

Teaching innovation in the dental curriculum: student feedback and future aspects

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Abstract: *Introduction:* Education is a constant and evolving field. With changing times, there is a need to change the teaching methodologies to involve the students in the learning process through different approaches. *Aim:* To assess the feedback of dental students on introducing newer teaching innovations i.e. crossword puzzles and spinwheel games. *Materials and Methods:* The study included 112 Dental students and 75 dental intern through convenience sampling in a dental college of Greater Noida who were involved in interactive sessions viz crosswords and spinwheel games in the subject of Public Health Dentistry. The students were the asked to fill a feedback form which was both open ended and close ended in nature. The questionnaire was pre-validated and pre-tested. Data was analysed using SPSS version 22.0 and the chi square test was applied to find out statistical differences, if any. *Results:* The sample consisted of 27 (14.4%) BDS third year, 85 (45.5%) BDS Final year students and 75 (40.1%) dental interns. The entire study population had a strong female predilection (126, 67.4%). A majority of the students 165 (88.2%) statistically favored the teaching innovation (p<.05) and responded positively to conducting such activities in the future. The students, in particular girls favoured these teaching methodologies more as compared to males. *Conclusion:* Students preferred that use of such innovative techniques for learning as it was an interactive and informative session. We suggest the inclusion of such methodologies in the teaching curriculum.

Keywords: Innovation, Crossword, Spinwheel, Teaching, Students, Feedback

Introduction

The present generation of students consider themselves to be “millennials”. They have rapid access to information via the internet, live life in the fast lane and want instant gratification for their acts. The way they imbibe knowledge is changing and have various other options other than reading their course books. The education scenario is also changing with diversity in the classroom with respect to different aspects (culture, religion, family background, etc) and due to the aforementioned diversities, students’ learning needs are also becoming increasingly diverse [1].

Due to the short attention spans of the students, they tend to become bored of the typical lecture

based on PowerPoint presentations. A researcher has aptly stated that students feel ignored in lecture halls when the instructor is focusing on the presentation and not paying attention to the class. Specially, if the faculty member does not have a remote mouse, he or she may not be able to leave the podium because of the need to advance to the next slide. A PowerPoint presentation also mostly serves as a one-way method of information dissemination bores the student easily [2].

An interesting research by the team at Harvard conducted a study to compare the effectiveness of Power Point as a presentation tool and compared 'zoomable user interfaces' (ZUIs) and oral presentations. It was concluded that PowerPoint fails in two key

areas: increasing information transfer to our target (students) and improving what people think of your brand (and you) [3].

As teachers, our purpose of education the student is to not just make a student literate, but to inculcate rationale thinking, knowledge ability and self-sufficiency [4]. Hence, the need of the hour is to introduce innovate teaching methodologies which includes all the students and make them learn the concepts of the topic being taught. The aim of this study is to assess the feedback of dental students on introducing newer teaching innovations i.e. crossword puzzles and spinwheel games.

Material and Methods

This study, conducted by the department of Public Health Dentistry, School of Dental Sciences, Sharda University was done on BDS students and interns was designed to be cross-sectional in nature. The students were selected by convenience sampling. The students were given class notices one week previously in the lecture conducted by the department. The notice did not mention the name of the game and were only told about an “innovative game” to be conducted in the upcoming lecture. The topics were given in

the class notice itself. For the spinwheel game, the topic was “epidemiology of oral diseases” and for the crossword puzzle, the topic selected was “general epidemiology”. The topics were selected based upon its relevance in the upcoming examinations as they frequently are included as long notes in the university examination. The crossword puzzle was pre-tested and pre-validated one week before being given to the students.

The crossword puzzle was an individual activity and students and interns were given 40 minutes to complete the same. Two faculty members were present to ensure that proper implementation of the activity. The activities were conducted in the lecture halls of the dental college. The spinwheel game was a group activity and student were divided in four teams (A, B, C & D). The spinwheel contained numbers from 1-8, along with two boxes continuing the roll numbers of students (box 1, divided into four compartments) and the second (Box 2) containing 20 chits pertaining to topic provided in the class notice. Figure 1 shows the spinwheel game in progress.

Fig-1: The Spinwheel game in progress



The four compartments of box 1 was divided according to the roll numbers of the students, as groups A-D were also divided according to roll numbers. Each group contained twenty roll numbers in sequence. On the day of the game, a random roll number was selected from box 1 for

group A, and was called in front to select the topic from box B. The student went back to his group and was given 5 minutes to prepare an extempore after inputs from his group. This activity was repeated for all groups. The extempore was for 2 minutes and groups were

awarded points for their responses. This exercise was carried out for four rounds and the team with the maximum marks was adjudged as the winner.

In the last 10 minutes of each activity, students were given a feedback form which contained 9 open-ended questions so that we could give the students the freedom to answer as per choice. The last questions asked for feedback while the fourth question asked students about what they liked/disliked in the game. The responses were then entered into Microsoft excel, descriptive statistics were applied to calculate mean and other statistics. Data was then entered into SPSS

version 21.0 [5] and the chi-squared test was applied to calculate statistical differences, if any.

Results

Table 1 Depicts the total number of students participating the games. It was seen that on an average, 187 students participated in both the games with females (153,81.8%) forming a majority of the students. The maximum students were from final year (79, 42.2%), followed by interns (75,40.1%) and third year BDS (33,17.7%).

