Pedagogic training for University teachers

A concept based on individual’s needs for personal development.

Claes Niklasson and Per Lundgren

Chalmers University of Technology

Abstract—Traditional pedagogical training for University teachers implies attending courses on how students learn and maybe on general theories about pedagogy and teaching strategies. Pedagogical context and scientific reasoning is the area of study in many such courses. These courses are usually broad and theoretically disposed and performed in a centralized manner at the Universities, involving teachers from many different disciplines and backgrounds [1]. The individual needs of teachers for their personal development are not always met by these courses. The experienced teachers often need support on how to improve teaching in a much more subject and individual specific manner. In 2011 the department of Chemical and Biological Engineering used a teacher/researcher questionnaire to disclose the needs of teachers in their own perspective in order to find new methods for improvement of teaching and learning. The department discussed these expressed needs with an experienced teacher from another department to develop and execute a more individually tailored development scheme. Through these discussions a concept which contained a number of probable areas for individual development was suggested for the academic staff at the department. All teachers at the department were invited to participate. In the fall of 2011, 10 teachers were admitted and 6 of these participated fully. The experience and feedback from the evaluation showed that the majority appreciated the personal dialogue as a way to improve individual capabilities in teaching. This paper describes the development process of this project, the implementation of the individual concepts, as well as some features of the experience gained.

I. INTRODUCTION

Pedagogic courses available for teacher development are frequent at all Universities where teaching is taken seriously. All Universities that want to compete on an international arena for recruitment of good students must take this seriously. Many of these courses are very useful for the initial step in starting to improve the way teachers work with personal development. The focus in initial courses is usually on how to improve learning at university level in general, containing learning goals like [1]:

- be able to reflect on common aspects of education on the basis of reading and experience (Lund)
- be able to use educational concepts and principles in discussions of teaching and learning in higher education (Karolinska)
- teacher duties and teaching practices in Sweden, how Swedish students react (Uppsala)
- utilise, analyse and communicate your own and others' experiences as well as the aims and regulatory framework for the activities within higher education of the society and the higher education institution, for development of the education and your own profession (KTH)
- conditions for learning, how students approach learning, principles of effective teaching, goals of engineering education, how to formulate clear goals for any teaching situation, and common teaching problems (Chalmers)
- describe students' learning in higher education based on theories and research of relevance for educational sciences (Göteborg University)

There are also often courses in which support is given for the teacher’s own investigation into and/or development of his or her teaching, but the coaching within the frames of such courses is primarily from someone who provides pedagogical expertise and an attitude of scholarship in teaching rather than experience of the particular characteristics of the individual teacher’s daily challenges. Besides this the Universities intermittently run various educationally related development projects for example on how to improve programs and progression between courses where teachers can participate. At Chalmers, support for the adaptation of “constructive alignment” [2] is one recent example [3]. All this is good and beneficial for the programs and will improve the program structure and the progression between courses within the programs.
A complementary vehicle for education improvement and development of the teaching and learning environment would be to directly address critical issues, perceived as such by individual teachers. Historically, there have been formats employed at Chalmers where teachers can initiate and run small development projects with financial support available (for a limited number of projects). One drawback of this format is that the coherence and lasting impact of such projects are likely to be limited. Examples of suggestions from teachers of what they consider to be prioritized concerns are:

**Alternative examination**

The examination controls to a large extent the way students conduct oneself in the strategy of passing courses and learning a subject. By changing the way of examination we will also change how the students approach a certain subject.

**New technologies**

The more frequent use of new and more modern technologies in the teaching has many reasons. First of all the courses will be more up to date on how things are done in industry/society and more effective training of engineering skills. Secondly new technology also has, used in a proper way, the potential of improve the learning of certain aspects of a subject.

**New strategies for difficult subjects or concepts**

How can a teacher approach what is considered a difficult or maybe abstract subject? Can different didactic methods improve on how the students learn these concepts in a more effective way?

**Mentors in teaching situation**

The direct feedback of an experienced teacher can be very efficient in improvement individual teacher’s ability to act in a classroom situation. Trust in the mentor is essential for this method to improve the teaching ability.

**Assessment and evaluation**

How can the teacher ability be constructively evaluated without being too personal? How can different strategies in learning be assessed and/or evaluated?

**Heterogeneous student groups**

For the individual teachers working in class the need for improvement in their special situation, for different subjects and with more and more heterogeneous student groups must be a stronger focus.

