

Short Communication

## Formative assessment in a postgraduate training program– does the model work?

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### Abstract

**Background:** Lack of assessment and feedback based on observation is one of the most serious deficiencies in the current medical education practice. Formative assessment strategies in postgraduate education can be effective when they are integral to the learning process. Seminars and journal club presentations are integral to the postgraduate education in all medical institutions.

**Methods:** This study was done to assess a structured tool for evaluation of seminars and journal clubs by postgraduates in Community Medicine (as part of formative assessment) based on rater reliability and efficacy of feedback.

**Results:** The scale having five domains namely justification for the topic or the journal article, presentation skills, slide preparation, slide content and discussion, had high inter-rater reliability with intra class coefficient of 0.861 (95% CI 0.632 to 0.958), 'p' of 0.000. There was a significant improvement of the students over three journal club presentations in four out of five domains.

**Conclusions:** This study has shown that use of rating scales during seminar and journal club presentations, when combined with feedback, can be an effective tool in formative assessment thereby supporting and enhancing the learning process.

### Introduction:

Lack of assessment and feedback based on observation is one of the most serious deficiencies in the current medical education practice<sup>1</sup>. Formative assessment strategies prompt change when they are integral to the learning process. Performance assessment criteria should be clearly defined, feedback provided immediately and trainees engaged in multiple assessment opportunities<sup>2</sup>. Further, the impact of feedback on trainee learning behaviour and performance needs to be determined<sup>3</sup>.

This study was done to assess a structured tool for evaluation of seminars and journal club presentations, as part of formative assessment and to study the impact of feedback on the learning outcomes of students.

### Methods:

A structured tool is used for assessment during seminars and journal club presentations by postgraduates in the department of Community Medicine, Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Pondicherry. During the seminars and journal clubs, postgraduates are evaluated under five domains namely justification for the topic or the journal article, presentation skills, slide preparation, slide content and discussion as a process

of formative assessment. Feedback was given to students after each presentation by the faculty.

Assessment for subjects was rated against each expected learning outcome in a rating scale with five domains (justification, presentation skills, slides, content and discussion). The score in each domain was 5 points, giving a total score of 25. Domain wise scores of the postgraduate students during the seminars and journal clubs were entered in excel and total scores were calculated. A dot plot was constructed to show the distribution of the mean scores of each student over one year, as rated by the six faculty. Inter rater reliability for six raters on assessment of 11 postgraduates during one year (2011-12) was studied. Analysis was done using intra-class correlation coefficient (SPSS version 16). Intraclass correlation uses analysis of variance (ANOVA), to estimate the variance associated with factors in the reliability design<sup>4</sup>. Efficacy of the formative assessment process was evaluated through impact on learning outcomes. The scores of students in each of the learning outcome were compared during this period, by analysing three consecutive journal club presentations for each postgraduate student. Friedman test was used to

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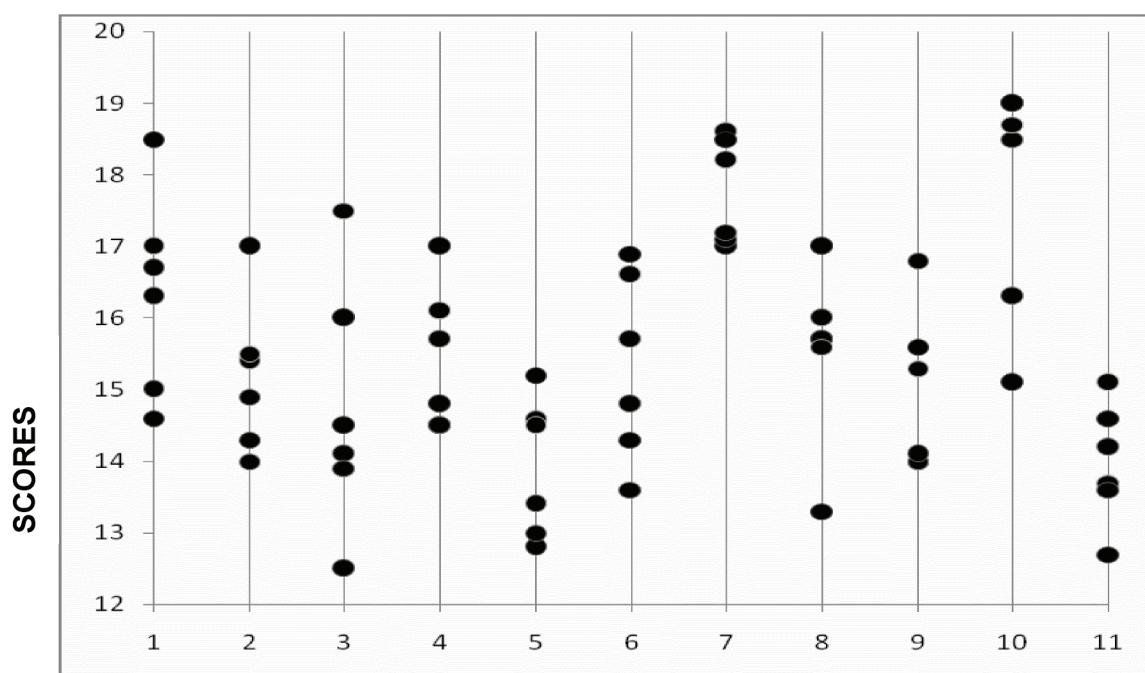
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compare the scores obtained in each domain (expressed as median and inter-quartile range).

