International Journal of Research in Medical Sciences
Alsalhanie KM et al. Int J Res Med Sci. 2017 Jul;5(7):2865-2869
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20172571

Original Research Article

Formative evaluation impacting the results of summative evaluation-a feedback based cross sectional study carried out among instructors of an international medical school

Kusai M. Alsalhanie[1]*, Sanjib Das[2], Sulaimaan Abdus-Samad[3]

[1]Department of Medical Pathophysiology, Windsor University School of Medicine, Cayon, Saint Kitts, West Indies
[2]Department of Medical Pharmacology and Therapeutics, Windsor University School of Medicine, Cayon, Saint Kitts, West Indies
[3]Department of Clinical Science, Windsor University School of Medicine, Cayon, Saint Kitts, West Indies

Received: 12 May 2017
Accepted: 29 May 2017

***Correspondence:**
Dr. Kusai M. Alsalhanie,
E-mail: k.salhaniemd@gmail.com

ABSTRACT

Background: In all forms of teaching worldwide, evaluation is fundamental in measurement of the students' acquisition and understanding of the material covered. Evaluation is divided into two separate forms. The goal of formative evaluation is to monitor students learning and provide ongoing students feedback. This in turn improves teaching and help finding strengths and weaknesses of students. Summative evaluation on the other hand is to evaluate students learning at the end of the instructional unit to compare students' performance with some other standards. Currently several types of formative evaluation activities are in practice at our institution. This study was performed to explore the views of faculties as to the impact of formative evaluation on summative evaluation within the MD program.
Methods: A cross sectional descriptive study was conducted using a questionnaire to record the opinions and then the data was collected, analysed and interpreted.
Results: All respondents opined that formative evaluation aids the students in isolating specific weak areas. All faculties indicated that, formative evaluation is important for them as it aids in targeting problem areas within their classes. A sizable percentage of respondents also supported that formative evaluation helped instilling the need for regular study and intensive learning within their students. Furthermore, many respondents (75%) didn't accept the statement that frequent formative evaluation impeded their students' focussed learning leading to deficient performance in summative evaluation.
Conclusions: Formative evaluation positively impacts summative ones in many ways.

Keywords: Academic performance, Deep learning, Evaluation, Feedback formative, Summative

INTRODUCTION

Within the realm of education, a critical foundation is found in the form of evaluation. Evaluation is the action or instance of making a judgement about something; specifically, within the scope of education, the level at which the student has performed in comparison to the standard. Evaluation is also used to refer to all activities instructors use to help their students learn and to gauge their progress.[1] It is known that evaluation, besides being a tool for measurement, also drives learning.[2] Thusly, medical schools, postgraduate programs, and licensing authorities have been expending huge efforts on their evaluation portion as of late.[3] Evaluation within the

medical educational sphere is classified into formative and summative evaluation, as detailed below.

Formative evaluation is a tool used to monitor students learning and is an aid in helping instructors to provide ongoing feedback that helps both in betterment of instruction and learning. More specifically, it helps students to identify their strengths and weaknesses, and helps them to target problem areas that need extra focussed work to bring it up to the standards. It also helps faculty recognize where students are having difficulties and allows them to address these issues directly. Its main purpose is to modify teaching and learning to improve students' outcome, in a formal or informal nature.[4] Formative evaluation usually has no bearing on the final grades of the student and are conducted throughout the course or learning module.[5]

Conversely, summative evaluation is to assess students' learning at the end of an educational unit by comparing it against some standards or benchmark. This type of evaluation is meant to make decisions on students' academic performance including passing or failing decisions or eligibility for licensure. Summative evaluation determines whether the goals of education, set out in the course syllabus, are being fulfilled. It is classically conducted at the end of the course or learning module and is formally carried out.[3]

The positive impact of formative evaluation on the outcome of medical programs in producing competent physicians has been shown in various studies.[6,7] Spolsky and Hult opined that formative assessment provides feedback for teachers to modify subsequent learning activities and experiences.[8] Furthermore, it remediates deficiencies in the students' learning by identifying them. Caulry and McMillan suggested that frequently carried out formative evaluation improves students' learning.[9] Formative evaluation also encourages self-regulated learning.[10]

Several studies support the importance of formative evaluation, very few are specifically aimed to explore the direct impact within medical students. Those studies by large supported the beneficial effects of formative evaluation on summative one.[11] However, the formative evaluation set up existed in those studies were extremely diverge therefore extrapolation of those findings in other settings may not be applicable.

