Activity Post-Mortem – an eXtreme Teaching Practice

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Most teachers strive for perfection in their activities and the use at Lund Institute of Technology, Sweden of summative (CEQ) and formative assessment is a help to that. However, it is difficult to put to consistent use and many struggle to get the benefits.

Reflection is key to all improvement. Activity Post-Mortem (APM) is a technique that supports the teacher in continuously reflecting on his teaching activities in a structured and disciplined way. It provides structures and guidelines for capturing and disseminating different kinds of reflection information and it imposes discipline in explicitly scheduling the production of reflection information and planning the use of the obtained data. APM fits well with the highly iterative nature of eXtreme Teaching and its focus on feedback and communication.

APM shares many traits with summative and formative assessment. However, in contrast to summative assessment that is done after the completion of a whole course, APM is done immediately after each single activity, like a lecture, and can be used to improve the pedagogy of the next lecture or the contents of this or next year's course. It can help you capture, preserve and use examples, questions, ideas and dialogue you improvise and create on the fly during an activity. APM shares the same objectives as formative assessment, however instead of focus on feedback to the students, focus is on feedback to the teacher on the results of *his* activities – did *he* learn something about teaching. Furthermore, APM is an explicit technique that implements the implicit principles from formative assessment.

Introduction

How do we as *teachers* improve and become better professionals? There seems to be some good intentions from "higher up in the system" of "creating lively pedagogical discussions" (Pelger, 2007) – but no real indications of how it can or should be implemented. In a teacher's everyday life it is usually difficult to find time for "lengthy, theoretical discussions" – especially about pedagogy as the technical contents of the teaching tends to attract more focus. You could try to practise Pair Teaching (Andersson and Bendix, 2006a) as a way of getting a "critical friend" (Biggs, 2003a) with whom you could discuss and develop your teaching – but your superior might not see the economical benefit of allocating resources for that. So most often you are stuck with yourself as critical discussion partner.

Well, is it really that difficult to assess, develop and improve your teaching? Is it really true that it takes a lot of pedagogical courses or workshops – that it is a lot of work – and that it is time wasted because you will not know if it actually works or not? If you have that impression, it could be that you are using or looking at approaches that are too heavy on costs and work with respect to what you get out of it. In that case Activity Post-Mortem (APM) may be worth trying out. It is called APM because we want to emphasise that it is a Post-Mortem action that is supposed to be carried out after any type of teaching Activity.

In the following, we will look at APM, which is a lightweight, iterative approach to teaching improvement. We will try to answer questions like: what is APM, what can it be used for and why does it look the way it does – before we finally draw some conclusions.

APM – what is it?

In its most simple form, the *first step* of APM is nothing more than one single 10x15 cm index card (or A6-format piece of paper) and 5 minutes of undisturbed time. Immediately after a teaching activity, you first spend one minute trying to empty your mind from distracting thoughts. Then you spend two minutes reflecting on *what* happened during the teaching activity (good things, bad things, new ideas). Finally, you spend two minutes writing down the unfiltered results of your reflection. That's it.

More advanced forms of APM can use various kinds of "templates" to structure and guide the reflection process depending on the actual context and purpose – and require a little more time, but not bigger pieces of paper (though possibly more pieces).

In the *second step* of APM, you schedule the results of your reflection for processing and action. You try to figure out *why* things happened and *what* you can do to repeat or avoid things happening again (depending on whether they were good or bad things). Sometimes you will be able to find time and reason to process the reflections immediately and decide what the resulting actions should be. Sometimes you will find it better – and have time and possibility – to postpone the processing of the reflections until later. In any circumstance the data from your reflection will be there on paper for you to use any time you find suitable.

APM is a practice that lends itself very well to the philosophy of eXtreme Teaching (XT) (Andersson and Bendix, 2006b). XT has focus on continuous improvement through a highly iterative approach, which makes it possible to easily adjust the teaching after each short increment. APM should be a natural technique for guiding the reflection and planning process that is carried out after each iteration, whether the teaching activity was a lecture, lab, exam, syllabus or something else.

APM – what can it be used for?

The structured and disciplined process of APM can have many purposes and uses. The following are just a couple of examples of what APM can be – and has been – used for.

First of all, APM helps you in continuously analysing and improving your teaching. It is an explicitly process that gently guides you through first capturing the facts of what happened and later reflect on why and what actions should be taken. The first step is very light-weight (five minutes and an index card), which means that you should be able to find time for it after each and every single teaching activity. The second step where you analyse and synthesize might take more time depending on how big results (= planned actions) you aim for or how much data (= first steps) you need. However, the intended use of APM should lead you into a process where you quickly and often will have occasion to reflect and plan actions in time for them to be feed into the next teaching activity. When that happens, you will continuously move forward in many small increments of improvement.

Second, APM can be used for self-assessment of your teaching performance and learning as a teacher. You can immediately assess how effective your teaching is on student learning – and reflect on why. You can immediately assess the effect of any pedagogical experiment you may have planned – and reflect on the results. In the latter case, you can – before the experiment – write down your expected learning outcome on the index card, so you remember to reflect with reference to your planned objectives.

Third, APM is also a way of capturing information and make it persistent and explicit so it is possible to pass on the information and actually use it for improvement. The receiver of the information could be you. Either on the short term for remembering experience – and planned actions – when you repeat the lab later today with another group of students – or for the next lecture next week. Or on the long term for remembering experience – and ideas – when you plan the syllabus, format or general pedagogy for your course next year. However, the receiver of the information could also be other people in the case of a "teaching team". The lab (or exercise) assistants could provide reflection feedback to the lecturer from the lab experience so possible corrective or perfective actions could be taken at the next lecture. The lecturer could provide reflection feedback to the lab assistants from his lecture experience so possible corrective or perfective actions could be taken before or during the lab. Finally, in the case you are a temporary employee with (course) responsibility your successor(s) would probably be most grateful for the pile of index cards with reflections you leave behind.

