

Assessing The Learning Approach to Basic Sciences Among Undergraduate Students of Optometry in Munawar Memorial Hospital & College of Optometry by Using Bigg's Revised Two Factor Study Process Questionnaire

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Abstract

Objectives: To assess the learning approaches of undergraduate optometry students with respect to different subjects of basic sciences.

Subjects & Methods: A cross-sectional comparative study was done to assess the learning approach to basic sciences subjects among 2nd, 3rd, and final year BSc Optometry students of Munawar Memorial Hospital & College of Optometry. About 40 students were enrolled in the study by simple random sampling. 20 students filled Bigg's Revised Two Factor Study Process Questionnaire (R-SPQ-2F) for Anatomy and Physiology while the rest of the 20 students filled it for Pathology and Biochemistry. Their relevant subject scores were also given due consideration while studying their learning approaches. Independent sample t-test was used to measure the difference in mean score pertaining to subscales of deep and surface learning approaches. $P < 0.05$ was considered significant.

Results: Annual scores of 2 groups of BSc Optometry students in basic sciences were almost equal. However, the group of students with Anatomy and Physiology scores studied by opting deep and surface learning approach comparatively more than those of Pathology and Biochemistry group with statistically significant difference ($P = 0.0001$).

Conclusion: Group of students with Anatomy and Physiology scores were involved in deep learning of their subjects.

Keywords: Learning environment; Bigg's Revised Two Factor Study Process Questionnaire; learning approaches

Introduction

Multiple aspects seem to influence the learning of students in any learning climate. Apart from aptitude of learning, educational standard of an institute is attributed to learning strategies of its students, the curriculum provided, teaching methodologies adopted by tutors, assessment schemes, feedback mechanisms, access to di

verse learning resources and conducive learning environment [1]. Students approach to academic learning seems to be considerably linked to existing educational circumstances [2].

Adoption of suitable learning approaches is genuinely linked to becoming high achievers [3]. Students intrinsically motivated to

learn preferably opt for a deep learning strategy while those who are influenced by extrinsic factors for learning prioritize surface approaches [4]. Institutes intended for higher education must provoke their students to indulge in deep learning of their subjects for conceptual learning [5]. According to McLoone P et al, deep learning approach among students can appropriately be incorporated by ensuring sufficient constructive alignment of the intended learning outcomes with teaching methodologies and assessment tools [6].

A study by Kek et al highlighted age, ethnicity, parental guidance and learning climate as probable attributes for learning approach of students [7]. Moreover, the health of the students, their IQ level and study habits are also determined as quite influential in achievement of planned educational outcomes [8]. Students do not adhere to one learning approach; they are likely to switch to other approaches that are contingent upon their cognitive abilities and learning style [9]. A strategic learning approach has also been acknowledged [10] which emphasizes the application of surface or deep learning tactics in alignment with the scenario like fear of getting failed in exams or for norm-referenced assessments [11].

Although numerous studies have already been carried out to evaluate the learning approaches of Pakistani medical students [12] but such learning approaches among paramedical and allied health sciences students also need to be emphasized. Allied health education is perceived quite complex as students must acquire clinical proficiency and skills in addition to gaining theoretical knowledge [13]. The present study is therefore intended to determine the learning approaches used by students of BSc Optometry studying at

Munawar Memorial Hospital Chakwal. The results of this study will enable us to perceive the learning strategy chosen by the students in comparison with their assessment scores and hence to provide the stakeholders, particularly the tutors, with productive suggestions.

Subjects & Methods

A cross-sectional comparative study was carried out to assess the learning approach to basic sciences subjects among 2nd, 3rd and final year BSc Optometry students of Munawar Memorial Hospital & College of Optometry. About 40 students were included in the study through simple random sampling. 20 students filled Bigg's Revised Two Factor Study Process Questionnaire (R-SPQ-2F) for Anatomy and Physiology while the rest of the 20 students filled it for Pathology and Biochemistry. This tool was proved to be sufficiently reliable [14] as well as valid [15] for assessing learning approaches of medical students. The scores of respective subjects were also noted while measuring the learning approaches. The difference in mean score pertaining to deep and superficial motives, strategies as well as approaches between two groups of students was statistically determined by independent sample t-test. $P < 0.05$ was taken as significant.

Results

Of the total 40 undergraduate optometry students enrolled in our study, about 32(80%) were females. Annual result scores of the students in the context of various basic subjects are revealed below in Figure 1.

