

## *Teacher Education*

### **Explicit Modelling in Guiding Student Teachers in their School Practicum: A Self-Study of Student-Teacher Oriented Teaching**

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#### **Abstract**

If teacher educators wish to educate physics teachers to teach in a student-oriented way, they themselves should teach their prospective teachers in the same way. This modelling should be done explicitly so as to stimulate the prospective teachers to reflect on their way of teaching. An important event in the education of a student teacher is the visit of a teacher educator during a lesson in the internship school. This paper reports about a set-up of a school practicum visit, as a result of a self-study from the perspective of student-teacher-orientedness.

Loughran *et al.*, 2004 have plead for self-study (action research) of teacher educators on their own teaching. This appeals to me, and in this paper I want to reflect on one of my tasks as a physics teacher educator: the visit to student teachers' school practicum lesson.

I started the self-study when I specified 'making student teachers more student-oriented' as the main goal of my lesson visits. I wished to explicitly apply the congruency principle (Korthagen *et al.* 2001): if I want the student teachers (STs) to teach in a student-oriented manner, I must supervise in a student-oriented manner. The issue of this study was: how to set up a lesson visit more student-teacher-oriented, so as to make student teachers more student-oriented?

Student-oriented science teaching means giving students the opportunity to put their thoughts and meanings into words and actions. For this, mastering the subject teacher role is crucial to a teacher. This especially goes for teachers in physics, because they will inevitably run into problems with concept development (Driver *et al.* 1985): how do you provide students with insights into the meaning of concepts such as energy, force, and particles?

When STs start teaching in a student-oriented manner, they will encounter unexpected problems. Fathoming and supervising the concept developments that their students go through demands a thorough insight. STs may discover that they themselves run into conceptual problems as well (Frederik *et al.*, 1999). Moreover, it is difficult to integrate knowledge of misconceptions in the teaching practice. It is necessary to embed this knowledge in the context of the actual teaching ('situated

cognition', Putnam and Borko 2000). Lesson visits by physics teacher educators may provide a well suited opportunity for this embedment.

### **Approach of the self-study**

I have always worked well with a more or less intuitive set-up of the teaching practicum visit:

- making an appointment with the student teacher and the mentor in the school
- observing in the classroom, making notes
- having a review discussion
- making a short report.

My aim that resulted in the self-study, exploring how to promote STs to teach student-oriented, made me feel more and more uncomfortable with that set-up. Therefore, I started adding new elements to my set-up, e.g. asking STs to make a report of the review discussion.

I have tried out single elements during various lesson visits. In my lesson visits to one student teacher, G., I implemented all of them and reflected on the experiences. To record the process, I collected my notes of the observations and the review discussions and I wrote down my reflections. I draw, with his permission, data from G's digital portfolio. I presented the results to my colleagues of IVLOS and processed the remarks they made.

### **Results of the self-study**

The main result of this self-study is the revised set-up of my lesson visit to the teaching practice of an ST. It consists of four parts:

Preceding the visit

- 1) Appointment with the student-teacher (ST): the ST informs the school supervisor and also invites him/her to the afterward discussion.
- 2) Request: send me a lesson plan, as well as observation cues.

During the visit

- 3) Before the start of the lesson: short interview with the ST
- 4) During the lesson: observations; no interventions
- 5) At the end of the lesson: short interviews with a few students.

The review discussion

- 6) The review discussion takes place directly after the lesson if at all possible. In it, at least the observations related to the cues are reviewed and classroom events related to different teacher roles are discussed

The report

- 7) ST makes report of the lesson and review discussion

- 8) I give my reaction to the report and if approved, the ST takes it up in the digital portfolio.

Below I shortly describe the importance of these parts. I illustrate my points with examples from my visits to G.'s lessons.

### ***Activities before the visit***

Before my first teaching practicum visit to G., I agreed with him about the day and time of the visit. I asked him to announce my visit to their mentor teacher and to invite him to take part in the review of the lesson. Furthermore, I asked him for his lesson plan. G. handed it to me just before the lessons began.

Reflecting on this afterwards, I realized that, from the point of student-teacher oriented teaching, I had to know what G. had wanted me to observe in his lesson. I was ill-prepared for the observations. Therefore, when arranging the second lesson visit some months later, I asked G. to send me his lesson plan as well as observation cues for me, making explicit that I wanted to contribute to the points he wanted to learn about. The lesson plan and the cues proved to be very useful to gear our expectations about the lesson visit on each other.

### ***Interview just before visiting the lessons***

At the start of the first lesson visit to G. there was little time for talking. On our way to the classroom, I asked G. to introduce me shortly to the class.

Reflecting about this, I realized that I had not been explicit why I wanted with the introduction. That is needed to prevent that students become distracted by my presence ('what does this guy have to do in the classroom?') Moreover, I realized that G. did not know at all what I planned to do in the classroom. That might have made G. feel unsafe. In my second visit, I had an interview with G. just before the lesson. I explained what he could expect me to do in the classroom, to be as discrete as possible and make no interventions. Moreover, I asked him for permission to have some short interviews with students after the end of the lesson.

