

LESSON STUDY REFLECTIVE REPORT

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Every teacher's main aim is for his/her students to learn. Many times, though, while planning a lesson teachers focus on what information to deliver and how to deliver it in what they think is an efficient way, without deeply understanding if their way is the best way for their students.

Students learn in different ways, and teachers need to take this into consideration when planning their lessons. Using one strategy while teaching might result in not reaching every student, and so, a teacher needs to be open to use different teaching methods and to update him/herself continuously to try to find the best way of teaching particular students and/or topics. Darling-Hammond, Hyler & Gardner state that:

“For students to develop mastery of challenging content, problem-solving, effective communication and collaboration, and self-direction, teachers must employ more sophisticated forms of teaching. Effective professional development is key to teachers learning and refining the pedagogies required to teach these skills.”

(Darling-Hammond, Hyler & Gardner, 2017, p.v)

One form of professional development is Lesson Study which provides teachers with an opportunity to reflect on their teaching, to broaden content knowledge and to collaboratively plan out a lesson while keeping in mind that their main aim is “to help their students do better” (Lewis, 2016, p.536).

Reflections – Lesson Study - Money Rock Lesson

Selecting a group of teachers – who are they, how did you select them and why?

During the initial stage of our planning, my colleague Janet and I discussed who to invite to join us and our choice naturally fell on our other colleagues maths teachers at our school.

As a Head of Department (HoD), I always felt the need to introduce new opportunities for collaboration amongst mathematics teachers and even though we have produced work jointly, I feel that such opportunities are still rare. As a HoD, I seek to lead by example. I wanted to be more aware of different opportunities for collaboration so as to be able to provide more concrete experiences and to encourage a professional learning community in our school. This would help teachers overcome fears to express their failures and queries because within a learning community they would find other colleagues to hear them out and provide possible solutions. Moreover, I felt that by showing other teachers what lesson study involves might encourage others to think of it as a possibility of using this type of professional development for teachers in our school.

We decided to send an open invitation to all our colleagues, inviting them to join us for both the planning process and the observation. They accepted our invitation for the observation of the actual lesson, with many of them stating in their observation sheet that this was quite a simple yet “not usual lesson” involving a “positive” and “interesting activity”.

Janet and I also invited our Head of School to observe the lesson so as to provide school management with ideas of how professional development can be conducted differently and aimed for day-to-day teacher needs. The idea behind it was to try to emphasise the fact that a one size fits all PD, usually thought of by SMT, is not always the best way and that there are other ways of providing training for teachers.

The initial meeting – how did you conduct this?

As every initial meeting on a new project goes, this consisted mainly of smoothing out logistics for future meetings to be able to plan our lesson. This is not the first time that Janet and I collaborated together on a project and through our initial discussion, we renewed that feeling of trust we have in each other - a vital step for collaboration. This first formal encounter involved reflection and discussion about our own teaching, openly stating our individual thoughts about what we think is going well and not so good with our teaching. We empathised with each other, tried to offer solutions to each other's doubts and difficulties, and narrated teaching experiences which might come useful in certain situations.

We also aimed to identify a problem with student learning that we agreed to study. After giving the issue some thought, we decided that a problem we could try to tackle is that of making connections between various mathematical topics. While teaching, I have always tried to provide such opportunities for the students by guiding and asking them how any new content could be worked out using previous knowledge, but I have always felt that this was not enough.

We also discussed logistical issues such as time for meetings. Scheduling time to meet is very important, and we both took a look at our busy schedules to carve out two slots during which we could meet. We felt that the two meetings needed to be spread out during the week so that we would be able to work on any ideas that we decide upon before meeting again. This also gave us the opportunity to reflect on what we plan and allowed us time for new knowledge or ideas to develop or to sink in.

Selecting what to teach, what class to teach and when to teach the lesson

Janet and I decided to plan our lesson for a Year 9 Track 3 class, with the first lesson planned for the 14th January 2019 and the second lesson for 18th January 2019. We selected this year group based on the fact that I teach this particular year group and because another colleague accepted that we repeat the lesson with her class. Moreover, planning to invite other maths teachers

to observe the lesson, we scheduled our initial a lesson at a time where all teachers were free and could attend.

