Understanding the Importance of Assessment and Feedback in Teaching and Learning

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Abstract: '*Nothing we do to or for our students is more important than our assessment of their work and the feedback we give them on it. The results of our assessment influence students for the rest of their lives*'. This quote really depicts the significance of assessment and feedback for our students. It is essential for learning and an indication of success (or failure). So, the whole purpose of assessment and feedback needs to be understood not only by the teachers but also make their students aware about the same. This will help the teachers to design suitable assessment methods and give constructive, timely and meaningful feedback to their students gracefully; and also help the students to understand the whole assessment process. This intervention was implemented in a third year UG course. The SRS conducted by the institute, and 'Course Instructor feedback for the course, clearly suggest that the students were pretty happy and satisfied with the contents, and the manner in which the whole of the course was covered and assessed in the class.

1. Introduction

'*Nothing we do to or for our students is more important than our assessment of their work and the feedback we give them on it. The results of our assessment influence students for the rest of their lives*' (Race, Brown and Smith, 2005). This quote really depicts the significance of assessment and feedback for our students. It is essential for learning and an indication of success (or failure). So, the whole purpose of assessment and feedback needs to be understood not only by the teachers but also make their students aware about the same. This will help the teachers to design suitable assessment methods and give constructive, timely and meaningful feedback to their students gracefully; and also help the students to understand the whole assessment process and its significance, and also to take their criticism/feedback in the positive manner to improve their learning. The students will definitely feel proud and responsible when they realize that they are being considered as partners in teaching and learning process. This will help the students to carry out self-assessment and peer-assessment which in turn will definitely aid peer-to-peer learning which has already been reported in the literature as the best learning method. Even during curriculum design, suitable assessment and feedback methods need to be proposed for each of the course in the module for effective teaching and learning process.

2. Literature Survey

The assessment quality cycle is shown in Figure-1. The reason for this is well supported by the following quote by Boud, 1995):

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'*Student can, with difficulty, escape from the effects of poor teaching, they cannot escape the effects of poor assessment. Assessment acts as a mechanism to control students that is far more pervasive and insidious than most staff would be prepared to acknowledge.*'
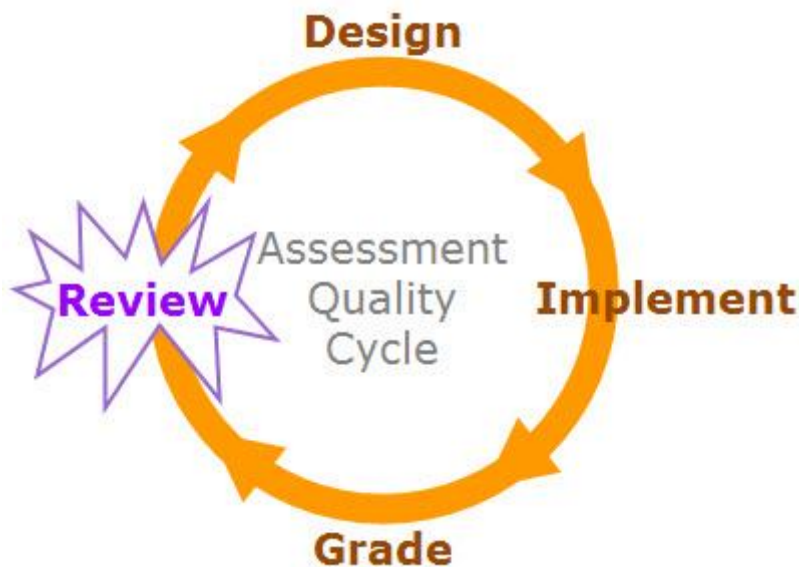

Figure-1: Assessment Quality Cycle

Assessment methods can be broadly classified into the following two categories:

Summative assessment, also known as **assessment of learning**, '*involves making judgements about students' summative achievements for purposes of selection and certification and it also acts as a focus for accountability and certification*' (Bloxham and Boyd, 2007).

Formative assessment, also known as **assessment for learning,** '*provides information about student achievement which allows teaching and learning activities to be changed in response to the needs of the learner and recognizes the huge benefits that feedback can have on learning*' (Bloxham and Boyd, 2007).

A well-designed assessment should be a mix of formative and summative assessment with emphasis given to formative ones. In the literature, several attempts have been made to define good assessment which should be/have:

- Fair
- Transparent in processes and documentation
- Reliable in terms of its accuracy, consistency and repeatability
- Feasible or practicable in terms of time, resources and student numbers
- Educational impact, i.e., assessment results in learning what is important and is authentic and worthwhile

Authentic assessment as given by Gulikers, Bastiaens and Kirschner in 2004 is '*an assessment requiring students to use the same competencies, or combinations of knowledge, skills, and attitudes that they need to apply in the criterion situation in practical life*.'