At Chalmers each department is responsible for how its teachers develop their teaching skills. With this in mind the Department of Chemical and Biological Engineering started a project in 2011 with the focus on individually based personal development in pedagogy. The idea was initiated by using a questionnaire to identify possible areas of interest for teaching improvement. The outcome of this questionnaire was the basis for sending the following invitation to all teachers at the department in the fall 2011:

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**Dear colleague**

*Are you interested in teaching?*

*Do you want some personal feedback and suggestions for improvement on your lectures?*

*Do you want to use more IT in your classes?*

*Do you want to couple aim and goals of a course to the learning environment (or the other way around)?*

*Do you want to improve the students understanding of difficult parts of a course?*

*Do you want to discuss how to handle heterogeneity in classes more efficiently?*

If the answer is yes to any of these questions now is the chance to work on these issues with the help of an external Peer.

**Subject:** To be decided individually together with the Peer  
**When:** This fall Sept-December, 2011  
(If the need is large we will repeat this opportunity)  
**Time:** About 10 – 15 hours and depends on your needs and ambition.  
(Your division pays your time and KB pay the Peer)  
**Schedule:** Individual, decided with the Peer  
**More information?** See attached document for more details and/or take direct contact with me.

Interested? Send your application/interest to me, Claes Niklasson, as soon as possible:

*We only have possibility to accept 10 teachers this fall; first come, first served. Deadline for application September 15.*

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The project started in 2011 with 10 teachers who had stated their interest and who were contacted by the peer coach. In an initial negotiation to find the time and format for their participation 6 teachers ended up engaged in carrying through with the peer interaction. Flexibility from all participants was necessary at this point. At the Department of Signal and Systems a similar call in the fall 2012 resulted in 7 teachers participating during 2013.

**III. Reflections**

In all but 2 cases the dialogue and feed-back has been focused on lecturing, and this is a direct reflection of the bias, desire and interest of the participating teachers. Although the outcome of the peer interaction is perceived to be very positive judging from the response from the teachers, it is our conviction that other elements in the teacher’s toolbox are at least equally relevant to discuss and improve compared to an improved lecturing format and delivery. In the chosen set-up, where the participating teachers set the agenda, we receive an indication that lecturing is (still) perceived (not always in large
groups) as the chief concern for many of our teachers – at least when it comes to engaging in a collegial discussion. It is relevant to note here that although the teachers that choose to participate are not necessarily generally representative for the faculty, there still was a significant variation from teacher to teacher in the amount of teaching experience they had previously accumulated.

When having the opportunity to visit lectures and to discuss them with the teachers both before and after, there are some reflections that can be made. These are at this point clearly not based on a very impressive amount of observations, but they do make out a starting point in describing key elements in the lecturing practice at our university and maybe concerning lecturing in general. These reflections concern where the attention and focus of the lecturer preside and will be described in the following.

In order to describe the lecturing situation we limit the analysis to three ingredients: 1) the topic (or subject or content), 2) the delivery (what the teacher is doing), 3) the learning (what are the students doing and what the outcome of their activities is). This selection of ingredients is directly related to the schematic of the “didactic triangle” [4], where subject, teacher and student are at the corners.

What can be observed in the dialogue with the teachers, is that there is a hierarchy among these three ingredients in terms of which one the teacher choses to be most preoccupied with – it seems to be only when the topic is so familiar that it requires little effort to relate to it (when it is inherent to the teacher) that significant attention can be transposed to the delivery. And it is only when the teacher is truly comfortable in her role as communicator that her attention can be significantly shifted to the student learning. It appears as if there is a process of maturation in the teacher role, where it might be very difficult to skip the first two stages before entering into a realm where the student learning receives the attention it deserves. So the reflection here is that the feed-back that makes the most obvious sense for the individual teacher is the feed-back that is concerned with the same things that she feels she cannot avoid paying attention to, and that feed-back that relate to other things are at risk of not being very helpful in the present situation. This links to the general ideas behind this particular project – starting from the perceived needs of the individual teachers.

The following description of teacher maturation is a suggestion of one possible way of relating to peer coaching in higher education that we arrive at from running this project.

First the teacher needs to find a level of subject acquaintance which makes it endurable to present it to others. At this point the relevant feed-back and coaching should concern the subject. For a teacher who is required to struggle with the subject, there is a desire for a delivery prescription, i.e a success-recipe, or a good-enough standard format, that one can apply without needing to reflect on it (so that one still has resources left to grapple with the subject). We feel that it might be a good strategy in such a case to focus feed-back and support to help the teacher move toward mastery of the subject to free up her mental resources, rather than to “solve the delivery problem” for them.

