

Effective Feedback Practices in Formative Assessment : Recognizing the Relevance

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Abstract

Feedback is proposed to be a critical element of formative assessment (FA) but evidence reflects its sparse and incongruous implementation. Current study on feedback sessions post formative assessment was undertaken to establish the extent to which it can make significant contribution in improving learning outcomes and the learners' perception about the same when compared to written feedback comments in answer sheets, which is a routine practice. An Experimental, Randomized, Controlled study with sample population being students in first phase of medical curriculum, were randomized into cases (n= 37) and matched controls (n= 38). The cases underwent feedback sessions after formative assessment. Difference in scores between cases and controls in Summative assessment was statistically significant (P = 0.002). Scores in formative and Summative assessment was statistically non-significant (p = 0.30) within controls (n=38) and statistically significant (P = 0.006) within cases (n= 37). Qualitative analysis was done for comparing the utility and efficacy of feedback sessions compared to written comments on answer sheets. Study concludes that feedback sessions post - formative assessment, irrespective of success, may determine greater involvement of students in learning process and improve learning outcome. The tutors should be made aware of proper feedback techniques and tailor feedback sessions according to specific needs. Students should be made conscious of various assessment process so that they become cognizant of seeking feedback.

Keywords : Formative assessment , Written comments , Feedback sessions

1. Introduction

Assessment of students' academic achievement is a basic step in any educational project since it provides information about attainment of specific learning objectives. Educational experts recommend earnestly the use of multiple formative assessments (FA) in addition to summative (18). The purpose of formative assessment is to provide direct and specific feedback about the learning and teaching processes. It should provide benchmarks to orient the learner who is approaching a relatively unstructured body of knowledge (15, 18). An exploration of the existing educational literature emphasizes the need of feedback in FA to adjust ongoing teaching, learning and achievement of intended instructional outcomes. An assessment becomes formative when the evidence is actually used to adapt the teaching to meet student needs (16,17). By definition, feedback is "A communication technique in which the teacher provides information to learners about their progress in mastering certain skills or achieving learning objectives of the course". It helps learners to maximize their potential at different stages of training, raise their awareness of strengths and areas for improvement, and identify actions to be taken to improve performance. Giving feedback can be seen as part of experiential learning (10) and serves that ideas are formed and modified through experiences. However, it is evidenced that written comments on answer sheets after FA is the most common form of feedback practiced in medical schools; which is faulty (9). It fails to offer guidance on how performance can be improved. Significant number of students do not understand it or do not consider it worthy to be comprehended (6). Accounting for this situation by simply blaming students is an inadequate explanation.

The current study on FA and verbal feedback is undertaken to establish the significant role of feedback dialogues in influencing learning outcomes with an earnest attempt to emphasize the mode and manner in which feedback should be practiced to maximize its potential.

2. Material and Methods

An Experimental, Randomized, Controlled, Single blind study was conducted in Department of Physiology and Department of Health Professions Education, JN Medical College, DMIMS (Deemed

University), Sawangi (M), Maharashtra, India. After due ethical clearance, 75 students of 1st MBBS -2011 batch were randomly assigned to cases (n=37) and control (n=38). The University has three FAs in first phase of medical curriculum. It includes two part completion tests (PCTS), each falling in one semester, and one preliminary examination. The present study included the second PCT and preliminary examination. Appearance in FAs is mandatory as per policy guidelines of University. The 2nd PCT and prelim exam comprises of written examination and practical. Question papers were constructed using specification tables to guarantee their content validity. Apart from factual recall, it was taken care to include items on comprehension, reasoning and problem solving skills. It was ensured that setting of question paper or valuation of the answer sheets was done by faculty other than the researcher.

After FA; the cases (n=37) underwent feedback sessions (by the researcher) along with their corrected answer sheets. It was taken care that the feedback given to the learner (cases) was aligned with the overall learning goals. The controls were provided with the corrected answer sheets for reference. They did not undergo any feedback session. It is left to the students to interpret those comments or seek clarification if needed.

