Designing Learner-Centric MOOCs

Prof.Sridhar Iyer
Prof.Sahana Murthy
Dr.Jayakrishnan M
Dr.Sameer Sahasrabudhe

Indian Institute of Technology, IITB

Lecture 18

Constructive Customized Feedback in LbDs

We're discussing the creation of learning by doing activities. Let's do a recap of what all an instructor has to do to create LbDs. While creating an LbD activity we need to start with the learning goal: is it concept attainment, application, integration of knowledge. We can use our teaching experience to decide the pedagogical goal and the pedagogical type and we need to explore the platform to decide the format of the question and then combine all this using our creativity.

In this Learning Dialogue, we will discuss how to give effective feedback for LbDs. Let's begin with a reflection spot. Your colleague wrote an LbD activity as a multiple choice question and gave feedback in the form of correct or wrong for each option. Do you think this is effective? Pause this LeD now and think of your answer and once you have decided whether you think the feedback is effective or not, please resume.

Some of you may have thought that this feedback is useful. You are right to some extent in the sense that learners do need to get feedback of whether the response was correct or not. Some of you, on the other hand, may have thought that this feedback is not effective. Yes, this feedback which merely points out whether an answer is correct or wrong is not sufficient. What is missing is that each learner needs to understand why his or her response is wrong and also needs to get feedback on the steps to move ahead.

Let's go through some key recommendations of giving feedback. Recall that Learning by Doing activity is in fact a formative assessment activity. Thus the feedback should be constructive, that is, the feedback should help a learner

understand not only why his or her answer was incorrect but also help them reason through it and what they can do to reach towards the correct answer with correct reasoning.

The feedback should also be customized, that is, each learner might have different reasoning or a different wrong answer in the case of an MCQ. The feedback should address this diversity and point out exactly what different learners should do to reach towards correct reasoning and the correct answer. Effective feedback should allow change, that is, it should point to future steps for the learner, what the learner should do to revise and how.

Now that we know what effective feedback looks like and what its features are, let's examine how an instructor can implement this. The challenge is that we are in a MOOC setting, we have massive numbers of students. There is the challenge of transactional distance because we are in an online mode.

So in such a setting, how can an instructor give customized and constructive feedback to each learner? Let us discuss this with an example of a multiple choice question.

Consider this multiple choice question from a programming course and this is from the topic of iterations. Suppose there is an LbD which reads as follows. The following program fragment counts even numbers between A and B. Predict the output of the program when the value of A is 1 and the value of B is 9. And then the program fragment is given. You can take a look at this.

In order to create the options for this question what an instructor can do is to think of what a student might do. That is, what difficulty students might face in such a problem or what common errors they may make. The options can be created so that they actually elicit student's thinking and their prior knowledge. This is something which experienced instructors will be familiar with based on your classroom situation.

So let's go through some possible options for the output and the feedback that can be given for each case. One of the possible options is four. This is the logical answer if one does a hand tracing through the steps of each program and sees

how each variable changes through the iterations, but the program does not output four and this is the feedback that must be given for this option. Trace each value of the variable a, b, c as the program goes through the iterations and pay attention to the exit condition.

Another possible option output option that an instructor can give is five. Now, this is a common error that even experienced programmers make in counting iterations and this is because they may not have paid attention to the correspondence between the entry values of A, the type of iteration used, here it's a 'do while' loop and the exit condition. So the customized feedback for this option can be that the learner should pay attention to the initial value of A, the exit condition and the type of iteration.

Note that this kind of feedback also helps the learner decide what to do next, that is, it is constructive in nature. Another feedback option can be six, which is in fact what the program outputs, even though it is not the solution to this question. And some learners may have chosen six and the feedback can tell them that yes this is what the program outputs, however, this is not the right answer and try to help them see where the discrepancy is.