The biggest “difficulty” we encountered was that of selecting a topic for our lesson. Planning to do the lesson in January meant that both classes would be having their half yearly exams soon and we were restricted with the choice of topics available. So, we planned a lesson that could help us achieve our aim of making connections, but which would also help revise certain topics such as solving equations and substitution, problem solving, finding and using patterns and n^{th} term. It also offered the opportunity for us to introduce new topics which will be covered later on during the scholastic year, such as simultaneous equations.

We opted for a ‘low floor” and “achievable” task, so that students would not find it difficult to arrive at the solution and so they have more time to focus on finding different ways of how to go about it. We decided to think of different strategies ourselves, and I was amazed at how many solutions we managed to find.

The lesson planning process

Lesson planning is a process during which the teachers plan, research, reflect on the outcome(s) and redesign previous plans collaboratively - all while renewing one’s own professional thoughts and ideas about the subject content, theory and practice. The lesson planning process involves creating a detailed step by step phase of the actual lesson - from selecting the task, the classroom organisation, the students’ groupings, planning out resources and worksheets to be used, down to what the teacher would say or do during certain phases of the lesson. Each part is planned keeping in mind that the final objective is for the students to learn.

Taking into consideration the task, we discussed extensively about which task to use so as to be open-ended enough to allow the students to gain maximum benefit from it. We took into consideration not only what the lesson’s aim is, but also how the students would respond to such a task. We also wished to

foster in the students certain skills such as group work, creativity and collaboration, and also took these into consideration.

Then, we decided what the phases of the lesson would entail. We opted for a power point to introduce our task, with later on refining this resource to include all possible methods and strategies and with reflective questions for students planned as conclusion. As we planned phase by phase, it was interesting to note how we revisited previously planned items to change, eliminate and/or include other issues/ideas which cropped up the more we delved into the lesson planning. Moreover, we also added other objectives to our initial objective of making connections to include aims such as “lesson will serve as a discussion starting point for new ideas and topics” and “students are given the opportunity to express themselves using mathematical keywords to describe their methods”.

Other considerations were the classroom organisation, a resource table and a way of how students can showcase their strategies. Janet and I opted for groups of four students and decided to allow the students to select their own peers. We thought that since students would need to discuss amongst them, it would be easier to do so with people that they are familiar with and whom they trust. Observers commented on the fact that some groups were gender biased – that is, either girls only or boys only, with only one group having mixed genders. I do not know if it would have been better if we decided ourselves whom the group members would be, but having been teaching this class for four months now, and having used group work on several occasions, I felt that this was the best solution as I notice that at times, the girls are still a bit shy of the boys and feel “safer” to be in an ‘all girls’ group.

Moreover, we wished to provide the opportunity for the students to express themselves and communicate their strategy to their peers. So we thought of asking each group to explain their method to all. This offered an opportunity for peer assessment and for whole class discussion.

With regards resources, we decided to provide the students with a mixture of resources which could be useful to solve the task such as plastic money, graph paper and tablet (for excel) and others not so useful, such as compass and protractor. We wanted the students to decide themselves which resource would be useful and which not in order to solve the task.

Finally, we thought about planning some guiding questions and statements for the teacher so as to guide students to think about different strategies that might be used and to make connections. One observer stated that “the teacher prompted the students by pointing out certain aspects of the task at hand, she did not offer solutions to the problem, allowing the students to be creative and to be totally engaged while carrying out the task”. This wasn’t an easy task, as I think that we teachers tend to spoon-feed our students too much rather than allowing the students to think about for themselves.