Though “TELL” model was kept in mind while giving feedback; it was kept flexible allowing more developmental dialogue between the tutor and the student (11). 20 – 30 minutes was dedicated to each feedback session. The sequence of steps followed during actual conduction of sessions is depicted in figure 1 ;

Figure 1 : The sequence of steps followed during conduction of feedback sessions

Every session ended with an opportunity to close the gap between current and desired performance (4). The students were asked to resubmit the responses which needed revisions based on the light of feedback. However; only seven students re-submitted the assignments out of 37. The final scores of cases and controls in summative examination was taken into consideration for analysis.

Perception of cases regarding feedback sessions and written comments on answer papers were obtained by a pre-validated questionnaire. The internal consistency of the test items were measured using Cronbach's alpha which was found to be 0.84 for Part A (i) and 0.72 for Part A (ii) of the questionnaire; falling under the category of good to very good internal consistency. The feedback questionnaire had two subdivisions namely;

Part A : Rating on a five point likert's scale to capture the perception of students about ;

- i. Written Comments on answer sheets
- ii. Feedback Session

Part B : 3 Open ended items

Data Collection : The scores of the two FAs and SA were recorded. Feedback was obtained from cases (n=37) through a pre-validated questionnaire.

Data Analysis : Summative examination results of the cases were compared with controls by unpaired t-test. The scores in FA were compared with scores in SA (both cases and controls) by paired t-test. Pearson co-relation was done to analyze co-relation between scores in FA and SA. The closed ended responses of questionnaire were analyzed quantitatively and open ended responses qualitatively by coding.

3. Observations and Results:

Quantitative data Analysis :

The percentage of scores in FA and SA were categorized into three heads namely; 1) <50%, 2) between 50–60%, 3) between 60–70% and 4) > 70%. Out of the 75 students recruited in the study, <50% was scored by 50% and 29.7% students in FA and SA respectively. There were no students falling under the category of >70% in FA or SA; however the percentage of passing increased from 36.4% in FA to 48.6% in SA “between 50 – 60%” and from 13.5% in FA to 21.6% in SA under the category of 60-70% (table 1)

Table 1

40.5% of controls scored < 50% whereas 18.9% cases scored the same in SA. 54.04% of cases had scores “between 50 – 60%” as compared to controls who were 43.24%. “Between 60-70%” there were 16.21% controls and 27.07% cases. There were no students above 70% in either groups in SA (table 2).

Table 2

The mean percentage of controls in FA was found to be 50.96 (SD 7.78) and 49.82 (SD10.18) in SA. In cases the mean percentage in FA was found to be 51.39 (SD 7.92) and 56.43 (SD 7.31) in SA.

Fairly strong positive relationship ($r= 0.74$) was established between the two assessments (r value more than 0.5 was considered significant for co-relation). Within controls the difference in scores between FA and SA in controls (n=38) was statistically non-significant ($P = 0.30$) and within cases (n=37) the difference was statistically significant ($P= 0.006$). Mean summative examination results of the cases (n=37) were compared with that of the controls (n=38) which was found to be statistically significant ($P= 0.002$).

The first part of feedback questionnaire (Part A) which dealt with the likert's scale consisted of two

subparts;

- i) Perceptions regarding written comments
- ii) Perceptions regarding feedback sessions

With respect to written comments; 81% students agreed to strongly agreed that tutors give written comments on answer sheets. 56.74% students agreed that they can comprehend written comments whilst 43.24% learners disagreed for the same. 54% students disagreed to strongly disagreed that they approach the teachers for clarification of comments, and 13.5% preferred to stay neutral. 81% of learners stated that this method however is not helpful in understanding the expected standard of performance (table 3).

Table 3

The second part of Likert's scale dealt with their perceptions regarding feedback sessions. Their was a mixed response about feedback being an integral part of FA; 37.7% students disagreed to strongly disagreed, 21.62 % students were neutral and 43% of them agreed to strongly agreed. 78.37 % of students disagreed about having prior knowledge about feedback sessions. 10.8 % students chose to be neutral about their consensus with the tutors regarding the strengths, weaknesses and suggestions in the specific tasks, whereas 5% disagreed to it. The feedback sessions were appreciated by 81% students who strongly agreed that they will seek feedback in future too (table 4).