The purpose of this study is to determine the opinions of the faculty at our institution as to the impact that formative evaluation has on the product of the summative evaluation of students across the entire MD program.

METHODS

This cross sectional descriptive study was carried out with 120 members of the faculty of an international medical university in the Caribbean region. This university runs a four-year MD program with ten semesters. Recently (in 2014) the university has adapted a competency based curriculum mapped with NBME (National Board of Medical Curriculum) objectives. This curriculum is delivered through various activities which include didactic, practical and small group activity sessions. As a part of student evaluation, several types of formative and summative activities were introduced across the program. The formative evaluation includes quizzes, discussion sessions, presentations, case studies, lab studies, group studies, etc. Summative evaluation includes quizzes, midterms/block exams, final comprehensive internal exams, and National Board of Medical Examiners (NBME) final evaluation.

The Questionnaire for this current study was prepared with 4 questions in the form of statements (see appendix). Responds were gathered using Likert scale. Five possible options were given for each question ranging from strongly disagree to strongly agree as seen in the results detailed below. Within the prelude for the questionnaire, the pertinent terminology was defined with examples given to avoid any confusion while filling out the questionnaire. The terminology defined included both "formative evaluation " and "summative evaluation ".

The present study's design followed several specific criteria. All participants were randomized before conducting the study. As a part of selection criteria, it was ensured that the study population is representing all departments of the MD program.

Faculties involved in either active or passive forms of teaching were included in this study. Only those willing to participate were included. Faculties who did not have any kind of involvement in student evaluation were excluded from the study. Those who were not available or not willing were excluded

The purpose, the results, and the identity of all participants were kept confidential. Written consent was acquired from all involved, and the questionnaire was sent through Google's online form which simplified the collection, processing, and analyzing of all data.

RESULTS

All respondents (120) supported that formative evaluation plays an important role to help students identifying their weak areas and subsequently fixing it to excel their performance on the summative examination (Figure 1).

All respondents are also in opinion that formative evaluation helps them (faculties) to spot the students' weak points thus allow them to provide appropriate feedback to improve students' performance in summative evaluation (Figure 2).

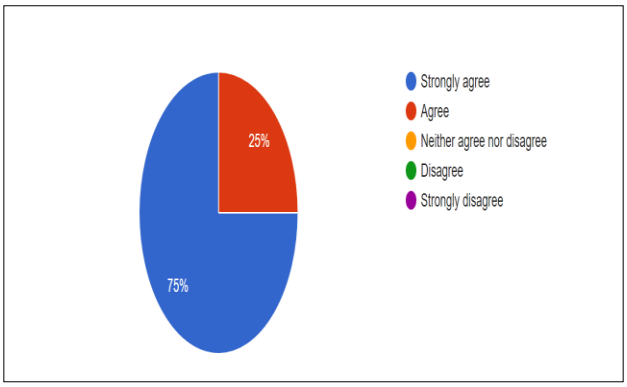

Figure 1: Formative evaluations help students to identify their own problem area, learning gaps and focus their efforts for upcoming summative evaluations.

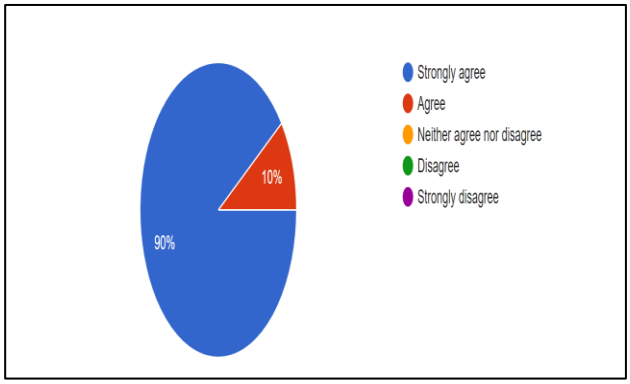

Figure 2: Formative evaluation helps faculty to identify students' problem areas and provide them with appropriate feedback.