Not only evaluation of assessment of individual courses but at the programme level is also important. The modular nature of our programmes can lead to problems with over-assessment, feedback that lacks feed forward qualities that links advice to learning in other modules, and students focusing on individual modules without seeing connections between them. Looking at assessment at a programme level means taking a more a more holistic look at assessment design and potentially avoiding the previously mentioned problems. Gibbs and Simpson in 2004 proposed a series of pedagogic principles that

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underlie assessment design that supports effective teaching and learning process. The following conditions should be taken into account when designing assessments at the module and programme level:

- There should be sufficient assessed tasks to capture sufficient student study time
- Assessment demands should be designed so as to orient students to distribute appropriate amounts of time and effort across all the important aspects of the course
- Tackling the assessed task engages students in productive learning activity of an appropriate kind
- Assessment should communicate clear and high standards
- Sufficient feedback needs to be provided, both often enough and in enough detail
- Feedback should focus on students' performance, on their learning and on actions under the students' control, rather than on the students themselves and on their characteristics
- Feedback should be timely: received by students while it still matters to them and in time for them to pay attention to further learning or receive further assistance
- Feedback should be appropriate in relation to students' understanding of what they are supposed to be doing
- Feedback needs to be received and attended to
- Feedback should be provided in such a way that students act on it and change their future studying

Feedback as described by Hattie and Timperley in 2007 is '*the most powerful single moderator that enhances achievement*'. The main objectives of feedback are to:

- justify to students how their mark or grade was derived
- identify and reward specific qualities in student work
- guide students on what steps to take to improve
- motivate them to act on their assessment
- develop their capability to monitor, evaluate and regulate their own learning (Nicol, 2010)

Feedback is valuable when it is received, understood and acted on. The way students analyse, discuss and act on feedback is also important in addition to the quality of the feedback itself (Nicol, 2010). This whole process of feedback definitely improves the whole learning curve of the students.

3. The Intervention

This intervention was applied in a third year course entitled 'Innovation and Entrepreneurship.' This is part of the B.E. Electrical Engineering Programme of 2015 scheme. There were 84 students in the class in July-Dec., 2018. A laboratory component with Project work was there in this course. The course has 1 lecture per week and 2 hours practical session every alternate week. I was also taking one practical group of 22 students who were doing their project work under my guidance in a group of 4 or 5 students. After having interaction with the B.E. Electrical Engineering students who took this course during July-Dec., 2017, I realized that the students were not able to appreciate this course and its contents in their course scheme. They were not able to understand the significance of this course and its relation with their branch of engineering. So, there was a total disconnect of the students with this course.

When this course was taken up for the first time in July-Dec., 2018, it was decided to make the students understand the significance of this course and its relation with their branch of engineering, before covering the content in the class. Even the assessment part of the course was also made available to them in the first class. The class was acquainted with the importance of each assessment components associated with this course. The continued assessment and feedback technique was thought of and implemented in this course. The weightage of marks assigned to each component associated with this course are given below:

- Laboratory Evaluations – 25 marks 5 different evaluations conducted throughout the semester

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- Business Model Canvas – 10 marks conducted at the end of the semester
- Project Report – 20 marks conducted at the end of the semester
- Pitch – 10 marks conducted at the end of the semester
- Central Quiz – 25 marks conducted at the end of the semester
- Class Quiz – 10 marks conducted in the middle of the semester

The details of the Laboratory evaluation are as follows:

LAB ACTIVITY 1 (5 MARKS)	**QUESTIONER ON THE BASIS OF BIG – 5 PERSONALITY TRAITS** **ASSIGNMENT:** To describe a personality on the basis of BIG–5 parameters with reasoning/justification.
LAB ACTIVITY 2	• **BUG HUNT AND PASSION:** Ask the every student for 3 areas which he/she are passionate about and 3 areas which he/she is concerned about. • **TEAM FORMATION (MINIMUM 4 MEMBERS & MAXIMUM 5 MEMBERS):** Students will be asked to describe why did they select a specific person (student) in his team. • **EXPLAIN PORTER'S FIVE FORCES MODEL BRIEFLY (FOR IMPLEMENTATION ONLY):** Students will be asked to evaluate the opportunity identified by them on PORTER'S models. • Students will be asked to prepare and present a brief presentation on their analysis of Porter's Model. **(TO BE EVALUATED)**
LAB ACTIVITY 3 (5 MARKS)	**IDEATION AND OPPORTUNITY EVALUATION:** • **Students will present a brief presentation on their analysis of Porter's Model with respect to their identified opportunity. (TO BE EVALUATED)** **ASSIGNMENT:** Students will be asked to conduct the customer survey to assess what customer actually wants from a service/solution. (Recommended customer size of 100 and above)