Table 4

Qualitative Data Analysis :

The responses to "What do you interpret by the word "Formative Assessment" were grouped under three categories given as given in table 5;

Table 5

Few suggestions to improve feedback sessions were;

- " Should give more time for discussion"
- " Should be done after every exam"
- "Should be less time consuming"
- " All teachers should give guidance"
- "Nothing as such"
- " This will be of very much help in Biochemistry as it is difficult"
- " It was good to discuss things out...should be done frequently as the doubts are cleared"

Majority of cases agreed to recommend feedback session to their colleagues. The reasons for recommendation were grouped into categories as stated in table 6 ;

Table 6

4. Discussion

The importance of formative assessment in student learning is generally acknowledged, but not well understood across higher education; particularly in developing countries. The present study attempted to analyze the impact of proper feedback techniques in FA for positive academic outcomes of pre-graduate students of health sciences, and how the students perceive feedback in the same context.

From the results so obtained there was a significant difference between the level of performance in Formative and Summative examination for the subject of Physiology among the cases recruited for the study. This strengthens our assumption that FA scores can be considered as a strong indicator of the students' academic standards against which further strategies can be planned accordingly and effectively(12).

Literature serves different methods to practice feedback via interactive dialogues, written annotations, written comments, video based feedback etc. Written comments on answer sheets is one of the most widely used method of feedback after FA. In our University written comments on valued answer sheets is a common practice. They are then shown to the students for reference. We tried to speculate the performance of controls in SA who received written feedback comments on answer sheets (controls n=37) as compared to cases who underwent feedback sessions (cases n = 37) in addition to written comments. The cases ;after experiencing 1st feedback session , voluntarily sought feedback after 2nd FA. This was an encouraging evidence to prove its ability to generate interest amongst students. The present study depicted that cases scored better in SA as compared to controls . This finding is in unison with the findings by **Mari'a T. et al** (12) where they compared the percentage of students who passed in the group that participated and in the group that did not participate in feedback sessions giving a significantly higher percentage of students who passed within the group who participated .

David Carless (3) analyzed the issue in more depth and recommended assessment dialogues which is in congruence with the constructive feedback dialogues between the tutor and student which the present study stresses about. He argued that tutors invest a lot of time in written feedback but fail to have an impact on student learning. The comments are invariably complex and difficult to decipher. For some students, only the numerical

grade is meaningful in terms of achievement and progression (2). Some students only read the qualitative comments if quantitative mark is outside their expectations, perhaps to complain if it is surprisingly low. To generate sense out of the written comments, students require opportunities to construct understanding of them (e.g. through discussion) before they can be used to regulate performance (7).

Questionnaire based feedback from cases captured their perception regarding feedback sessions (n=37). Majority of responses stated that the tutors do give written comments on the sheets (81%). This was encouraging as it suggests that tutors are aware of their responsibility. However the responses were mixed as to whether the students understood those comments. 56.7% of the students strongly agreed to agreed that they could comprehend the comments. Almost 54% stated that they do not approach teachers to get comments on answer sheets clarified. Probably, the students do not realize the significance of written comments in their academic progression. We wish to draw attention to the 4th item which stated whether they understood the expected standards of performance from the written comments to which almost 81% disagreed. There is considerable evidence showing significant mismatches between tutors' and students' conceptions of goals and assessment criteria and standards (15,12). Weak and incorrect conception of goals not only influence what students do but also the value of external feedback information. If students do not share their teacher's conceptions of assessment goals then the feedback information they receive is unlikely to 'connect' (8). In that case, it becomes difficult for students to evaluate discrepancies between required and actual performance. It is also important to note that feedback not only has a role in helping guide students towards academic goals but, over time, it also has a role in helping clarify what these goals are (4,5).