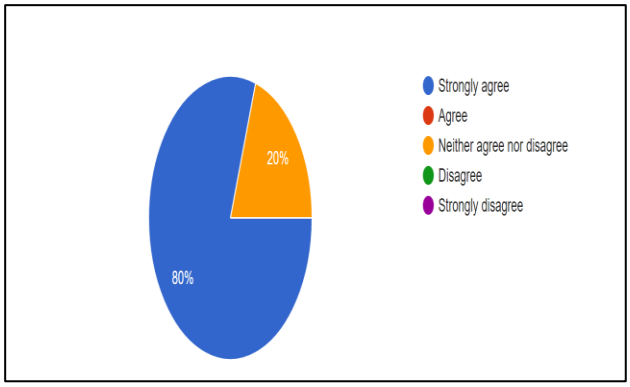

Figure 3: summative evaluation results are aided by self-regulated deep learning which is prompted by formative evaluation.

Majority of respondents (80%) accepted the statement that; formative evaluation inculcates the art of deep learning leading to higher students' performance in summative evaluation (Figure 3).

Three fourths of respondents from the survey poll rejected the statement that frequent formative evaluation has negative effects on the students' performance as it appears a burdensome task and interferes with their independent study time (Figure 4).

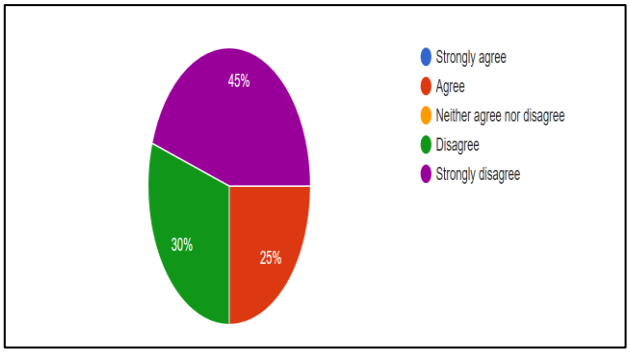

Figure 4: Too frequent evaluation hinders summative evaluation results.

DISCUSSION

Evaluation system is an integral part of any medical education program. Several studies have shown the beneficial effects of formative evaluation on the outcome of the summative ones.[9] It was found that formative evaluations particularly assist teachers to guide their students towards excellent performance.[11] However, there is no uniform formative evaluation set up that exist across different institutions.

Upon gathering the data about teacher's prospective with regards to the impact of formative evaluation on summative ones at our institution we found the following;

Formative evaluations help students to identify their own problem areas, learning gaps, and focus their efforts for upcoming summative evaluations

All the respondents supported this statement with varied levels. This is in agreement with the study performed by Cauley and McMillan who stated that frequent, ongoing formative assessment allows student to focus on progress.[9] It also allows students to remediate their individual deficiencies.[12] Our study reveals that a fair percent (25%) of respondents didn't demonstrate highest level of agreement (strongly agree) with this statement. The reason could be attributed to the fact that some students lack self-assessment skills required for formative evaluation to be productive.[1]

Formative evaluation helps faculty to identify students' problem areas and provide them with appropriate feedback

All respondents in this current study approved this statement. Literature strongly supports that formative evaluation provide teachers with feedback about their students' performance against expected standards.[12] This feedback becomes more effective in closing the learning

gap when teachers share it with their students.[11, 15, 16] The most critical issues of all kinds of formative evaluation are using that information of teaching, learning, and thus closing the gap.[1]

Another study indicated that formative evaluation could be a valuable tool for teachers and students for their academic activity. It helps to identify the areas of their strength and weakness without incurring any academic penalty. It also allows for rapid remedial action.[13] Students also use the feedback received from formative evaluation to monitor the strength and weakness of their performances aiming towards success in the summative evaluation.[14]

Summative evaluation results are aided by self-regulated deep learning which is prompted by formative evaluation

