SHORT COMMUNICATION

Interpretive Versus Didactic Learning Approach Towards Oral Biology: A Student's Perspective

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Abstract

This study analyzed the preference of dental students for oral biology questions that require either an interpretive or a descriptive approach to answer and to compare the preferences with their final examination result retrospectively. A questionnaire requiring student academic number and containing two questions (one asked with an interpretive approach/the other asked with a descriptive approach) from random topics of oral biology course was distributed among students who have already appeared in the final examination. Majority of the students who had achieved good grades (A+, A, B+, B) preferred interpretive questions whereas majority of the students with average grades (C+, C, D+, D) selected descriptive questions. Common reason for picking interpretive question was that it enhances critical thinking. The descriptive questions were argued to provide students with a chance to explain more. Hence, students should be encouraged to learn interpretively to promote enquiry based learning (EBL) and critical thinking.

Key Words: *Dental students. Descriptive approach. Interpretive approach. Oral biology.*

The purpose of education is not to cover the subject area but to inspire the students to cultivate their own learning tools and tactics.[1] With recent changes in the role of education, role of educators has also been transformed and now the role of an educator is not to transmit the knowledge but also to facilitate the learning process. The instructor has to help the students in developing an interpretive rather than didactic approach towards learning.[2]

Dental curriculum involves basic science and clinical subjects. Oral biology is a basic science subject that deals with the understanding, structure and function of oral tissues and bridges the gap present between basic sciences and clinical subjects.[3] Little is known about the approach of the dental students towards examination based questions and no similar study has been performed in Saudi Arabia before. Therefore, this study was carried out to evaluate whether third year dental students of College of Dentistry, University of Dammam have an interpretive (research/scenario-based) or descriptive (didactic/regurgitative) approach towards learning oral biology.

Oral biology is taught to the students during the third year (first semester) of their studies in the College of Dentistry, University of Dammam. The study involved third year dental students who have already appeared in the oral biology examination. Only male dental students were engaged for the study, as no female student was available beyond 2nd year. Ethical approval (Ref: EA 2013003) was obtained before the commencement of the study from the Ethics and Research Committee of College of Dentistry, University of Dammam and all the ethical protocols were strictly followed during the study. An informed consent was taken from all the students before participating in the study and the participation in the study was on voluntary basis.

A small power point presentation explaining the purpose of the study and how to fill the questionnaire was delivered before commencing the study. No attempt was made to follow the students who were absent on the day of study. The questionnaire was designed to evaluate whether dental students have an interpretive or a descriptive approach towards learning. Five topics were randomly selected from oral biology course which included dental enamel, dentine, tooth eruption, maxillary sinus and temporomandibular joint. Every topic included two questions. One was asked with an interpretive approach and the other with a didactic approach (Table I).

Questions based on interpretive approach were broken down into different parts in order to facilitate the students and stimulate critical thinking. Students were asked to choose one question which they preferred and also to mention the reason for its selection. Data were collected in the same session. In cases where students opted for mixture of interpretive and descriptive options, majority of answers towards one approach were considered concluding. No data except the academic number of the students was collected. Grading system used by the College of Dentistry is as follows: A+ = 95 - 100; A = 90 - 94; B+ = 85 - 89; B = 80 - 84; C+ = 75 - 79; C = 70 - 74; D+ = 65 - 69; D = 60 - 64. Data were collected and analyzed

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using SPSS software (version 19.0; SPSS, Inc., Chicago, IL, USA). Fisher's exact test was used to analyze the difference between the approach of students towards oral biology questions and grades achieved retrospectively during final examination. Grades were divided as follows: good grades (A+, A, B+, B); average grades (C+, C, D+, D). P-value < 0.05 was considered statistically significant.

The overall response rate was 100%. Of the 36 students, 12 students (33.3%) were found to have scored good grades and 24 students (66.6%) had scored average grades in the final oral biology examination. Sixteen students (44.4%) were found to have interpretive whereas 20 (55.5%) were having descriptive approach towards oral biology questions. Of the 16 students who opted to go for interpretive questions, 11 students (30.5%) had good grades and 5 students (13.9%) achieved average grades during final examination, whereas of the 20 students who chose descriptive question, 19 (52.7%) achieved average grades and only 1 student (2.8%) was able to acquire good grade (Table II). From Table II, it can be observed that majority of the students with good grades opted to go for interpretive questions as compared to the students who had average grades in the examination, who liked descriptive questions more and the difference was statistically significant (p-value < 0.05).

