Pair Lecturing to Enhance Reflective Practice and Teacher Development

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***Abstract*—Pair lecturing enables a more thorough reflection-on-action since the teaching experience is shared with a pair teacher. It also enables deeper reflection-in-action, incorporating student interaction into the lecture plan while keeping the assessment methods and the teaching activities aligned with the course objectives. And in our setup it comes for free.**

Index Terms—**Pair lecturing, team teaching, reflective practice, reflection-in-action, constructive alignment, teacher development**

I. Introduction

IN 2010, we started to use – more or less by chance – pair lecturing in our course on model-driven software development. We had recently introduced a new way of developing software models [1] and a new assessment method in the course [2]. In an attempt to better explain the implications of these changes to the students, two of us (Heldal, as the course responsible and Burden, as a teaching assistant) were present during the first lecture. During the lecture we commented on each other's presentations and started to discuss the impact of the changes. We discovered that we were able to create a more dynamic interaction with the students in this way, and in 2011 we introduced pair lecturing in all our lectures [3]. From a teacher perspective the possibility to enhance our reflective practice was a key point.

II. Reflection

Reflection is a vital part of teaching since new situations constantly arise for which we have not been specifically trained [4], [5]. Smith defines reflection as "assessment of what is in relation to what might or should be and includes feedback designed to reduce the gap" [6]. From the perspective of pair lecturing we found the work of Brookfield and Schön adequate to further assess "what might or should be".

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Brookfield [7] describes four reflective lenses that teachers can use as sources of information and feedback: the *autobiographical lens* (the teacher's own experiences as a student and teacher), the *student lens* (the perspective of the students), the *peer lens* (the perspective of colleagues) and the *theoretical lens* (theories of teaching and learning).

Schön introduces the twin notions of *reflection-on-action* and *reflection-in-action* to capture when reflection takes place [4]. Reflection-on-action takes place before or after teaching, at the planning or evaluation stage. Reflection-in-action can be seen as "thinking on your feet" during teaching.

Reflection has been crucial to maintain good alignment between learning objectives, teaching/learning activities and assessment methods [8] in our course.

III. Reflection in Pair Lecturing

In Table I the two frameworks of Brookfield and Schön for reflection are combined, with Brookfield's four lenses heading the columns and the twin notions of Schön defining the rows.

A. Reflection-on-action

Together the teachers on the course prepare the objectives of each teaching/learning activity so that the objectives of the course are met and so that the prerequisites of each activity are fulfilled before it is carried out. One or more of the teachers then prepares each activity, taking prerequisites and objectives into consideration.

During the planning stage we evaluate the results from previous years based on different types of inputs, such as our own experiences, course evaluations and examination results, feedback from colleagues and theoretical insights etc.

B. Reflection-in-action

During the lectures we take turns being the *driver* and the *navigator* [9]. The driver starts the lecture and introduces the objectives and main topics to the students. Then the first topic is introduced and related to our running example, a course registration system.

The different ways of using the topic are then incrementally drawn on the blackboard by the navigator, while the driver keeps developing the theme of the lecture. When something is unclear about the suggested usage by the driver or there are

TABLE I. POSSIBILITIES FOR REFLECTION IN PAIR LECTURING

		Brookfield's lenses			
		Autobiographical	Student	Peer	Theoretical
Schön's reflections	On-action	Own experiences as student and from previous years	Questionnaires Interviews Examination Comments	Course teachers Faculty members Publications	Publications Education researcher
	In-action	Own experiences as student and from previous years	Questions Comments	Pair teacher	Constructive alignment

interesting alternatives to how to use the models, the navigator raises a question or makes a comment. Clarifications and alternatives are then added to the blackboard as they are identified during the interaction between driver, navigator and students. If the navigator finds something unclear it is most probably the case that some students do as well. By asking for clarification the issues are not only resolved for the assistant but also for the students. The lectures are then an opportunity for the teaching assistant to ask questions about those aspects of the course content that are unclear, to clarify issues that previous students have struggled with during supervision or, in our case, to discuss how certain model elements are to be used. This kind of interaction relies on the teacher assistant to have some previous experience from the course and an existing working relationship with the other teacher.

Since the navigator is less occupied in developing the topics it is possible to now and again step back to keep an eye on that the lecture is developing according to its aims and to capture subtle signs of uncertainty among the students. When the students seem to not understand or if the topic is complicated the navigator steps in and gives an alternative explanation.

