

Reflection on Practice, in Practice: The Discipline of Noticing

Sinead Breen, Aisling McCluskey, Maria Meehan, Julie O'Donovan and Ann O'Shea
St Patrick's College, Drumcondra; National University of Ireland, Galway; University College Dublin; Cork Institute of Technology; National University of Ireland, Maynooth

This paper outlines the use of John Mason's Discipline of Noticing by a group of university level mathematics lecturers. We describe the aims that motivated the study, the challenges we faced in using the Discipline of Noticing to reflect on our teaching, and the progress that we have made.

Keywords: noticing, accounts, professional development.

Introduction

In the academic year 2010/11, a group of mathematicians in five third level institutions in Ireland conducted a study in which each reflected on her own teaching. There are many definitions of the term *reflection* (Hatton and Smith 1995) but we endeavored to employ the ideas of Mason (2002) as described in the book 'Researching your own Practice: The Discipline of Noticing'. Each lecturer wrote accounts of critical incidents that occurred in her classes, taking care to keep the accounts short and as free from opinion and value judgments as possible.

The National Council of Teachers of Mathematics (2010) recognises the value of projects like this for professional development. They identify four core goals of professional development programmes for mathematics teachers: to build teachers' knowledge of mathematics and their ability to use it in practice; to build teachers' capacity to notice, analyse and respond to students' thinking; to build teachers' productive habits of mind (for example by analysing instruction); and to build collegial relationships and structures that support continued learning. Ramsden sees "a reflective and enquiring approach as a necessary condition for improving teaching" (1992, 5) and believes that understanding how to use the various skills involved in teaching well requires constant practice and reflection. Ticha and Hospesova also speak of the 'indispensability' of competence in reflection, maintaining that

the development of teachers' conscious self-reflection on their own teaching and systematic pursuance of joint reflection with other teachers and/or researchers can promote the teacher's professional growth. (2006, 129)

Their project aimed to improve the quality of in-service education, thereby supporting the development of competence, of primary school teachers of mathematics. They reported that the self- and joint reflection engaged in during the project led to shifts in the interest of the participating teachers, in their assessment of their own capabilities, and in their evaluations of the process of reflection.

Speer, Smith and Horvath considered undergraduate mathematics teaching and noted that

very little research has focused directly on teaching practice - what teachers do and think daily, in class and out, as they perform their teaching work. (2010, 99)

In particular, studies which involve mathematicians reflecting on their own teaching seem to be quite rare. McAlpine and Weston (2000) describe a reflection

project involving six professors (three Mathematics Education faculty and three mathematicians). The lecturers were interviewed prior to some of their classes, and again while watching a recording of the lecture. The study found that the participants monitored their actions (before, during, and after class) in order to see if their pedagogical goals were achieved. The lecturers used information gained from students' responses to make decisions about teaching strategies. McAlpine and Weston (2000) contend that this reflective process of monitoring and decision-making builds pedagogical knowledge.

Jaworski and Matthews (2011) report on a series of seminars called "*How We Teach*" given by mathematics educators and mathematicians in a university School of Mathematics. Their intention was not to reveal how mathematics teaching is, but rather how those teaching mathematics *talk about* their teaching within their institutional setting. Its focus, in seeking a teaching discourse, was not on the practice of teaching per se, but on how the mathematical community expresses its thinking about teaching and the design of its teaching. They assert that, thus, the actual practice of this research can draw teachers' attention to alternatives to common practice, encourage critical approaches to thinking about teaching, and foster teaching development.

Currently, a team of researchers from the Department of Mathematics at the University of Auckland is approaching the end of a two-year government-funded research project on professional development for mathematics lecturers (<http://www.math.auckland.ac.nz/CULMS/projects/>). Their research design draws on the theoretical framework KOG (knowledge, orientation and goals) of Schoenfeld and on research evidence that collaborative reflection on teaching leads to improvement. Based on reviewing video recordings of team members 'live' in lectures, the perspective of their work is in the spirit of 'as others see us' which both contrasts with and complements the 'in the moment' perspective of self-reflection expressed in this paper.

Accordingly, in this paper we consider our experience of trying to implement the process of the Discipline of Noticing.