Educational theory proposes that learning approach of the students has a relationship with success in the examinations.[4] It has been reported earlier that most of the dental students embrace a superficial learning approach to pass basic science subjects.[5] The results of this study demonstrate that students who scored good grades in the final oral biology examination, preferred interpretive questions over descriptive questions. The possible reason for this could be that interpretive learning boosts critical thinking and amplifies one's understanding of the subject[6] which probably helped the students to gain good grades retrospectively.

Most of the students with an interpretive approach gave the reason for its selection as 'it enhances critical thinking' which is actually true and is also evident from the literature.[7] It has been proposed that breakdown of the question into relevant constituent parts not only helps in developing more effective examination question but it is also a better way to analyze the knowledge of the students.[8] This was also one of the reasons for the selection of interpretive question reported by the students. Majority of the students who had a descriptive approach provided the reason for its selection as 'we can explain more'. The likely reason for this could be that students wanted to gain good grade by expressing whatever they have learnt via their strategic learning approach. It has long been proposed that didactic learning is the least effective learning method.[9] Deep learners look for answers, design their own learning strategies, and integrate the knowledge they gain from other sources with the course material. On the other hand, surface learners only try to regurgitate the knowledge that has been provided to them.[10] Therefore, the students with descriptive approach should be encouraged to avoid planned learning which is aimed at passing the examination only and does not helps in the long run.

The results of this study showed that students who preferred interpretive questions over descriptive questions were the students who achieved good grades in the final examination. Therefore, all the students should be encouraged to learn interpretively rather than descriptively in order to promote enquiry based learning and critical thinking. These results should not be considered decisive because of the small sample size and the representation of data from only one college but they could prove useful in assessing the general learning behavior of students and their respective outcome.

Table I: Showing a question asked with an interpretive or descriptive approach.

Academic No:

Questionnaire

This questionnaire is designed to analyze your approach to examination based questions. Please select your preferred question from the following topics of oral biology course that you think should appear in the examinations and also state the reason for its selection.

Dentine

Q. 30 years old male suffered a trauma to his maxillary central incisor yesterday and complains of sharp pain on taking hot or cold drinks. On examination you observe that the incisal edge is broken horizontally upto 3 mm.

a. Name the likely condition he is suffering from? (2)

b. Why is the patient feeling pain after cold or hot stimulus? (2)

c. How would you manage the condition? (2)

OR

Q. Write a note on dentine hypersensitivity? (6)

Reason for selection:

Table II: Grades of the students in the final oral biology examination having interpretive or descriptive approach.

	Good grades (A+, A,B+,B)	Average grades (C+,C,D+,D)	Total
Interpretive approach	11 (30.5%)	5 (13.9%)	16 (44.4%)
Descriptive approach	1 (2.8%)	19 (52.7%)	20 (55.5%)
Total	12 (33.3%)	24 (66.6%)	36

Fisher's exact test, p-value < 0.001
Percentage is calculated out of total number of students (n=36)

REFERENCES

1. National Research Council. How people learn: brain, mind, experience and school. Washington DC: National Academy Press; 2000.

2. Spronken-Smith R, Walker R. Can inquiry-based learning strengthen the links between teaching and discipline research? *Studies Higher Educ* 2010; **35**:723-40.

3. Farooq I, Ali S. Comparison of the perceived relevance of oral biology reported by students and interns of a Pakistani dental college. *Eur J Dent Educ* 2014; doi: 10.1111/eje.12086.
4. Samarakoon L, Fernando T, Rodrigo C, Rajapakse S. Learning styles and approaches to learning among medical undergraduates and postgraduates. *BMC Med Educ* 2013; **13**:42.
5. Baum BJ. Can biomedical science be made relevant in dental education? A North American perspective. *Eur J Dent Educ* 2003; **7**:49-55.
6. Kieser J, Herbison P, Waddell N, Kardos T, Innes P. Learning in oral biology: a comparison between deep and surface approaches. *N Z Dent J* 2006; **102**:64-8.
7. Kumar LR, Voralu K, Pani SP, Sethuraman KR. Predominant learning styles adopted by AIMST University students in Malaysia. *South East Asian J Med Educ* 2009; **3**:1-5.
8. Reiner CM, Bothell TW, Sudweeks RR, Wood B. Preparing effective essay questions [Internet]. 2002. Available from: https://testing.byu.edu/handbooks/WritingEffectiveEssayQuestions.pdf
9. Bloom BS. Effects of continuing medical education on improving physician clinical care and patient health: a review of systematic reviews. *Int J Technol Assess in Health Care* 2005; **21**:380-85.
10. Ward PJ, Walker JJ. The influence of study methods and knowledge processing on academic success and long-term recall of anatomy learning by first-year veterinary students. *Anatomic Sci Educ* 2008; **1**:68.