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LAB ACTIVITY 4	**ANALYSIS OF CUSTOMER SURVEY: The students are asked to present their analysis on the customer survey and show their conclusions with respect to the opportunity identified.**
LAB ACTIVITY 5 (5 MARKS)	**OPPORTUNITY EVALUATION: Students will be asked to prepare a brief presentation of their final components of Opportunity Canvas. In this assessment, the students are required to fill the opportunity canvas for the problem identified by them. There are four key elements being evaluated by faculty** • **Market/Customer Segmentation** • **Value Proposition** • **Budget Estimates** • **Not followed guidelines analyzing the sections of opportunity canvas**
LAB ACTIVITY 6 (5 MARKS)	**BUSINESS MODEL CANVAS: The students are asked to fill the BMC based on their identified value proposition and targeted customers and also include detailed revenue and cost model. Students will be asked to prepare a brief presentation of their final components of BMC in the lab session.**
LAB ACTIVITY 7 (5 MARKS)	**PITCHING: The students are asked to pitch the idea on the basis of filled BMC.**

During their Laboratory evaluations, feedback was given to the students at the spot to ensure the improvement in the performance of the students in the successive assessments. This will definitely improve the insight of the students into the whole subject. The students were also advised to preferably prepare the 'Business Model' related to their branch of engineering. This really helped them to understand the link between their branch of engineering and Entrepreneurship course.

There was also a need to monitor the progress of the students, and their level of engagement. Therefore, I used to have informal discussions with the students inside and outside the class to assess their level of understanding and engagement. The students seem to be very satisfied with the way this course was covered in the class, as is justified from the 92.3% 'Student Response Survey' (SRS) of 'Innovation and Entrepreneurship' course. After the assessment of the course in the previous semester was over, I decided to conduct an independent survey of the course from the students who were part of my Laboratory classes. For this, a 'Course Instructor Feedback' form was designed which is given below:

1. This course is informative and helpful in developing your technical know-how.
2. The course instructor referred to the success stories of some eminent personalities of the world.

3. The information given by the course instructor will be useful to you in setting up your entrepreneurial venture.

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4. The course instructor made you feel free to ask questions in the class.

5. The course instructor communicates effectively in the class.

6. The course instructor shared some of the biggest disaster stories of the entrepreneurial world and their causes.

7. The course instructor shared some additional knowledge with the students thoroughly linking your technical know-how with the entrepreneurship mindset.

8. The course instructor explained the objective(s) of this subject.

9. The course instructor helps the students to prepare their business models projects.

10. The course instructor made the whole class aware about the various evaluation strategies that would be carried out throughout the semester at the beginning.

11. The course instructor allows you to be active in the classroom learning.

12. The course instructor listens and understands student's point of view. He may not agree but students feel understood.

13. The course instructor carried out the continuous evaluations throughout the semester for the better understanding of the concepts related to the subject.

14. The course instructor was fair in his evaluation of the students' performance in the course.

15. The course instructor used to give constructive and timely feedback and evaluation results to the students.

Average Weighted Score of 4.88 on a scale of 5 for the Course Instructor Delivery in the class was obtained

5. Summary and Conclusions

This paper has examined the impact of timely and effective assessment and feedback, for the overall growth of students in a graceful and responsible way. This approach is not only beneficial for the students but also for teachers to design compassionate and serious assessment strategies that will involve the students as partners in the whole teaching learning process. From the 'Course Instructor Feedback' conducted for the 'Innovation and Entrepreneurship' course, it is clear that the students were pretty happy and satisfied with the contents, and the manner in which the whole of the course was covered and assessed in the class. The comfort level of the students in this topic when measured through indirect methods was also very encouraging. This has also helped me in inculcating good moral, ethical and technical values or skills in my learner's minds. In the end, I would like to conclude saying that '*no teaching and learning is complete without authentic assessment and feedback*.'

References

- Gulikers, J., Bastiaens, T., & Kirschner, P. (2004). A five-dimensional framework for authentic assessment. Educational Technology Research and Development, 52 (3), 67-85.
- Boud, D. (1995). *Enhancing Learning Through Self-Assessment*. London. Routledge Falmer.
- Gibbs, G and Simpson, C. (2004). Conditions under which assessment supports students' learning. Learning and Teaching in Higher Education vol.1 pp.3-31.
- Race, P. Brown, S. and Smith, B. (2005) 500 Tips on assessment: 2nd edition, London: Routledge.
- Hattie, J. and Timperley, H. (2007) The power of feedback. SAGE Journals, 77(1), 81-112.
- Bloxham, S. and Boyd, P. (2007) Developing effective assessment in higher education: A practical guide: 1st edition, New York McGraw Hill International.
- Nicol, D. (2010) From monologue to dialogue: improving written feedback processes in mass higher education. Assessment & Evaluation in Higher Education, 35(5), 501–517.

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