### ***Observation cues***

The first time I observed G., he started with a classroom discussion on nuclear fission. Next, the class was split up in groups. Each group studied some specific nuclear fission situation, made a poster about it and presented it to the class. It was the first time G. used posters in his lesson. He had planned this poster lesson in order to get my feedback, but I did not know! I concluded that I had to ask students for observation cues. My second time in G's lesson, I knew that G. wanted me to observe, among others, interaction with the students. Preparing myself to this

lesson visit, I read in G.'s in-between portfolio that had been occupied with the question:

*How do you go about half-correct answers? This is the question I still ask to myself, because this came up during my first teaching practice. Students did not feel rewarded and this can be demotivating.*

This question we had discussed after the first lesson visit, as then he had rewarded right answers and had rejected answers that were not fully right, but that did show some insight. In my observations during the second lesson visit I noticed that he had solved that concern. He promoted students explaining their views on air pressure, accepted incorrect and half-correct answers and brought those in a classroom discussion. The cue G. had given me, had been very useful!

### ***Short interviews with students***

Being student-teacher oriented, I should exemplify getting feedback from different sources and ask the students about their experiences with the ST's lesson. So, before my second visit, I asked G.'s consent to talk to some of the students after he had ended the lesson.

I asked a couple of students questions like 'What did you like about this lesson?' They automatically drew this on to G.'s teaching and expressed their contentness. They felt the atmosphere was good and G. always answered their questions. This asserted my observations and gave me some points for the review discussion.

### ***The review discussion***

After my first classroom observations, we started the review discussion by making up the agenda. G. wanted feedback about the poster presentation and about his interaction with students. I asked him to start reflecting, from which I led on. I told him that during the lesson he awarded many students, and also that he rejected right away the answers that he found incorrect, even if they were partly correct. G. admitted that he did not know how to encourage students who do not give a fully correct answer. I gave him some suggestions about how to do it more efficiently.

Reflecting on this, I found what I had done was fairly student-teacher oriented, but I felt that I was not explicit enough why I did so. In the second visit, I elaborated the procedure and made it more explicit:

- a. I explain the structure of the review discussion, including making notes and reporting.
- b. The ST gets the opportunity to give his first impressions.
- c. Together, we select some aspects of the lesson to be reviewed:
  - the observation points;
  - other points resulting from teaching or observing the lesson;
- d. The review discussion is started: the ST is first given the floor, then the observers.

e. The ST formulates conclusions and new intentions.

G. was content with his lessons and with the interactions with the students. I confirmed that and told him that his students liked his lessons and that it was typical for the atmosphere in his class that the students felt free to bring forward their correct, half-correct and incorrect answers. We discussed what he exactly did: inviting students, taking their answers seriously before indicating which ones are correct. We concluded that this approach contributed to the safe atmosphere during the lessons. I told that I had heard some misconceptions during his class on air pressure. He had remarked one and described some more. Reflecting on the review discussion, I concluded that G. had learnt to be student-oriented and had become sensitive to student thinking.

### ***ST's report of the review***

In the report G. wrote after my first lesson visit, he shortly mentioned the discussed points with the poster presentation as a special point of attention. It showed that G. had learnt about student-oriented teaching and that he had started making a connection between rewarding, using interactive working forms, and responding to student contributions. The report he made after the second visit showed that he was happy with the review discussion, in particular about a discussion we had on students' misconceptions:

*During the lessons many misconceptions of students came to the fore that deeply impressed me. Ton related many of those notions to the literature, and this inspired me to read through the literature on misconceptions myself. Also, it is starting to get to me how important working methods are for a good student-teacher relationship.*

The making of a report of the review discussion by G. had several positive effects. G. had to actively get busy and became 'owner' of the result of the lesson visit. That enhanced the learning effect. The report gave me insight into the progress of G. I received feedback on my lesson visit. Because I thought it was a very good report, I reacted by naming some strong points in his development.

### **Discussion and conclusions**

Lunenberg and Korthagen (2005) have found that the teacher educators from their research group did not sufficiently succeed in providing their students with a student-oriented 'mental model' of education. Such a model should provide an alternative to reverting to the traditional way of teaching that STs undergo themselves as school students. Teacher educators especially lack in three areas:

- Attention for personal interest-oriented learning of STs.
- Varying in ways of reflection.
- Discussing educational choices with the STs.

In my set-up a lesson visit is an opportunity for paying attention to personal interest-oriented learning of STs: asking for observation points; using these points when making the agenda for the review discussion. It is important that I, reacting on ST's report of the review discussion, demonstrate clearly that I have observed and appreciated the ST's individuality.

The set-up provides for varying ways of reflection at different times:

- beforehand through thinking of observation points
- afterwards through the review discussion
- reflection on the review discussion itself by making the report
- overall reflection by incorporating the results into the portfolio.

The set-up offers room for STs to put their educational choices on the agenda through sending the lesson plan and the observation points. The review starts with discussing these choices.

The set-up of a lesson visit developed in this self-study is student-teacher oriented. It provides an opportunity for promoting student-orientedness and making student-teachers experience it.

It is recommended to have student teachers carefully prepare the lesson-to-be-visited, suggesting observation cues for the teacher educator; to start the review discussion with reporting about these cues and to ask student teachers for a reflective report about the lesson and the review discussion.

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