Teaching the lesson

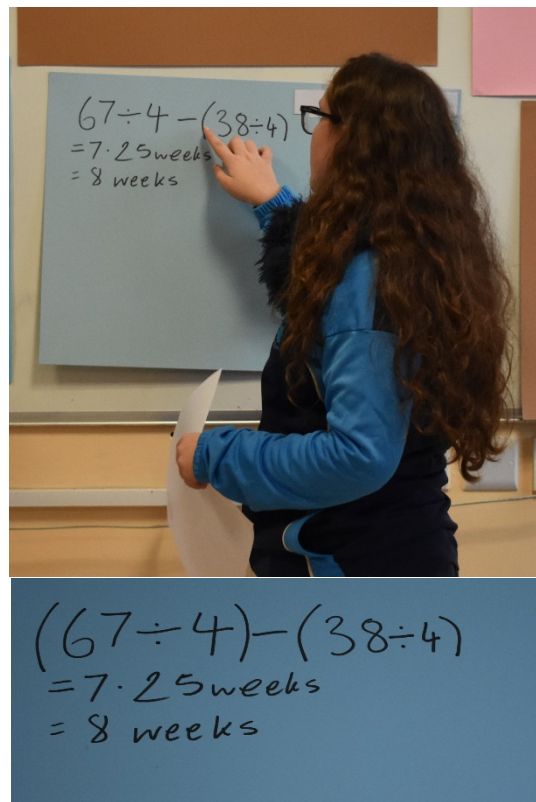
On the day that the lesson was to be taught, I must say I was a bit nervous but as soon as the lesson started, all the planning kicked in, and in a few minutes, the many observers (a novelty for me) faded from view and I was totally focused on the lesson and the students.

Thinking retrospectively, I must say that all the time Janet and I spent planning the lesson was very useful, but the parts which I felt were most useful were the previously prepared questions we thought of for the teacher to be able to guide the students in ‘thinking of different methods’ stage and those we thought of for the ‘making connections’ stage. One can never be prepared enough and the possibility of encountering a scenario for which one is not prepared can always occur, but the fact that we did spend time thinking about these helped me focus more on what we were aiming for and how to try to achieve this.

Lesson study also requires the teacher to look at “common errors and misconceptions that learners are prone to form as a result of a particular teaching approach” (Dudley, 2013, p.109) so as to improve their teaching and

students' learning. Thinking about this beforehand also came in handy. I always try to ask the students to comment on each other's ideas and work but being more aware of those instances where students could make mistakes is very useful so as to be able to identify them. I feel that when there is a mistake, the teacher should not intervene immediately but s/he should allow the students to provide reasons why they consider that there is an error. One particular observer commented "Improvements were suggested by students themselves and explained clearly". If none of the students noticed the mistake, then the teacher should intervene by asking appropriate questions to guide the students to rectify the misunderstanding.

An example of this is when student J., on behalf of her group, explained the method they had thought of. The method was verbally explained in a correct way when she mentioned the steps the group took to work out the task, but this did not match with the method she wrote on the cardboard, as this required a bracket to be correct (BIDMAS rule). Drawing the whole class' attention to this by asking the previously prepared question, "What is wrong with this method?" after none of the students commented about J.'s explanation, allowed me to draw the students' attention again to the writing on



the cardboard and to make them focus on deciding where the error was and, after a short discussion, how it can be corrected.

The lesson study debriefing

After the lesson occurs, it is important that the lesson phases and the data collected are analysed. This helps the teachers to be aware of what went really well in the lesson while noticing what things needed to be tweaked to ameliorate it so that the aim of the lesson is better achieved.

We have done this through a discussion among the teachers involved in giving/preparing the lesson to get a feeling of how the lesson fared, by talking to individual observers and by reviewing all the data gathered, namely the observation sheets and the students' reflection sheets. Thus, the lesson planners have an idea of those issues that went well and those that could be changed and/or need to be eliminated, so as to provide a better learning experience to the students.

Janet and I felt that in general the lesson went well. In fact we had lots of positive comments from the observers such as "students seem to (have) enjoyed the lesson", "a positive lesson – all were given feedback", "activity well planned" and "good class organisation and layout".

We noticed that during the main activity, the students working in groups all thought of an arithmetical method first as also noted by an observer, "students didn't come up with a lot of different ideas". The guiding questions were essential to encourage the students to explore other areas, such as algebra (solve and substitution), tabular form and n^{th} term. In fact after that, students seemed more engaged and they felt more confident about exploring other ways of how to that there are many way.