The second part of the questionnaire which dealt with the students perceptions on feedback sessions had mixed responses regarding their awareness about feedback in FA. It was interpreted that the learners are not oriented towards the actual role of FA in their overall educational process. If the learners are made aware of the actual role of FA in their academic development; they can seek feedback; that too in a manner most be-fitting their learning needs and utilise it to its optimal potential.

The present study organised feedback sessions in a way that encouraged active communication between learner and the tutor. 86% of students strongly agreed that the feedback session was specific, informative and relevant. There was initial positive feedback and reinforcements, followed by a mutual discussion of problem areas, the perspectives of learner and suggestions by the tutor. It was consciously tried not to keep a prototype communication, rather make feedback flexible and interesting. Some researchers maintain that teacher-student dialogue is essential if feedback is to be effective in higher education (13). It should be carried out in a very flexible manner. However, one major limitation this study fails to address is that with large class sizes it can be difficult for the teacher to engage in dialogue with students. Nonetheless, there are ways in which teachers might increase feedback dialogue even in these situations for eg. small group break-out discussions of feedback in class after students have received written comments on their individual assignments, use classroom technologies or peer dialogues. Discussion regarding these alternative strategies in view of increasing strength of medical schools, though relevant; was beyond the scope of this study.

The students were asked to resubmit their responses with due alterations and corrections as suggested. Out of 37 cases we received only seven re-submissions. According to literature "*The only way to tell if learning results from feedback is for students to make some kind of response to complete the feedback loop*" (4). This is one of the most often forgotten aspects of FA. Unless students are able to use feedback to improve learning, by re-doing the same assignment, neither they nor those giving the feedback will know whether it has been effective or not (1). In higher education, students have little opportunity to close the performance gap. Invariably they move on to the next assessment task soon after feedback is received. While not all work can be re-submitted, many writers argue that re-submissions should play a more prominent role in learning (1). The reason for non-submission might be that the students did not take it on priority basis as the resubmission was not tagged with any weightage.

The qualitative analysis depicted students misconceptions/partial understanding of the word "Formative Assessment". This unfurled an important issue that given the centrality of assessment to learning, students need to learn about assessment in the same way that they engage with subject content. Feedback dialogues can help students to clarify the standards known to teachers but less transparent to students. For assessment to be major contributor to learning process; the takers i.e the students should be made well aware of the relevance of various assessment methods.

There were not much suggestions generated to improve feedback sessions; probably due to lack of existing knowledge about how feedback should be carried out. Interestingly; 35 /37 students stated that they will recommend the sessions to their fellow colleagues with cited reasons as it helped them to understand where the fault lies, how to improve / rectify the faults, it was interesting and novel concept etc.

5. Conclusion

The present study suggests that the mere participation in feedback sessions after FA, irrespective of success, may determine greater involvement of students in the learning process and hence improve learning outcome. FA scores should be considered as performance indicators for planning specific feedback rather than general guiding statements. It should be emphasized that written comments, even if it relates to explicit goals and criteria, does not suffice as feedback. The tutors in medical schools should be made aware of proper feedback techniques.

There should be awareness amongst students about various assessment methods and its relevance. The significance of FA in professional education should be stressed so that learners become more conscious of seeking feedback in various learning activities.