In our experience, it often after the lecture that you fully understand the student perspective of a question or comment and realise how to make the most of the student interaction to drive the lecture forward. But by then the now-or-never opportunity to connect to the students is gone. Through pair lecturing the navigator has that opportunity to seize the moment.

And when the navigator steps in to handle the student interaction, he or she becomes the driver and continues the lecture together with the students, still keeping the overall goal of the lecture in mind. In the meantime, the old driver becomes the navigator and gets the opportunity for reflection-in-action. In this way, we not only create more opportunities for student interaction through the interaction between driver and navigator, as expressed by Little and Hoel [10], we also make better use of the interaction through reflection-in-action.

C. Aligning assessment and activities with objectives

Since the learning objectives are static during the course the assessment and the teaching/learning activities have to be aligned to meet the objectives (though reflecting on action possibly will lead to changing the learning objectives from one course occasion to the next). This means that Brookfield's lenses are used for reflecting both on how our assessment methods and our teaching/learning activities meet the objectives for the lecture. And if the "what is" does not match "what might or should be" we can either change assessment method or teaching activity or both on-the-fly during the lectures to better meet the objectives of the lecture, and in the long run the course.

IV. TEACHER DEVELOPMENT

The interaction between us as teachers, to deliver a series of lectures within a course, creates a dynamic environment that reflects the way we conduct our own research; through dialogue and with an open mind for new solutions and ways to analyse a problem.

Pair lecturing does not only change how the students learn (encouraging dialogue and active learning) it also changes the teachers as they learn new things about the subject matter and themselves as teachers, "Colleagues continue to learn from each other, about both content and teaching" as Shibley puts it [11]. While his experiences are from team teaching in inter-disciplinary courses, we find them just as valid for pair lecturing in courses within one discipline.

Instead of only sharing our teaching experiences with other teachers that were not present during the lecture, and maybe never seen us teach, we can now share the experience with a fellow teacher that was present. In this way the reflection-on-action gets more rewarding since the feedback from the pair teacher is more concrete and detailed.

By lecturing in pairs we also feel more comfortable trying out new ways of presenting the contents and giving feedback

to each other. It also gives the teaching assistant a smooth on teaching the course has been passed on to the course assistant in a way that was not possible before. Buckley [12] refers to "in-service training" when new teachers learn from old teachers and tacit knowledge that can only get exposed and explained in a concrete teaching context is passed on. Andersson and Bendix argue that the loss of tacit knowledge when a new teacher takes over a course should be balanced against the cost of pair lecturing [9].

V. Pair Lecturing for Free

There is in general a notion of an increase in teaching hours for pair lecturing [9], [12]-[15]. The conclusion in these cases is drawn from a setting where two lecturers take turns to prepare and conduct the lectures. Our setting is different in that one of us is course responsible and one is teaching assistant.

The course assistants at our department get teaching hours for preparing for supervision as part of their supervision. This time is often spent in solitude reading the course book or similar. Our solution is instead to include the course assistant into the lectures. After all, that is where the course content that is to be put into practice during supervision is taught.

A side effect of including the teaching assistant in the lecturing is that the alignment between the lecture content and the practical assignments is enforced while teachers and students know that there is a common understanding of what has been agreed upon during lectures.

VI. Challenges

Our cooperation in the lecture hall relies on mutual trust and confidence in each other. As Jessen-Marshall and Lescinsky [14] point out, pair lecturing includes an element of open critique in the dialogue between the lecturers. It also opens up for comparisons between teaching styles and individual knowledge of the course content [12]. Perhaps it is easier to handle such issues for an unbalanced team where the course responsible is clearly more senior than the teaching assistant in comparison to inter-disciplinary courses where each lecturer is an expert within the own discipline?

One aspect that is important to recognise is the loss of control, both from not being able to foresee or decide on the actions of the other lecturer [16] but also from the increase in student interaction, which might take you places you had not anticipated [3]. Here the possibility for the navigator for reflection-in-action is important since it is difficult for the driver to simultaneously be submerged in interaction with students and see how to smoothly relate to the outcome of a diversion when returning to the main track of the lecture.

introduction to teaching, and the informal and tacit knowledge

VII. Conclusion

Through pair lecturing we have found the possibility of a more dynamic interaction with the students and at the same time utilise the interaction in a better way by reflection-in-action. Since we now share the experience of the lectures with each another reflection-on-action is also more rewarding than it was before we introduced pair lecturing. And by trading preparation time for lecturing hours it comes without an increase in the total teaching hours.

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