



IMPACT OF ONLINE FORMATIVE ASSESSMENT ON KNOWLEDGE OF UNDERGRADUATE STUDENTS IN THE SUBJECT OF PEDIATRICS

Medical Education

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ABSTRACT

Formative assessments are difficult to implement because of time constraint, scarcity of faculty and inbuilt resistance of faculty to come out of comfort zone of summative assessment. Online formative assessment can be another option which may save time and generate interest in the teachers for conducting formative assessment. This study was undertaken to determine impact of online formative assessment on student's knowledge and motivation. Students from 3rd MBBS were included in the study. Structured Internal Assessment examination of 20 marks was conducted at the end of three months of their routine academic teaching. Same batch of students were imparted five online formative assessments periodically every two weeks during the next three months of academic teaching. Platform used for these assessments was Google form and Google classroom assignments. After each online formative assessment constructive feedback was given to the students. Internal assessment of 20 marks was taken for the same batch of students. Motivation of students was assessed by applying Motivated Strategies for learning questionnaire (MSLQ) (Pintrich, Smith, Garcia and McKeachie, 1991) before and after periodic formative assessments as pre-test and post-test. The significance of difference of distribution was tested using paired- t- test for analysis at 95% confidence interval. P- values less than 0.05 was considered to be statistically significant. A total of 100 students from 3rd MBBS appeared for the pre- and post-formative assessment internal examination out of which 40 students also appeared for the questionnaire for motivation assessment. The mean score for the internal examination of students prior and after formative assessments was 10.22 and 12.29 respectively. This difference was statistically significant ($p < 0.0001$). The average total score of students appearing for the MSLQ pre- and post-formative assessment was 157.75 and 163.02 respectively. This difference was also noted to be significant ($p = 0.048$). Thus, there was significant improvement in knowledge of the students after online formative assessments. In conclusion; Formative assessment is an effective method to enhance learning by increasing knowledge and motivation among students. The online platform can be effectively utilised for this purpose.

KEYWORDS

INTRODUCTION

Formative assessment is assessment for learning, conducted by teachers during the learning process in order to modify teaching and learning activities to improve student attainment (1). Formative assessment is longitudinal and carried out during the learning process. Constructive feedback is essential component of formative assessment (2). It helps the teacher to identify students understanding of the subject and level of attainment. Formative assessment encourages effective study habits of the students and automatically enhances learning (3). Formative assessments are difficult to implement because of time constraint, scarcity of faculty and inbuilt resistance of faculty to come out of comfort zone of summative assessment (4). Implementation of formative assessment requires enabling environment, faculty and student training, role of Department of Medical Education of the institute (2). Online formative assessment can be another option which may save time and generate interest in the teachers for formative assessment.

Aims And Objectives

- 1) To determine impact of online formative assessment on student's knowledge
- 2) To determine impact of online formative assessment on student's motivation

MATERIAL AND METHODS

The study was undertaken to find impact of online formative assessment on knowledge and motivation of undergraduate students in the subject of paediatrics. Students from 3rd MBBS were included in the study. Written informed consent was taken from all participating students and ethical clearance was taken from institutional ethics committee. Structured Internal Assessment examination of 20 marks was conducted at the end of three months of their routine academic teaching. Their Internal Assessment scores were noted. Same batch of students were imparted five online formative assessments periodically every two weeks during the next three months of academic teaching. Periodic online formative assessment was in the form of multiple-choice questions, brief answer questions (BAQ) and structured case scenarios to assess their analytical skills. The assessments were

conducted using the Google Classroom platform. After each online formative assessment constructive feedback was given to the students. At the end of three months, structured Internal Assessment of 20 marks was taken and their scores noted. Scores of both internal assessments were compared.

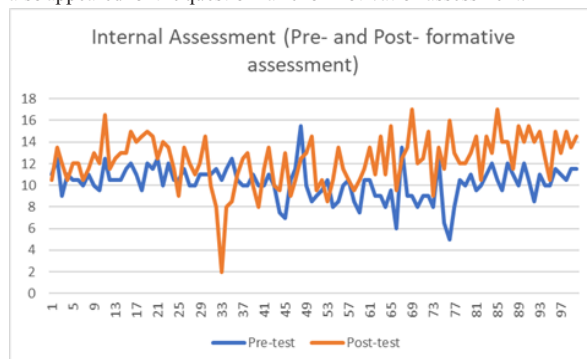
Motivation of students was assessed by applying Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia and McKeachie, 1991) before and after periodic formative assessments as pre-test and post-test. A composite score was calculated for each candidate by adding the total of all the responses while adjusting the scores from the lowest level of motivation to the highest.

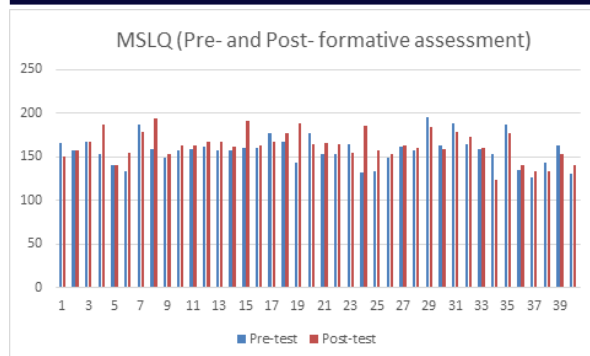
Analysis:

The significance of difference of distribution was tested using paired-t- test for analysis at 95% confidence interval (For motivation beliefs scale and Internal Assessment scores). P- values less than 0.05 was considered to be statistically significant.

RESULTS

A total of 100 students from 3rd MBBS appeared for the pre- and post-formative assessment internal examination out of which 40 students also appeared for the questionnaire for motivation assessment.





The mean score for the internal examination of students prior and after formative assessments were 10.22 and 12.29 respectively. Standard deviation pre and post formative assessment were 1.56 and 2.32 respectively. This difference was statistically significant ($p < 0.0001$). The average total score for motivation of students appearing for the MSLQ pre- and post-formative assessment was 157.75 and 163.02 respectively. Standard deviation for pre- and post- formative assessment were 16.09 and 16.40 respectively. This difference was also noted to be significant ($p = 0.048$).

DISCUSSION

Formative assessment is a good tool to promote learning and supports self-inspiration to acquire knowledge and skills (5). Students perceive that formative e-assessments help them to monitor their progress, encourage further study and increase their learning and understanding (6). Students also perceived online formative assessments as tools that promote self-directed learning, improved knowledge and tailor learning for individual learning needs and style (7). Studies show that formative assessments consolidate learning and reinforce learning behaviour in learners. (8). Online formative assessment is expected to save time and may be easy to administer which can be conducted at the end of the online class (9). Students do favour online formative assessment, but with demerits that they prefer MCQs, have concerns about distractions and availability of gadgets(10). Literature search found scarcity of studies regarding impact of online formative assessments on knowledge of the students.

As seen in this study, there was significant difference in the level of knowledge in students as assessed by the second internal assessment. Along with an increase in knowledge, the students also appeared to be more motivated for their examination after undergoing formative assessments.

The strength of this study was the large sample size, the clarity of the formative assessments administered and the consistency in internal assessment methods. The use of a standardised questionnaire for the assessment of motivation further adds to the validity of study results.

A major limitation of the study was the relatively small percentage of students that participated in the motivation assessment questionnaire. In addition, the small total of 20 marks possibly led to large changes in percentage of scores which may have led to the overestimation of effect in the final analysis.

CONCLUSIONS

Formative assessment is an effective method to enhance learning by increasing knowledge and motivation among students. The online platform can be effectively utilised for this purpose.

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