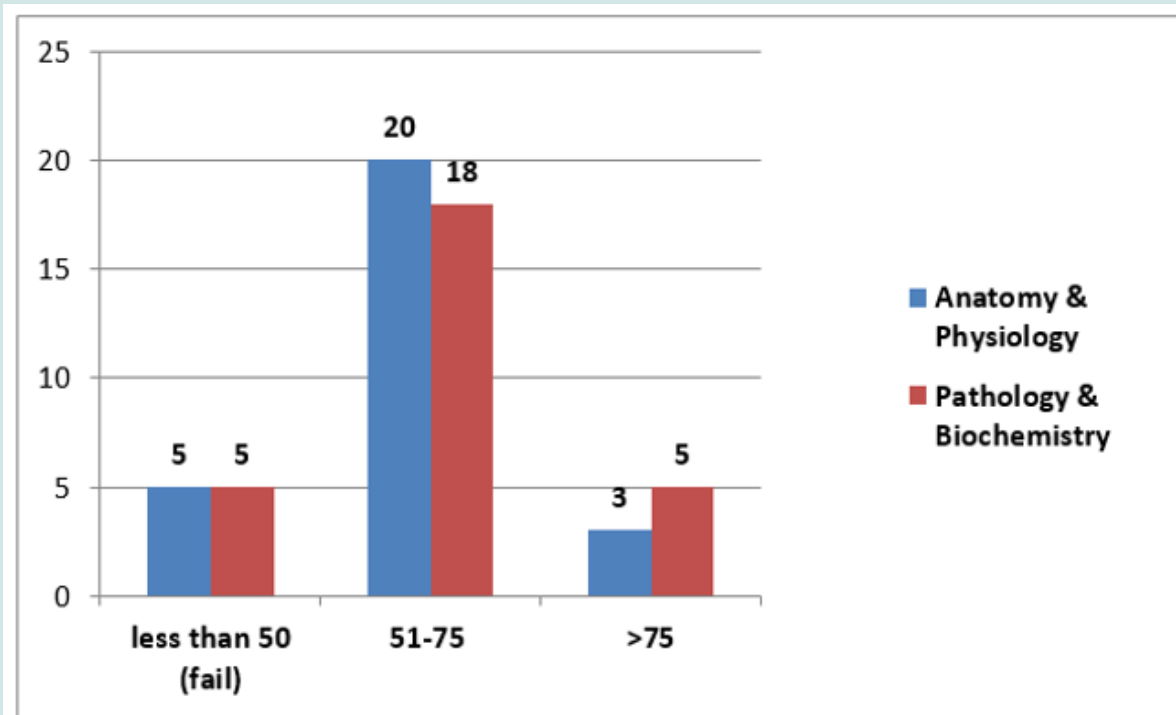


Figure 1: The difference in meaning of two factors- Study Process Questionnaire (SPQ) pertaining to different basic subjects is depicted below in Table 1.

Discussion

Construction of new knowledge and its incorporation in schema of students can significantly be attributed to constructive alignment between the learning objectives to be covered, teaching methods and assessment plans [16] as constructively aligned courses are more likely to enhance adoption of deep learning approach deemed essential for conceptual and long-term learning of the subject [17]. In the current study, about 20 students with Anatomy and Physiology results and another 20 students with Pathology and Biochemistry results filled Bigg's Revised Two Factor Study Process Questionnaire (R-SPQ-2F). This questionnaire was filled by each group of students pertaining to deep and surface learning approach opted by them for studying the respective subjects during under graduation in Optometry.

Although students who filled the questionnaire regarding learning strategy opted by them for Anatomy and Physiology studies were having less score pertaining to deep motive items (16.78 ± 0.67) than those of Pathology & Biochemistry students with mean score of 17.25 ± 0.34 for deep motive items but their means score related to deep strategy items were very closer (Table 1) though statistically significant ($P = 0.01$). Basic sciences have been recognized as the fundament component of medical and paramedical curricula as it is impossible to acquire new knowledge without getting acquisition with the core concepts [18]. Although apart from interest in the subject, desire to become high achiever also leads to inclination of students towards in depth learning [19] yet in-depth learners are more prone to link the course content to their preceding knowledge and hence more capable of building schema in their brain [20]. A study recently done by Qureshi SS et al among medical

students at a Qatar medical school by using revised 2 factor study process questionnaire revealed gender and academic year-based difference in learning approaches [21].

