and 2, no significant differences were detected between the two batches. In terms of scores for individual students of both batches, the highest and mean marks were noted in Mini Test 2 (Table 2).

44 out of 47 students (batch of 2017/2018) who responded to the questionnaire contributed to 93% of respondents. The results are as shown in figures 2, 3 and 4.

Discussion

Peeragogy, which is also referred to as

“*paragogy*”, is defined as a collection of “the best practices of effective peer learning”². While pedagogy transmits knowledge from teachers to students, peeragogy produces and applies the knowledge together. Hypothetically, peeragogy assimilates peer-to-peer learning, and teaching likewise tackles the challenge of self-directed learning. In addition, the strength of peeragogy is its flexibility and robustness. Apart from education, peeragogy can also be applied in organizations or society².

Learning is a personal and interpersonal skill, and educational technologies can aid material search as well as make the learning experience meaningful and full of enthusiasm. In addition, educational technologies increase accessibility to endless pieces of information, and students can contribute to building knowledge comprehension together^{2,5}.

Concurrently, when compared to traditional teaching approaches, our choice of interactive games in the study, for example, using Kahoot!, a game-based student response system, increased peer participation, engagement, and motivation, as well as reduced student anxiety⁷. Treasure hunt games encourage peer interaction and creativity, and when combined with mobile device use, they support the learning process as well as the flexibility of roles played by students in their groups^{8,9}.

Likewise, charade and crossword puzzles were developed to address the need of students to understand the key terminologies and concepts in the oral pathology course. The charade focused on fun and entertainment, which is also a great ice-breaker among the students, and the crossword puzzle assists students to mediate the knowledge gap and provides teachers some flexibility in the textbook usage¹⁰.

Earlier work had shown that technology media was associated with improved knowledge in higher education learning^{11,12} as also seen in students' feedback in our study, in which they enjoyed and understood more of the oral pathology topic when peeragogy was applied. Hence, students' knowledge might also be enhanced when teaching aids like the games are incorporated. According to a systematic review on palliative care education¹¹ the use of a mix of didactic and experiential teaching and learning tactics, which is akin to the peeragogy notion, has been shown to improve student learning outcomes.

Furthermore, the mythical belief that students can multitask¹³ when using computers was not true in our findings, and it was due to the distractions coming from the internet, such as social media, blogs, and YouTube channels. It is also important for educators to recognize students have different learning styles, and thus assessing their preferences will improve the success rate of method assimilation and learning experience^{14,15,16}.

The results of this study indicate that the conventional method was proven effective in delivering oral pathology as there was no significant difference between the success rates of the peeragogy-incorporated group and the conventional teaching method group. Though there is a minute difference seen, especially in Mini Test 2, when the maximum and minimum scores achieved by the students in the batch of 2017/18 were slightly higher than the previous year's class, it is not statistically significant. Based on a previous study, the quality of the learning is supposed to determine the quality of the results accomplished¹⁷. However, this study was not in total support of that finding as it did not include factors like discipline, which are an important contributing factor in determining students' academic performance. In addition, the number of learning sessions, competencies, and requirements can be contributing factors to students' performance¹⁶.

The advantages of our study when incorporating teaching aids like the games are that the students can learn in a more fun and relaxing environment since they can discuss and interact with their friends regarding the topic that has been given. Secondly, they can share their opinions among them, through which they can gain more knowledge and understanding about the given topic. Since the oral pathology course requires the students to master radiographic, histological, and clinical features of the lesions, the use of video and visual aids can help the students visualize the features more effectively. These were observed during the Kahoot! game. Apart from that, the combination of peeragogy and lectures helped the students to boost their understanding since the lecturers guided them during the interactive games.

Unfortunately, our study showed that the students become too dependent on their friends since they work in groups and some of their friends might take advantage of the situation.

This will cause only one party to get the benefit from this study, and their friends might be stressed out, as there is no cooperation given by them. Furthermore, the peeragogy method requires preparation before class to fully gain the benefits of this method. Unable or failing to prepare adequately before class will cause the students to feel left out or confused and making it difficult to understand the topic that has been taught, which renders the activities conducted rather useless. Additionally, the 2-month gap between the last activities and the test was considered too long, and this was due to the semester break before Mini Test 1, as shown in Figure 1. This long break caused the students to forget what they had learned, and last-minute study might have been the reason for the poor result. Finally, yet importantly, students' attitudes and teaching preferences should be taken into consideration, as different students understand better with different teaching and learning styles.

The improvements that can be made for future research based on our study are, to begin with, the idea of conducting peeragogy method needs in variety n that does not solely depend on only games, for example, including public speaking. In addition, preparation may include assessing students' learning preferences using the VARK (visual, aural, read/write, kinesthetic) questionnaire before proceeding with the activities that are group targeted. This is because different students may prefer different teaching aids to boost their understanding of the topic learned. Then, the time frame between the last activity done and the test must be the same between the control group and the test group to achieve correct data and minimize errors in data analysis. It is suggested that dental school administrators consider expanding the number of alternative or variety materials for teaching dentistry using current technology.

Conclusions

Peeragogy is an interesting and fun teaching tool, especially when integrated with the advancement of technology to aid the learning process. In our study, it was found that students favored learning using the peeragogy method compared to the conventional method used, as it is more enjoyable, enhances understanding, and improves communication among peers regarding the topic learned. Nevertheless, conventional

teaching has proven comparatively effective in knowledge delivery. Further investigation to determine other factors that affect the learning process of dental students and long-term monitoring of the efficiency of this teaching modality is needed.

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Declaration of Interest

The authors report no conflicts of interest.

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