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Course and teaching improvement using Classroom Assessment Tools

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1 Introduction

In the second chapter, we will try to convey the complexity of teaching skills and how learning perhaps emerges from them. Moreover, we give a brief overview of what it means to learn and make a distinction between the two types of learning because it is useful to know how the information is being received if we want to properly convey it [7].

The third chapter describes good feedback practice, and how it facilitates self-regulation in students and provides teachers with crucial information which can be used to improve course architecture and teaching methodology [4]. We will touch upon the use of formative assessment in teaching and how it could be used for teachers' self-reflection. We consider that improving the course architecture and modulation of teaching-learning symbiosis is a natural byproduct of such self-reflection.

In the fourth chapter, we tried to present the easy-to-implement changes to the course organisation given a larger context.

Finally, in conclusion, we tried to summarize the content and provide some personal opinions.

2 Learning

Inspiration for this chapter was taken from the first part of the book *When Teaching Becomes Learning* [7].

When one reflects upon difficulties while learning she or he can witness a form of a shapeless mass that tends to collapse into a definite state after the emotional period in between. The description of that collapse is captured in this quote: "Dynamic complexity lapses into truism or formula, and the originality and aliveness of the work leaks away [5]".

Learning assumes the capability to memorize pieces of information and understand their meaning. Speaking plainly, learning could be explained as a process where modulation and reshuffling of mental schemas occur. Therefore, learning assumes some fundamental ground made of schemas, on which new thinking or understanding could stand.

2.1 Two types of learning

We could say we have subconscious, experiential or tacit learning because of the things that happened to us and learning that was the result of conscious thinking because of the things we deliberated. Those can be in a felt, non-verbalized form and in a more explicit form connected with speech. The distinction is related to two different and observable thinking processes that occur in two halves of the human brain that can even function separately.

2.2 Two memories

Procedural memory explains the human ability to know something without being able to verbally define it. Such as tying the shoelaces. Declarative memory is made by deliberate callbacks of events that we experienced. Such as remembering someone's height. Declarative memory is prone to error because it's constantly refreshed by conscious reconstruction of events not events per se.

2.3 Understanding and thinking

Teaching must depend on making a difference between thinking and understanding. Thinking is related to combining past experiences with present circumstances. Understanding comes after the experiential process.

One can say that thought begins where feeling ends. Perhaps we could also state that thought ends where the feeling initially began. Remembering the information is a matter of attitude at that moment and information recall is then a justification of the attitude. A quote in [9] supplements this idea: "Behind every thought, there is an affective-volitional tendency which holds the answer to the last *why* in the analysis of thinking." For example, during the spontaneous speech, children tend to use some words that are driven by attitude and motive at the given moment. That's why often they don't know how to repeat the words used afterwards because the motive is absent.

Author in [3] explains learning as the brain's ability to resonate with the new information that is already within us, not just mere neural activity triggered by the environment that is being stored. So, reshuffling schemas means changing the notion of self not just storing and changing new information in our brains.

Learning might be about being open to the world and the ability to pay attention. New information has to have personal relevance in order to find its meaning. That relevance is obtained through experiential learning.

2.4 Language usage

After the short lecture teacher can expect to have as many interpretations of the lecture as there are listeners. Language can be seen as a double-edged blade so its punctual usage can prevent blurring the understanding.

3 Classroom Assessment Tools

Classroom Assessment Tools (CATs) could serve as means to identify currently present schemas in learners' minds for teachers to start from.

Fifty CATs can be grouped into three categories [1]:

- Techniques for assessing course-related knowledge and skills
- Techniques for assessing learner attitudes, values, and self-awareness
- Techniques for assessing learner reactions to instruction

Moreover, CATs are used to evaluate students' attention, improve engagement and give teachers valuable pieces of information that could be used to adjust their teaching approach [8]. Maybe the most important feature of CATs is where learners have the feeling of control over the teaching methodology by openly advising the teacher. Since they require active participation passive learners perhaps back down from the progress more easily than without such assessments. Having that in mind, using a suitable tool is really important. Tools like quizzes [6] and Mentimeter¹ provide teachers with an elegant solution that doesn't alter the intended lecture tempo and direction since those are the main issues with CATs.

