

Marion LEHNER¹ (Zurich)

Visualizing individual conceptual development paths in faculty development

Abstract

Teachers in higher education differ widely from one another because of their disciplinary backgrounds and experiences. Examining the individual development pathways of faculty shows how a particular academic environment influences an individual's conception of teaching. In this context, a longitudinal mixed methods study involving 37 trainee teachers at a Swiss Business School identified three types of conceptual development. It also demonstrated how using visualization methods like metaphors and sketches help to externalize teachers' unconscious conceptions of what good teaching is and facilitated the design of individually tailored learning environments where conceptual development is visible and may also be steered.

Keywords

Conceptual development, conceptions of teaching, approaches to teaching, mixed methods, visualization

¹ email: marion.lehner@let.ethz.ch



1 Individual conceptual development paths as learning vehicles in faculty development

1.1 The challenge of developing holistic competences

To ensure teaching quality at universities, faculty must be trained to keep pace with new and ongoing challenges such as student diversity and interdisciplinary learning (BRAHM, JENERT & EULER, 2016; ENTWISTLE, 2009). Here broad-based knowledge of teaching methods and fundamental teaching skills are essential, but an awareness of faculties' conceptions of teaching – e.g. whether their teaching in a specific situation should be explicitly student- or teacher-centered – is crucial. The latter has so far been neglected in faculty development programs at European universities (ÅKERLIND, 2008; GINNS, KITAY, & PROSSER, 2008; KEMBER, 1997; POSTAREFF, LINDBLOM-YLÄNNE, & NEVGI, 2007), even though MCLEAN & BLACKWELL (1997) posit that professionalism and excellence in teaching only follow when teachers elaborate consciously, and deliberately build on their existing attitudes towards teaching.

The great challenge for faculty development departments at universities is how to further develop or alter the conceptions of even experienced teachers on an individual level. Relevant learning environments and structured teacher training must be designed, not only to impart didactic methods, but also to tackle ingrained personal perceptions of how these should be transferred to the classroom (NORTON, RICHARDSON, HARTLEY, NEWSTEAD, & MAYES, 2005). Further research should address how faculty development programs can effectively and sustainably influence conceptions of and approaches to teaching. It should also find ways to chart attitude development pathways to facilitate a relevant learning environment for the conceptual development of the individual teacher in training (ÅKERLIND, 2008; EULER & FEIXAS, 2013). Therefore, the aim of this paper is to address the following question: How do trainee teachers in higher education develop their conceptions of teaching, and how can this knowledge benefit faculty development in practice?

1.2 Individual development paths of trainee teachers

In order to design structured training programs (e.g. certificate programs) which address teaching competences holistically, faculty development staff must first be familiar with their participants' current teaching contexts and disciplinary backgrounds. Being aware of their individual competence level helps faculty developers to create relevant reflection tasks for the individual trainee teacher. As participants' conceptions of teaching comprise layers of cognitive schemata based on and reinforced by their own situated evaluations of their teaching, it is important that tailored and therefore personally relevant support for the individual teacher's conceptual development must be personally relevant and therefore tailored (KUGEL, 1993; MCLEAN & BLACKWELL, 1997). By first identifying a teacher's conceptual developmental stage, it will be possible to design a learning environment which may enhance or alter conceptual development (LEHNER, 2016). There are two different ways how this specific component of teaching competence can be approached, addressed and facilitated in faculty development. The first one is phenomenographic studies, which assume that conceptual development stages are interdependent and hierarchically building on one other (ÅKERLIND, 2003; PROSSER & TRIGWELL, 1999). A second option focuses on individual conceptual development and assumes the stages are independent and non-hierarchical. Based on this assumption, KEMBER (1997) described five developmental stages which range from teacher- to student-centered conceptions of teaching. Trainee teachers may join faculty development programs at any level (figure 1).

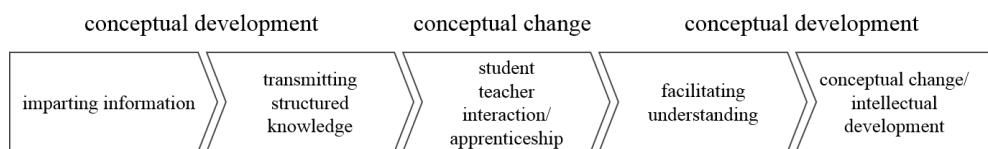


Figure 1: The five conceptual development stages of KEMBER, 1997 (adjusted)

1.3 Approaching existing conceptions of teaching

The various groups of teachers from different disciplines at universities emerge from separate “mini-cultures” (WENGER-TRAYNER & WENGER-TRAYNER, p. 4) with their own rules, norms and practices. Being aware of current socialization stages in conceptions of teaching (fig. 1) and of the different teaching cultures of participants in a training cohort seems important not only to support teachers’ individual reflection but also to create a learning environment which enhances conceptual development. LEWIN’s (1951/1947) model with three development stages, namely *unfreezing*, *moving* and *freezing* attitudes to a new level, assists to set up didactical sequences in order to challenge existing conceptions of teaching and to support their further development (HO, 2000; LEWIN, 1951/1947). According to TRIGWELL & PROSSER (1996), faculty development should not direct the conceptual development pathways of trainee teachers towards an extreme position of student-centeredness, but rather make teachers “able to explain what teaching meant to them, and what learning meant to them [...and to gather] a relational conception on teaching and learning” (p. 282).