Finally, APM has been tried out on a number of students on a project course at my department. The project runs as six similar iterations of one week and after each iteration the teams should – among other things – reflect on how the iteration went and decide on how they could improve on the next iteration. Informal experiments indicate that teams where the students did an individual APM immediately after their team programming activity had better team reflections 2-3 days later than teams where the students did no APM. This may be due to having better (explicit) data for their reflection or the fact that they go through the reflection activity twice (though the first time is more "data collection" and the second time is more "data processing").

APM – why does it look like it does?

In software engineering, Post-Mortem is a well-known technique for debugging computer programs where you dump data about *what* happened and analyse this data to try to find out *why* it happened and decide what *actions* will remove the bug. In my early career as a novice teacher in software engineering with no formal pedagogical background or support, that was what I resorted to when my teaching did not always go as expected.

Later on I was introduced to Kolb's learning cycle (Kolb, 1984), which is one of the fundamental pillars in the teaching model used at Aalborg University, Denmark. That meant that I now had a terminology and a "theory" for what I was doing – and I came to appreciate that what was supposed to work well for the students' learning could actually be a good way for me to learn teaching – and that I was sort of doing it already. So in Kolb's learning cycle in Figure 1, "Concrete Experience" is thinking about *what* happened, "Reflective Observation" is figuring out *why*, "Abstract Conceptualisation" are *actions* for improvement – and "Active Experimentation" is my teaching ;-)

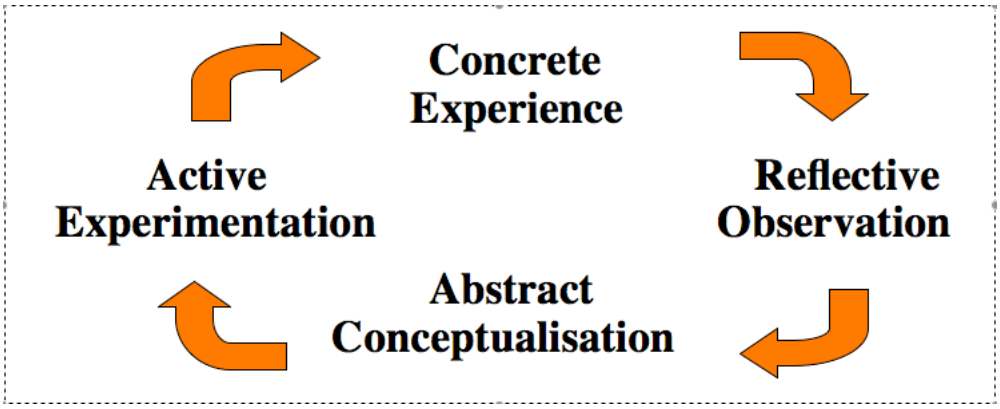

Figure 1. Kolb's learning cycle.

Originally the index card was an A6-format piece of scrap paper. The small format was a deliberate choice to avoid suffering writers block during the first step and scrap paper was chosen to resist the temptation to write on the back too. If you really have a lot to write in the first step, you should use two or more index cards so all text is visible when you lay out the index cards on your table in preparation for the second step. Later on I became inspired – conceptually and physically – by eXtreme Programming (Beck, 2005) which is a software development methodology used on a course (Hedin et al., 2008) at my department. Here the customer writes down on index cards the stories he wants the developers to implement. Kent Beck intends these stories not to be complete specifications, but promises for discussions, and as such each story/functionality must be described on a small index card. In APM, what you write down is also a promise to discuss (and reflect) – sometimes with yourself, sometimes with others. eXtreme Programming is a highly iterative development method and builds on the "extreme" philosophy that if something is worth doing, it is worth doing all the time. That convinced me that APM should in fact be so extreme that it can done all the time (= after each single teaching activity) – and that the only way for that to be practical is that it is kept very light-weight (hence the five minute rule).

Conclusions

Activity Post-Mortem (APM) is a flexible, light-weight and tailorable process for continuously assessing and improving your teaching capability. It gives structure and discipline for the necessary reflection and takes it from an implicit to an explicit process in a cost-effective way. Capturing reflection data is cheap (easy and fast) and using the results to reflect and act on is no higher cost than usual. APM encourages you to reflect early (immediately after a teaching activity) and in most cases that will allow you to act immediately on the outcome when you action can still make a difference.

APM's focus on reflection causes teaching development and improvement to become a true formative process and not a ranking activity where you "count numbers". Therefore APM is more of a Quality Enhancement activity than merely a Quality Assurance activity (Biggs, 2003b), which is what is obtained by summative assessment methods like the CEQ. What is missing in APM (with respect to Biggs fig. 12.1 (Biggs, 2003a)) is the "teaching theory" that is used in the second step (Reflective Observation and Abstract Conceptualization in Kolb's learning cycle) – you will have to pick that one yourself.

Finally, because APM in most cases is a "private" activity, you will be more inclined to feel free to admit your uncertainties, weaknesses and failures during your reflection.

Post Scriptum

Post-Mortem is used in many other disciplines besides software engineering, though sometimes under other names: in the military (or intelligence) *debriefing* is a series of questions about a completed mission; in medicine *autopsy* is used to discover the cause of death or the extent of disease. Usually Post-Mortem is used when things go wrong, but APM can be put to good use when things go well too – if you want to understand why and want to make sure things continue to go well.

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