In the present study, academic performance in terms of pass, fail or extraordinary performance did not reflect remarkable variation among 2 groups of students whose score with respect to basic sciences' subjects were analyzed. However, visualizing the learning approaches holistically, students with Anatomy and Physiology scores were found to be indulged more in deep learning ($P=0.0001$) (Table 1). A similar study carried out by May W et al among 4th year medical students illustrated positive correlation of deep and strategic learning of students with their academic score in terms of summative clinical performance examination [22]. Although numerous studies have been done to highlight the impact of learning approach on academic performance, yet the role of institutes in provision of conducive educational environment to postgraduate trainees for enhancement of their conceptual and practical learning should also be visualized [23]. Therefore, accrediting bodies both nationally as well as Reviewing the learning style of medical students by utilizing Kolb's Learning Style Inventory (LSI) concluded that although students who prioritized conceptual learning achieved higher scores in basic sciences subjects, yet those students had to emphasize their interviewing competencies. Hence the recommendation was to apply diverse teaching methods for achievement of desired results instead of just relying on the learning styles of the students [24]. However, implication of teaching strategies on academic achievement is another debate that should also be given due consideration by the stakeholders and strategic planners for betterment in future (Table 2).

Table 1: Difference in Mean scores of SPQ Subscales.

Subscales	Anatomy & Physiology (n=20)	Pathology & Biochemistry (n=20)	P-value
Deep motive	16.78 ± 0.67	17.25 ± 0.34	0.008
Deep strategy	11.43 ± 0.56	11.82 ± 0.36	0.01
Surface motive	12.68 ± 0.76	13.25 ± 0.23	0.003
Surface strategy	14.56 ± 0.35	12.85 ± 0.35	0.0001
Deep approach	28.21 ± 1.23	20.07 ± 0.56	0.0001
Surface approach	27.24 ± 0.46	26.1 ± 0.38	0.0001

Table 2

Sr.no	Items	Subscale	Never or only rarely true of me (5)	Sometimes true of me (4)	True of me about half the time (3)	Frequently true of me (2)	Always or almost always true of me (1)
1.	I find that at times studying gives me a feeling of deep personal satisfaction.	DM					
2.	I find that I have to do enough work on a topic so that I can form my own conclusions before I am satisfied.	DS					

3.	My aim is to pass the course while doing as little work as possible.	SM					
4.	I only study seriously what's given out in class or in the course outlines.	SS					
5.	I feel that virtually any topic can be highly interesting once I get into it.	DM					
6.	I find most new topics interesting and often spend extra time trying to obtain more information about them.	DS					
7.	I do not find my course very interesting, so I keep my work to the minimum.	SM					
8.	I learn some things by rote, going over and over them until I know them by heart even if I do not understand them.	SS					
9.	I find that studying academic topics can at times be as exciting as a good novel or movie.	DM					
10.	I test myself on important topics until I understand them completely.	DS					
11.	I find I can get by in most assessments by memorising key sections rather than trying to understand them.	SM					
12.	I generally restrict my study to what is specifically set as I think it is unnecessary to do anything extra.	SS					
13.	I work hard at my studies because I find the material interesting.	DM					
14.	I spend a lot of my free time finding out more about interesting topics which have been discussed in different classes.	DS					
15.	I find it is not helpful to study topics in depth. It confuses and wastes time, when all you need is a passing acquaintance with topics.	SM					
16.	I believe that lecturers shouldn't expect students to spend significant amounts of time studying material everyone knows won't be examined.	SS					

17.	I come to most classes with questions in mind that I want answering.	DM					
18.	I make a point of looking at most of the suggested readings that go with the lectures.	DS					
19.	I see no point in learning material which is not likely to be in the examination	SM					
20.	I find the best way to pass examinations is to try to remember answers to likely questions.	SS					

Annexure

Bigg's Revised Two Factor Study Process Questionnaire (R-SPQ-2F)

DM: Deep Motive;

DS: Deep Strategy;

SM: Surface Motive;

SS: Surface Strategy

Conclusion & Recommendations

Students with Anatomy and Physiology scores were more inclined to both surface and deep learning approaches. Being health-care personnel, BSc Optometry students should practice thorough and in-depth learning of their subject for better healthcare management of their patients. Sufficient sample size with scrutinization of other demographic and subject based attributes would enable us to visualize the scenario in true sense.

Conflicts of Interest

The authors declare no conflict of interest.

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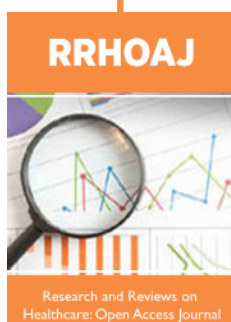


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