References

1. Boud, D., Cohen, R. and Sampson, J. (1999) Peer learning and Assessment, *Assessment and Evaluation in Higher Education*;24(4):413-426.
2. Chanock, K. ,(2000) Comments on essays: do students understand what tutors write? *Teaching in Higher Education*;5(1):95-105
3. David Carless, (2006);Differing perceptions in the feedback process, *Studies in Higher Education* 31(2): 219–233
4. David J. Nicol, (2006) Formative assessment and self-regulated learning: A model and seven principles of good feedback practice, *Studies in Higher Education*, Vol 31(2), 199-218
5. Duncan N. (2007); Feed-Forward: improving students use of tutors comments, *Assessment and Evaluation in Higher Education*, 32(3): 271–283
6. Falchikov N. (1995),Improving Feedback To and From Students, in P. Knight (ed.), *Assessment for Learning in Higher Education*, London: Kogan Page
7. Higgins, R., Hartley, P. and Skelton, A. (2001), Getting the message across: the problem of communicating assessment feedback,*Teaching in Higher Education*;6(2):269–274
8. Hounsell, D. (1997),Contrasting conceptions of essay-writing, in: F. Marton, D. Hounsell and N. Entwistle (Eds),*The Experience of Learning*,Edinburgh, Scottish Academic Press.
9. Kazi Khairul Alam, (2009), Feedback on formative assessments in undergraduate medical education of Bangladesh; *Bangladesh J Physiol Pharmacol*; 25(1&2): 18-22
10. Kolb DA , .(1984), *Experiential Learning: Experience as the Source of Learning and Development*,Prentice Hall, Englewood-Cliffs, NJ
11. Malathi Srinivasan et al (2007);Does feedback matter? Practice-based learning for medical students after a multi-institutional clinical performance examination, *Medical Education*, 41(9):857–865
12. Mari´a T. (2009); Formative assessment and academic achievement in pre-graduate students of health sciences, *Adv in Health Sci Educ*, 14:61–67
13. Orsmond P., Merry, S. &Reiling, K. (2002); The use of formative feedback when using student derived marking criteria in peer and self-assessment”, *Assessment & Evaluation in Higher Education*, 27(4):309-323
14. Rolfe, I., & McPherson, J. (1995); Formative assessment: How am I doing? *Lancet*, 345:837–839
15. Ronald M. Epstein, (2007); Assessment in Medical Education, *N Engl J Med* 356:387-96
16. Rushton A, Formative Assessment: a key to deep learning? 2005; 27(6):509
17. Sadler, D. R., (1989); Formative assessment in the design of instructional systems, *Instructional Science*, 18:119–14
18. Wass, V., Vander Vlugten, C., Shatzer, J., & Jones, R.Assessment of clinical competence, *Lancet*, (2001);357:945–949.

Tables and figures

Marks in Percentage (n=74)	Formative Assessment	Summative assessment
< 50%	37 (50%)	22 (29.7%)
Between 50 – 60%	27 (36.4%)	36 (48.6%)
Between 60 – 70%	10 (13.5%)	16 (21.6%)
>70%	None	None

Table 1 : Percentage of scores in Formative and Summative Assessment

Assessment	Cases (n=37) (values are given in %)				Controls (n=37) (values are given in %)			
	<50%	50-60%	60-70%	>70%	< 50%	50-60%	60-70%	>70%
FA	51.35	35.13	13.5	0	48.64	37.8	3.5	0
SA	18.9	54.04	27.07	0	40.5	43.24	6.21	0

Table 2: Comparison of percentage of scoring between cases and controls in formative and summative assessment

S. N.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Tutors often give written comments on the answer sheets			18.9	67.56	13.5
2	The written comments (if present) are comprehensible	10.81	32.43		48.64	8.10
3	You approach the tutors to clarify the written statements	10.81	43.24	13.5	27	5.4
4	The comments are helpful in understanding the expected standards.	32.43	48.64		13.5	5.4
5	This method is best way to understand your mistakes and improve upon them	27	35.1	13.5	21.62	2.7

Table 3 : Percentage of responses for Part A (i) i.e Written Comments in answer paper (n=37)

S.N.	Items	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
1.	Feedback is an integral part of Formative assessment	8.1	29.72	21.62	32.43	10.81
2	You had a prior knowledge about what feedback session is all about	16.21	78.37		5.4	
3	You were explained regarding the expected standards of performance during the sessions			13.5	81	5.4
4	You were made aware of your strengths in the topic/subject and were appreciated for it during the sessions			2.7	81	16.21
5	Suggestions were provided for ways and means to improve your performance				5.4	94.5
6	The feedback session was specific, informative and relevant			5.4	10.81	83.78
7	You agree with your tutor about the strengths, weaknesses and suggestions		5.4	10.81	64.86	13.5
8	You were given the opportunity to present the same work in a better manner			21.62	35.1	43.24
9	You will seek feedback from your tutor in future too				18.91	81