Aims

As we embarked on this project, we aimed to achieve a number of objectives working both on an individual basis and collaboratively. On an individual level, we hoped that we would each become more aware of what was happening in our classes, and would reflect more deeply on and analyse our own teaching. It was our hope that this process of reflection would facilitate the improvement of our teaching by enabling us to recognize more easily opportunities to act differently in our classes. We also hoped that the group meetings in which we would discuss our accounts with colleagues would further inform good teaching practice, as well as enabling the identification of various phenomena in undergraduate teaching as we shared accounts and searched for similarities and differences between them.

Methodology

Each of the authors lectures Mathematics in a different third-level institution in the Republic of Ireland and teaches a variety of Mathematics modules in her institution. Each endeavoured to write an account of an incident in a number of classes per week over the 2010/2011 academic year. This varied from some individuals writing accounts for a single module taught, to others writing accounts of all their classes

each week, depending on the teaching load of the individual and local circumstances. The modules involved ranged from service Mathematics courses for first-year Civil Engineers to an Analytic Topology course for Masters students.

At the outset we agreed to seek '*brief-but-vivid*' accounts of our teaching practice. Mason defines a brief-but-vivid account as

one which readers readily find relates to their experience. Brevity is obtained by omitting details which divert attention away from the main issue. The aim is to locate a phenomenon, so the less particular the description, the easier this is, without becoming so general as to be of no value....Thus description is as factual as possible. (2002, 57)

While Mason acknowledges that events or situations which stay in our memory are usually those to which we have considerable emotional or intellectual commitment, he claims that we cannot analyse such events unless we can first be clear on what they consist of, as impartially as possible. Thus, we must be able to give an account of an incident "without explanation, justification or emotive terms" (2002, 40). This leads Mason to distinguish between an '*account-of*' which describes an event as objectively as possible, minimising evaluation and judgement, and an '*account-for*' which offers interpretation, explanation, value-judgement or criticism.

The accounts written as part of the project discussed here were shared by circulating them to all members of the group approximately every three weeks. The group met twice during each semester to discuss the accounts circulated. From a professional development point of view, Mason (2002) has reported finding that when colleagues have made similar observations which they have "shared, discussed and challenged", then their practices are unlikely to "stay still and stagnate" (90). Thus, we tried to spend our meetings "seeking resonance, negotiating similarities and differences, locating issues, understandings and possible behaviour to employ in the future" (Mason 2002, 90).

At the end of the academic year, each of the project participants reflected on the process of reflecting on her practice through the discipline of noticing and keeping accounts. These final reflections provided the data for this paper. The reflections were coded and categorised by the first author and the categories were discussed by the whole group.

Challenges and difficulties encountered while applying the Discipline of Noticing

Implementing the 'discipline of noticing' involved challenges in a variety of guises. Mason distinguishes between noticing, marking and recording: to 'notice' is to make a distinction, though this need not necessarily be done consciously; to 'mark' is to be able to initiate mention of what you have noticed; while 'recording' involves making a note of what has been noticed in some way so as to be able to 're-mark' on it at some point in the future. Initially it was difficult to stand back sufficiently from the act of teaching in order to mark incidents in the class 'in the moment'. There was an uneasy tension experienced in engaging fully in the practice of teaching and allowing the lesson to evolve and flow naturally, while simultaneously setting oneself to notice. In the initial stages of this project, members of the group reported failing to reflect on a particular lesson at all or 'reflecting on' their actions following a lesson rather than 'reflecting in' action. At times it appeared that nothing notable at all had occurred during class; in fact it sometimes seemed that a mundane lesson provided more time to devote to noticing.

A certain discipline was required to ensure that accounts of what had been noticed were written soon after lessons had taken place. Different members of the group experienced different challenges in writing brief-but-vivid accounts of lessons. Some found the notion of a brief-but-vivid account difficult to grasp, others found it was difficult to be brief while more struggled with writing vividly. While the accounts that were written enabled the author of the account herself to remember the event described, she sometimes felt that the event may not have been captured sufficiently well by the account to allow others to relate to it. It was difficult to decide how much detail should be included to ensure others could appreciate or understand the context while not including so much as to render it impossible to cause resonance with others. Some members of the group felt that the task of writing a brief account was less daunting than that of writing an in-depth reflection, and that this made the project more manageable. There was also a temptation sometimes to report on what one felt the rest of the group might be interested in. While some found the *notion* of a description of an event without defence, explanation or justification appealing, all found *writing* an ‘account-of’ rather than ‘accounting-for’ an incident very challenging. Some members of the group initially struggled with keeping emotive terms or conjecture out of their accounts. They felt that important features of the critical incident described were lost if emotion was not considered in the account.