The majority of respondents (80%) accepted this statement. These findings are found in previous studies suggesting that formative evaluation encourages in-depth approach of learning.[1] Literature also suggests that formative evaluation enhances the learning processes and metacognitive awareness.[17] Remaining one fifth of the respondents disapproved the statement. One probable reason could be that some students choose not to be involved with utmost sincerity in the formative evaluation as it doesn't directly contribute to their final grade.[18]

Too frequent formative evaluation hinders summative evaluation results

Only one fourth of respondents agreed with the possibility that frequent formative evaluation interferes with the students' independent study habits. In contrary, respondents by large rejected this statement with varied degree. This was further supported by an independent study showing that daily quizzes improve students' performance.[19]

CONCLUSION

Present study shows that formative evaluation has positive impact on the outcome of summative evaluation in various aspects. Identifying learning gaps by both faculty and students is a major factor contributing to this positive impact. Another contributing factor is that formative evaluation encourages a deeper approach of learning among students. Frequently carried out formative evaluation doesn't have negative impact on students' performance in summative examinations. Since our study was conducted among small number of participants using limited number of questions, larger detailed studies are needed to reconfirm our claim.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Black P, Wiliam D. Assessment and Classroom Learning. Assessment in Education: Principles Policy Practice. 1998;5(1):4-7.
2. Wormald B, Schoeman S, Somasunderam A, Penn M. Assessment drives learning: An unavoidable truth? Anatomic Sci Edu. 2009;2(5):199-204.
3. Epstein R. Assessment in Medical Education. New England J Med. 2007;356(4):387-96.
4. Crooks T. The validity of formative assessment. Education on-line, 2001. Available at http://www.leeds.ac.uk/educol/documents/00001862.html.
5. Abu-Zaid A. Formative assessments in medical education: a medical graduate's perspective. Perspect Med Edu. 2013;2(5-6):358-9.
6. Chisnall B, Vince T, Hall S, Tribe R. Evaluation of outcomes of a formative objective structured clinical examination for second-year UK medical students. Int J Med Edu. 2015;6:76-83.
7. Mitra N, Barua A. Effect of online formative assessment on summative performance in integrated musculoskeletal system module. BMC Med Edu. 2015;15(1):29.
8. Spolsky B, Hult F. The handbook of educational linguistics. In: 1st ed. Malden, Mass: Blackwell Pub; 2008.
9. Cauley K, McMillan J. Formative Assessment Techniques to Support Student Motivation and Achievement. The Clearing House. J Edu Strategies, Issues Ideas. 2010;83(1):1-6.
10. Nicol D, Dick DM. Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. Studies Higher Edu. 2006;31(2):199-218.
11. Black P, William D. Assessment and Classroom learning. Assessment Edu. 1999;5:103-10.
12. Huhta Ari. Diagnostic and Formative Assessment. In Spolsky, Bernard, Hult, Francis M. The Handbook of Educational Linguistics. Oxford, UK: Blackwell. 2010:469-482.
13. Vaz M, Avadhany S, Rao B. Student perspectives on the role of formative assessment in physiology. Med Teacher. 1996;18(4):324-6.
14. Sadler D. Formative assessment and the design of instructional systems. Instruct Sci. 1989;18(2):119-44.
15. Butler DL, Winne PH. Feedback and self-regulated learning: a theoretical synthesis. Rev Edu Res. 1995;65(3):245-81.
16. Sadler D. Formative Assessment: revisiting the territory. Assessment in Education: Principles Policy Practice. 1998;5(1):77-84.
17. Shepard Lorrie A. Formative assessment: Caveat emptor. In: ETS Invitational Conference the Future

of Assessment: Shaping Teaching and Learning, New York, 2005:10-11. Retrieved 25 August 2011.)
18. Palmer E, Devitt P. Limitations of student-driven formative assessment in a clinical clerkship. A randomised controlled trial. BMC Med Edu. 2008;8(1).
19. Matthew S. The effects of frequent formative assessment and feedback on summative assessment. Masters of Arts in Education Action Research Papers; 2016:193.

Cite this article as: Alsalhanie KM, Das S, Abdus-Samad S. Formative evaluation impacting the results of summative evaluation-a feedback based cross sectional study carried out among instructors of an international medical school. Int J Res Med Sci 2017;5:2865-9.