Sl. No	Year of study	Males	Females	Total
1.	Interns	19(25.3%)	56(74.7%)	75(40.1%)
2.	<ul style="list-style-type: none"> BDS Final Year BDS Third Year 	11(13.9%) 04(12.1%)	68(86.1%) 29(87.9%)	79(42.2%) 33(17.7%)
3.	• Total	34(18.2%)	153(81.8%)	187(100%)

Q. No	Title	Responses (Crossword Game)		Chi-Squared analysis (p value)	Responses (Spinwheel Game)		Chi-Squared analysis (p value)
		Yes	No		Yes	No	
1	Was the topic for this game appropriate	159 (85.1%)	28 (14.9%)	NS	171 (91.4%)	16 (18.6%)	NS
2	Were the instructions clear and understandable	171 (91.4%)	16 (18.6%)	NS	135 (72.2%)	52 (27.8%)	0.01
3	Do you prefer these games over lectures	160 (85.5%)	27 (14.5%)	NS	180 (96.3%)	7 (3.7%)	NS
4	Do you prefer such games to be played in the future also	185 (98.9%)	02 (1.1%)	NS	187 (100%)	0 (0%)	.03
5	Would you prefer this game to be played in groups or as an individual	Group 126 (67.3%)	Individual 49 (26.2%) Both 12 (6.5%)	.02	Group 147 (78.6%)	Individual 14 (7.5%) Both 26 (13.9%)	NS

The responses to the questionnaire is shown in table 2. It was observed that while both the games garnered favourable responses, the spinwheel

game was more preferred by students as all students preferred this game to the played in the future also (significant difference, p=.03).

It was seen that the instructions needed to be more specific for the spinwheel game as 27.8% students did not find the instructions given to be understandable (significant difference, $p=0.01$). More than 85% of the students responded that the

topic selected for the games was appropriate. Additional comments/ feedbacks/ suggestions and the answers for what the students liked/disliked about these games are depicted in table 3.

Table 3. Additional comments/feedbacks/suggestions and the answers for what the students liked/disliked about the games	
Answers to comments/ Feedbacks/ Suggestions	
Additional comments/ feedbacks/ suggestions	<ol style="list-style-type: none"> 1. Small topics could be helpful in learning 2. Everything was good 3. We could have such things for every topic we finish 4. If questions could be more specific like definitions, etc 5. Games should be more frequent 6. Please do give picture games for diagnosis
What did you like/ dislike about these game	<ol style="list-style-type: none"> 1. It was unbiased 2. We Answered: You don't give us marks 3. Bias 4. I liked that everyone had a chance to participate and the right answers were appreciated 5. Like: The team up: Dislike: nothing 6. I like how the game made me more interested in the subject more than ever 7. The concept was really good and such games will develop our interest in the subject 8. I like that the game is not like regular class

Discussion

The present study, with the aim to assess the feedback of dental students on introducing newer teaching innovations i.e. crossword puzzles and spinwheel games found that more than 85% of students found both the games favorable. These innovations in teaching methodologies are appreciated/given positive feedback by students and are in agreement to Devi K et al [6] (Quiz method as an alternative and innovative method to teach the topic “International Health” for undergraduate medical students) and Sipiyrak K et al [7] who used GRAPHIC (Games Research Applied to Public Health with Innovative Collaboration)-II, as a serious game for learning dental public health by the dental undergraduates at King’s College London for the academic year of 2013-2014.

The topic chosen for both the games was done after careful consideration. Dental students come in contact with the subject of Public Health Dentistry in the third year and final year of their academic career, and to garner their interest in the

subject, epidemiology was chosen as it is an important topic which has future practical applications.

In support of this statement, Soudarsannane MB et al. [8] made first year clinical students of MBBS undergo case-control studies, second year students were involved in community based epidemiological studies while the interns were projects related to social factors in health and diseases and towards health administration were encouraged and these innovations were largely welcomed by the students. Sharma DB et al [9], in their study reported that regarding the subject of community medicine, 76% students stated that field visits contribute much to their practical skills and knowledge, while almost two-third (61.4%) students told that practical classes helps a lot to understand the subject better and adds extra to their knowledge. A total of 59% students opined that village stay is important and it is a different experience from classroom learning.

We could not find any such studies done with respect to dental students and utilizing the findings of our present study, would like to introduce such innovative teaching methods (future aspects) in the subject of Public Health Dentistry too as it is closed related to the subject of community medicine.

In the present study, females [153,(81.8%)] comprised of the majority of the population and this is in agreement to Doshi A et al [10] 79.5% and Shaik PS et al (75.6%) [11]. This trend is seen throughout India and can be contributed to more interest of females in pursuing this course. There is one limitation to the study, which is the creeping in of social desirability bias by the students, even though we assured full confidentiality of their responses. Also, we would like to randomly allocate the students into

different groups next time we conduct such games as to include a more heterogeneous sample. We also believe that these innovative teaching methods apart from teaching students regarding group interactions and innovative thinking promotes the important aspect of public speaking among the students, and trains well for future challenges in the field of public health dentistry.

Conclusion

The preference of the students for such innovative techniques necessitates it frequent use while teaching subjects in dentistry. Such innovations could also be included in the curriculum to give the students a breather from their regular lectures and promote learning in a fun and innovative manner.

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