Recently, higher education started to adopt feedback practices to enable self-regulation in learners [4]. This methodology assumes that the learner should initially estimate his own knowledge, set learning goals and fuse them with the teacher's requirements and shape a methodology to converge towards a predefined setpoint. All the concepts are quite fluid, including the teacher's requirement because of frequent feedback from CATs.

In [2] author points out that educational institutions should develop teachers into reflective practitioners where CATs are one of the means for achieving that. Classroom Assessment faculty groups in higher education provide teachers with support in implementing new ideas, promote collegiality, give teachers the ability to tune into students' voices and a place for engaging in systematic changes of their teaching and course modulations.

¹Mentimeter: <https://www.mentimeter.com/>

3.1 Extrinsic and intrinsic rewards

Extrinsic rewards represent a teacher's affirmative confirmation of a positive outcome. It was shown that reinforcing learning through extrinsic rewards diminishes creativity and adopts learning to be more goal not purpose driven. The main reason is perhaps because of award anticipation. Purpose-driven learning is related to intrinsic rewards which are generated from meaningful patterns formed by understanding. In other words, intrinsic rewards in learners are enabled by building responsibility for their learning.

This is why it is curious to observe how common extrinsic rewards are at every level of education, including universities, where grades and marks are prime examples of this. The most common assessment tool flies in the face of the understanding that extrinsic rewards are not helpful to motivate the student. This issue permeates the whole of society and it's out of the scope of this essay.

3.2 Feedback on teaching

One-minute papers are widely accepted practise to assess teaching and it belongs to techniques for assessing learners' reaction to instruction. The questions are given at the beginning and the end of the lecture where learners reply briefly about what they know about the topic and how well they comprehend the topic, respectively. This is a good way to avoid misunderstandings about topics and techniques at an early stage, this knowledge may be retained by the teacher or passed on to a future lecturer in the course.

4 The course in a larger context

To understand course content, the key is to understand the lecturer teaching it and the larger context of a course. Courses are typically not isolated dispensaries of information. They live both in the larger contexts of the university program and the discipline the course belongs to.

How do you ensure that knowledge from previous iterations of a course is handed down? In chapter 3 we discussed CATs and how they may be used during a course. If some of the findings of the previous lecturer are recorded they could be a valuable resource. If there is a concept in a course that is often a great source of confusion, it would be helpful to know this beforehand.

Teachers juggle three potential reasons to change the course content and teaching methodology:

- Governmental and educational institution course frameworks
- Intrinsic guidelines based on their expertise in the thought field
- New comprehensions obtained from CATs and self-reflection interplay

Course architecture and content are defined within the larger education program mostly following faculty guidelines. If the teacher decides to change teaching methodology it doesn't have to reflect on course content or its architecture.

One is free to change the scheduling parts of the course and make sure they are synchronised with other courses learners have in the program they attend. The synchronisation should facilitate learners' ability to easily reshuffle existing schemas. In another word, if a teacher notices repeating conceptual misunderstandings from year to year, one should pinpoint it and identify a colleague with whom he might agree on altering the schedule of their course parts. The natural consequence might be a need to bridge the gap between the two courses and include the missing part in the third course. The design of such scheduling and bridging the gaps should be inspired by stereotypical learner's schema that is a cause of pinpointed conceptual misunderstanding.

5 Conclusion

In the following bullet points, we cherry-picked the facts that seem important:

- Teachers can't improve learners' motivation, one can only prevent its deterioration.
- The goal is to facilitate the development of agile minds and keen and passive alertness in learners.
- People learn about themselves in relationships. So we can infer that learners' self-regulation could be enhanced by creative peer assessment, group work etc.
- Learning is an experience, CATs shouldn't be taken as a threat but approached with pleasure. The teacher should facilitate such an atmosphere.
- The need to present old information from different angles is challenging for a teacher and rewarding for a learner.
- Learners should be provided with enough time for reshuffling the existing schemes in order to grasp the meaning and more global view.
- Teachers should be prepared for a systematic study about learning and struggles to translate it into effective practice.
- Course improvements are desirable in any context as long they maintain teacher's motivation and curiosity about learning processes

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Abbreviations

CATs Classroom Assessment Tools.