Table 4 : Percentage of responses for Part A (II) i.e feedback sessions(n=37)

As routine exams	As Internal assessment	Near perfect explanation
“ Part completion examinations” - 12	“ Examinations throughout the semester who’s marks are added to final examinations”	“ way of assessment which helps us to improve our knowledge”-1
“ Prelims”– 8	“Internal assessment”– 6	
“All types of exams except university examinations “2	“ Where we are allotted marks on projects, seminars, home assignments ,attendance etc.”	

Table 5 : Open ended responses for item no. 1 of Part C of Feedback Questionnaire (n=37)

Recommendation	No. of responses	Categories	Commonly cited reasons
Yes	35	Novel/ Innovative /Interesting Informative Beneficial	“interesting method” “it was a good interaction I liked the idea” “it is a novel and helpful discussion” “ clarified my doubts, encouraging too” “it has helped in realising our mistakes and how to improve” “ came to know why I lost marks” “ everything was explained very nicely” “ it will be of help in final exams” “finally I came to know how I need to write” “best part is I can clear my doubts and ask how I can write better” “felt good after the session initially was reluctant. But it is helpful.” “it has helped me to understand where I am doing right and what needs to be improved”
No	1		“ time consuming”
Neutral	1		“Maybe ...if he is interested !”

Table 6 : Open ended responses for item no 3 of part C of Feedback Questionnaire (n=37)

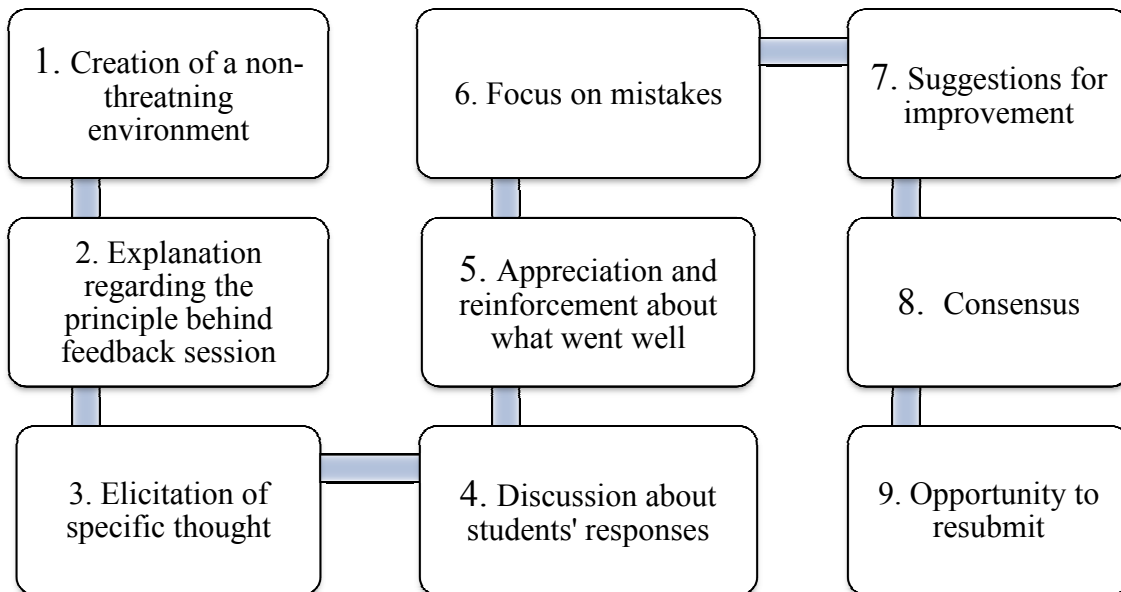


Figure 1 : Sequence of steps followed during conduction of feedback sessions

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