It was found that certain contextual factors impacted on the ease with which the discipline of noticing was adopted. It appeared to be easier to mark incidents occurring with smaller groups than those in lectures with very large groups. The regularity with which the lecturer met a particular cohort was also a factor in establishing a discipline of noticing and recording incidents.

Improvements over time

Despite the difficulties enumerated above in engaging in a discipline of noticing, there were some improvements over time. As the year progressed, so did our ability to notice ‘in the moment’. Our efforts to write brief-but-vivid accounts of incidents led to some success and an increased appreciation of the value of such accounts in reflecting on one’s own practice and that of others, and in developing professionally. By the end of the year, some of the group reported that the exercise of writing such accounts helped them to look at their lessons from a new perspective and to consider the situation from the point of view of a student. The keeping of accounts moved these lecturers away from “whining” (Mason 2002, 41) and allowed them to break “out of a cycle of frustration with the Grs”(Mason 2002, 9) – grumbling, griping, groping, grasping etc.

Advantages of collaboration

All members of the group reported that the support of the collaborative group undertaking this project was invaluable. The deadlines for sharing accounts provided an incentive and motivation to persevere with the project and to establish a regular discipline of keeping accounts. The knowledge that colleagues would read one’s accounts ensured the effort required to write brief-but-vivid accounts was sustained. The group meetings provided encouragement and support in negotiating our way into a new discipline of reflection and clarified how the theory may be put into practice.

Moreover, added to the sense of collegial support invoked by undertaking the task together, the fact that the collaboration involved reading others’ accounts proved to be most interesting and informative. It was very helpful to have a (formal) forum

for discussing teaching experiences and this provided an opportunity to learn about different teaching styles. From an early stage it became clear that accounts written by one individual struck a chord with other members of the group: we could all relate to a situation articulated by one. We felt that this means of pooling experience had tremendous potential for our professional development. As The National Council of Teachers of Mathematics explains

Collaboration with colleagues can spark the need for teachers to explain their practices and to articulate rationales for instructional designs, helping teachers make tacit ideas visible and subject to shared scrutiny and develop deeper, more widely shared understandings of student learning. (NCTM, 2)

Progress towards achieving aims

The disciplined attempts to notice and record incidents in our classrooms certainly helped us to step back from the process of teaching to some extent and to analyse it. Issues that may have raised vague concerns for us as lecturers in the past were now more clearly articulated in our accounts and it was thus felt that these issues had become more tangible in some sense, resulting in our being better able to deal constructively with them. Furthermore, individuals within the group were able to identify threads or themes permeating accounts of their own teaching: the account of one lesson was often similar to ones written previously. This allowed us at times to identify more clearly aspects of our own teaching styles (for example, methodologies actually employed in the classroom) and gave us an opportunity to think about what we could do differently. Some members of the group reported putting more thought into how they interacted with students and viewing incidents involving students in a more measured way. It was also reported that more time was devoted to the preparation of classes due to involvement in this study. The accounts written have acted and will continue to act to inform our teaching.

Conclusion

In this paper we have outlined our experiences of conducting a reflection project using Mason's (2002) Discipline of Noticing. We faced challenges when implementing certain parts of the discipline, for example when endeavouring to write brief-but-vivid accounts-of critical incidents in our teaching. However we recognised that Mason's ideas concerning noticing and reflecting were very useful; the advice on writing accounts and the labels that he uses added structure to our reflection process. This structure and the collaborative nature of the project ensured that we persevered and that the reflective process was a positive experience for all of us. We are continuing with the project and have begun the process of identifying themes in our own and in others' accounts. Our objectives for this work are twofold: we would like to analyse our own teaching and to improve it; and we would like to investigate the practice of teaching mathematics at third level.

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