**Results:**

Distribution of scores for presentations during one year for eleven subjects as rated by the six faculty is shown in figure 1. Minimum total score obtained was 12.7 and the maximum score was 18.7.

**Figure 1: Dot plot showing scores as rated by six faculty for presentations during one year**



**Subjects:**

The dot plot shows moderate to high agreement in scores between the observers for most of the subjects. The intra class coefficient for the tool used was 0.861 (95% CI 0.632 to 0.958) with ‘p’ of 0.000, establishing high inter-rater reliability.

The impact on learning outcomes of students was examined by the trend in students’ performance in each of the domains listed above. There was a significant improvement in the performance in the domains of justification, skills, content and discussion (Table no. 1).

**Table 1: Domain wise scores over three Journal club (JC) presentations**

DOMAINS	JC1	JC2	JC3	p value
Justification	3.2 (2.8-3.5)	3.2 (3-3.5)	3.6 (3.2-3.8)	0.03
Skills	3.0 (2.75-3.2)	3.0 (2.7-3.3)	3.4 (3.0-3.8)	0.004
Slides	3.0(2.8-3.3)	3.0 (2.7-3.4)	3.3 (3.0-3.6)	0.11
Content	2.9 (2.4-3.2)	3.0 (2.5-3.4)	3.5 (3.1-3.8)	0.009
Discussion	3.1 (2.5-3.25)	2.75 (2.5-3.2)	3.5 (3.0-3.75)	0.001

Values are expressed as Median (interquartile range)

Median score improved from 3.2 to 3.6 in the justification domain and 3.0 to 3.4 in the skills domain. The scores showed significant improvement from 2.9 to 3.5 in the content domain and 3.1 to 3.5 in the discussion domain. However, the improvement in the quality of slides was not statistically significant. Thus the process of formative assessment was found to be effective in improving the performance of students.

#### **Discussion:**

Research literature on formative assessment and feedback suggests that it is a powerful means for changing the behaviour of trainees. This study has shown that use of rating scales during seminar and journal club presentations, when combined with feedback, can be an effective tool in formative assessment thereby supporting and enhancing the learning process. Feedback promotes student learning in three ways. It informs trainees of their progress, observed learning needs and resources available to facilitate their learning; and it motivates trainees to engage in appropriate learning activities<sup>5</sup>. Though it is well-known that formative assessment and feedback have a powerful influence on trainee performance, there is a significant gap between what should be done and 'on the ground' practice. Since faculty play a key role in the successful implementation of formative assessment, strategies to provide training and encourage their participation are critical<sup>4</sup>. Faculty development is therefore vital to the quality and effectiveness of formative assessment.

#### **Conclusion:**

Seminars and journal clubs which are an integral part of postgraduate education in all institutions can be a platform to improve not only the knowledge but also inculcate the right attitudes and skills of presentation among the Public Health leaders in the making addressing adequately all the domains of education; cognitive, affective and psychomotor. Thus this model works and can be replicated.

#### **References:**

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