A subject-wise knowledgeable teacher who is having a hard time communicating might appear to be ready to hear a message about the importance of focusing on what the students are doing, rather on her delivery. What the teacher in this case might perceive is the need for a fix of the “delivery problem” once again. But this time we believe it is appropriate to focus on the teacher in her capacity as someone who is representing the subject and relating to students. If we would skip paying attention to who the teacher is, it becomes very difficult to answer the most pertinent question at the next level – how to support student learning being me. So here it is time for feed-back and dialogue concerning the teacher as a communicator, and time for the teacher to pay effort and attention to who she is and what she can do in a communicator/facilitator role and how she can grow in this dimension.

When the teacher is confident in her capacity to represent the subject and in relating to and communicating with students, the urge to get to know the students will be the natural next step. At this point the teacher wants to have a dialogue on ways to find out what the students know and can do, and she will be reflecting on how to evaluate her own performance in view of what student learning outcomes she is achieving.

An illustration of our understanding of teacher attention is given in Figure 1. The illustration is schematically exaggerated and simplistic. Initially all of the available attention is directed towards the topic (green area), and it is only when \( t_1 \) the teacher has reached beyond a certain threshold that attention can be made available to actively consider the delivery (red area). The threshold can in this figure be represented by the total green area covered at time \( t_1 \). So it is when available attention is freed by a decreased need of focusing on the topic that attention can be given to something else. At a later point in time \( t_2 \), when the teacher is sufficiently confident in her role as communicator (the red area covered is large enough), attention can be paid to the learning of the students.

**Figure 1.** The total available attention of a teacher is taken as a constant over time. The green field represents the topic,
the red the delivery and the blue the learning.

In order to support teachers in their professional development as efficiently as possible, we believe from what we have experienced in this project, that the individual teacher’s journey towards awareness and attention to their students’ learning can benefit from beginning by meeting the teacher where she finds herself, with timely support for learning the topic and for getting to know herself as a communicator before launching substantial support to gear the teacher’s focus towards the actual learning of the students.

IV. PARTICIPANT FEED-BACK

We have received written comments from four of the participating teachers and here are some of their statements concerning their experiences:

“"It was very direct, straight forward, and it actually gave me ideas how to improve myself. Not just a lot of words!""

“"It was the first time I received direct feedback on my own teaching and suggestions for new things to try, which is immensely helpful."

“The way I make the presentations has been improved.”

“I plan to try to implement some of the new ideas we have discussed in my teaching and evaluate the effect of the new changes.”

“I now know what my major flaws as a teacher are, something which I was not aware of before. With this knowledge, it is not so difficult to improve my lectures!”

“More time with the coach will help to improve the skills more.”

It is clear from all of the meetings with the teachers that the opportunity to get feed-back and to engage in an intense dialogue on teaching is a rare event. Since it in all cases is a dialogue which is directly emergent from the teacher’s own reality, the relevance of what is being treated is high by default. The teacher engaged in the dialogue never has to ask herself: “How is this relevant for me?” or “How can I use this?” but rather finds herself asking “How can I improve this particular feature in my teaching?”.

Even if it is possible to argue that the most pertinent problem in a particular learning situation is a different one than what the individual teacher has identified as a key issue, we believe that the strongest incentive for development of the individual teacher (not the particular course) is to engage in a dialogue on her preferred topic.

V. CONCLUSION

We have conducted a teacher development project, where the content and focus for each participating teacher has been set by her own preferences. Out of 13 participants with a wide range of teaching experience, 11 chose to focus on lecturing. We suggest that there is a common sequence of maturation for teachers and that efficient teacher development should take this into consideration, and give support tailored to the phase the teacher’s attention is in.

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REFERENCES


Claes Niklasson is a Professor in Chemical Reaction Engineering at Chalmers. The main research area is bioreaction engineering with more than 70 published research papers in well-known international journals. The great interest in teaching and pedagogical projects is indicated by more than 25 pedagogical publications and over 50 pedagogical presentations internationally and over 25 pedagogical projects including teacher exchange with Indonesia and Malaysia for over 10 years. He has also been the project leader for the Chalmers project IMPACT concerning development of new Master Programs at Chalmers 2007-2009. Claes has also been the external examiner for University of Malaya (2006-2012), Kuala Lumpur, Malaysia in the Chemical Engineering Department. Claes teach and examine the courses in Experimental Design and Analysis of Experiments, Industrial Chemistry and Bioreaction Engineering in Chalmers.

Associate Professor Per Lundgren has a background in Solid State Electronics and is currently conducting research on the integration of carbon nanostructures in electronic devices. The main part of his time is however devoted to education, which besides teaching microelectronics takes the form of responsibility for a graduate school in engineering science for high-school teachers, directorship for the graduate school in Microtechnology and Nanoscience and the role of pedagogical development coach for a range of schools and departments at Chalmers University of Technology.