The fact though that few different methods were thought of, the majority of which arithmetical, made the making connections phase towards the end of the plenary a bit difficult as there weren't enough starting points for me to elicit further connections. Also, it was noted that "it was more difficult for the groups which presented their work after other groups because their preferred chosen method was already previously presented". Although this happened we noted students nodding their agreement and passing comments to other peers as various groups explained their chosen method on the board.

Janet and I thought about this fact a lot. To try to solve this dilemma, we thought that if at the beginning of the lesson the teacher mentions item by item the resources we had on the table, this might provide some innovative ways of how to solve the task as during the first lesson, none of the groups

used any resources or even took a look at the resource table. In fact, during the second lesson, the fact that the teacher mentioned and showed the resources helped a lot as the students were more creative and come out with new ideas.

Janet and I felt also felt that the students needed more time for the initial discussion. We decided to add more time to the initial group discussion and felt that we could gain some precious minutes by removing some of the methods and strategies flashcards because some groups had difficulty in choosing the appropriate method and precious time was lost in the process.

A final remark that emerged from the observations was that some teachers felt that the lesson succeeded only because it was done with a good class. I feel that this lesson could also be used with students following other tracks, by making some modifications. Some concrete examples are by asking for less methods, by removing the part of the lesson where the students are asked to choose the proper mathematical keywords to describe the method used and during the plenary, the teacher discusses the “easier” strategies.

Benefits and challenges of integrating lesson study within your school

Lesson study is a type of professional development that “focuses on the learning and progress made by children as their teachers develop specific pedagogic techniques designed to improve a particular aspect of teaching and learning that they have identified within their school.” (Dudley, 2008, p. 3). The main benefit of lesson study is that instruction is focused on the students’ learning and so, the planned lesson tries to ensure that the students obtain the maximum benefit, and if this does not occur, the lesson is reviewed to ameliorate it to better achieve the intended aim.

Through observations, teachers learn to be acute observers and to determine if their teaching is really contributing to students’ learning. They observe how students are learning, how much they are learning and if what they are learning matches with what they thought the students would learn. Teachers examine their own personal beliefs, reflect upon their own teaching while

learning more about their role as a teacher and their effectiveness in teaching. A particular comment made by a maths teachers who observed the lesson was

“... groups struggled to find creative ways of solving (the) problem – I did not expect this considering that students are quite high achieving. Could be that students were very sequential and methodical and could not push themselves beyond the “drilling” methods known in class.” (Maths teacher teaching in Middle School).

This particular teacher knows some of the students quite well as she was teaching some of them the previous year. After the lesson we ended discussing this fact, and the fact that at times, we take things for granted. Such an experience was beneficial to both this teacher and also to me, as we both revisited our beliefs about teaching.

Another benefit of lesson study is the production of a better planned lesson. This occurs because various inputs and experiences from the various teachers involved elicit deeper thought and different points of view are factored in during the planning stage. Experienced teachers are able to share and pass on their knowledge with less experienced teachers as lesson study offers an opportunity without excluding the fact that they too can learn from less experienced ones.

It is a hands-on type of PD, with the main focus originating from a teacher’s need. It provides vital support for teachers as they have people to whom they can refer to if they have particular instructional problems to tackle. It is also a way of how to generate new instructional resources as teachers work collaboratively to create and evaluate lesson plans which originate from their specific needs, that is, a topic which the teachers may find difficult to teach or an issue that the teachers year in year out complain of having difficulty with.

Particular challenges are the fact that introducing lesson study in school necessitates a big culture change. Teachers in Malta and Gozo work mostly

in isolation, and the fact that one needs to be open about his/her ideas and also welcome to one's class observers is new for us.

A further challenge is being open with other teachers and trusting each other as classrooms become less private and one needs to trust those persons with whom one expresses one's inner thoughts and feelings.

Time is a further challenge. Many times, teachers have a large load and it might be a bit difficult to find a common time for the teachers interested in collaborating to meet. Such initiatives need backing from SMT, even though nowadays, the use of social media can help a lot.

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