Figure 2 shows an application of Lewin’s model to a set of didactical interventions that could be implemented in a structured faculty development program. At the beginning of such a program, existing conceptions of teaching need to be made explicit not only to define the individual teachers’ conceptual developmental stage but also to reveal their potential dissonances between the individual ideas of what good teaching is and their actual teaching practice (STES & VAN PETEGEM, 2015). Conceptions of teaching and interrelated dissonances may become visible in the shape of metaphors, drawings or sketches. Follow-up group discussions in faculty development programs may enhance the unfreezing phase of the trainee teachers’ conceptions of teaching and lead to modeling of further elaborated conceptions.

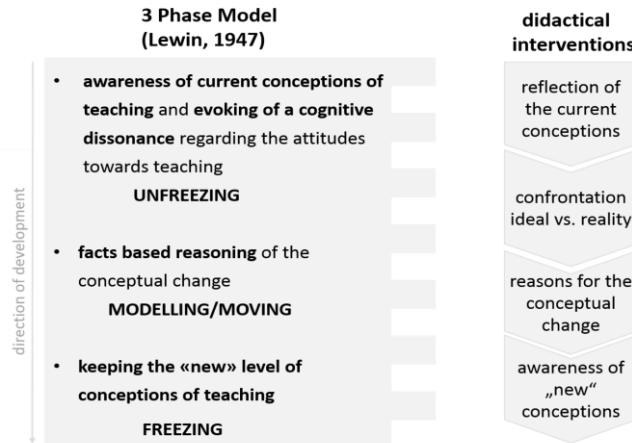


Figure 2: Didactic design for enhancing conceptual development (LEHNER, 2016)

After unfreezing existing conceptions of teaching, in this model trainee teachers are confronted with their perception of their own role as a teacher, their view on students and on collaborating with other teachers, with their basic assumptions about teaching and learning and their view on discipline-specific teaching. These five reference points provide opportunities for faculty development staff to develop tasks for deep reflections on existing conceptions of teaching. This may enable faculty development staff to build a bridge to teachers' existing approaches to teaching (HO, WATKINS & KELLY, 2001; KEMBER, 1997). Furthermore, factors influencing the transfer of teaching competences mainly depend on individual perceptions. Therefore, reflection tasks about their organizational surrounding might also enable trainee teachers to connect their ideal world to their approaches to teaching and their teaching practice (FEIXAS, PINEDA, DEL MAR DURAN, FERNÁNDEZ & ZELLWEGER, in press; MÄLKKI & LINDBLOM-YLÄNNE, 2012; PROSSER & TRIGWELL, 1999; YOUNG, 2008). The awareness of potential incongruities between conceptions of and approaches to teaching could even be an important prerequisite for conceptual development processes of trainee teachers (POSTAREFF, KATAJAVUORI, LINDBLOM-YLÄNNE & TRIGWELL, 2008).

The blend of confrontation with the tangible personal conceptions of teaching and compelling discussions in class thus is supposed to enhance the conceptual development in faculty development programs.

2 Approaching conceptions of teaching in a longitudinal training and research design

2.1 Cross-fertilization between training and research in faculty development programs

Faculty development programs typically aim to tackle teacher knowledge, skills and attitudes (EULER & HAHN, 2014). In practice, specifically externalizing attitudes towards teaching (e.g. conceptions of and approaches to teaching) might be challenging (OOLBEKKINK-MARCHAND, VAN DRIEL & VERLOOP, 2006). Conceptual metaphors and other visualization methods allow insights into how attitudes have been individually constructed by teachers (ENTWISTLE, SKINNER, ENTWISTLE & ORR, 2000; LÖFSTRÖM, ANSPAL, HANNULA & POOM-VALICKIS, 2010; NEVGI & LÖFSTRÖM, 2014). Visualization may therefore assist faculty development staff to make flexible pedagogic decisions about relevant training methods as the developmental stages of trainee teachers have been explicated by their drawings and verbal descriptions. Therefore, visualization methods like drawing and illustrating individual conceptions of good teaching, have been integrated into the teacher training at the University of St. Gallen in order to

- a) facilitate the development of conceptions of teaching didactically as well as
- b) collect data about the conceptual development pathways of teachers in training.

2.2 Using a structured approach to challenge existing attitudes

An informal exchange of ideas about teaching and learning can be implemented in faculty development programs in order to challenge a person to rethink their teaching concepts based on individual experiences. Faculty development staff can provide stimuli for informal communication between faculty with diverse disciplinary backgrounds in order to establish a common language between teachers and to overcome misunderstandings (WENGER-TRAYNER & WENGER-TRAYNER, 2015). Awareness of participant's different conceptual development stages helps faculty developers to facilitate personally relevant reflection tasks or to come up with provoking questions to support individual reflection processes after classroom observations or in coaching situations (STES, CLEMENT & VAN PETEGEM, 2007). Once teachers recognize the value of sharing insights, e.g. obstacles they have encountered in their teaching, they are able to overcome disciplinary boundaries and integrate new perspectives in established landscapes of their individual teaching practice. As conceptions of teaching set the course for the transfer into teaching practice (HO, WATKINS & KELLY, 2001), the approaches to teaching should be explicitly discussed and reflected in light of the individual conceptions of teaching. Figure 3 provides an example of a didactic design, which implements concerted didactical interventions in a teacher training program in order to tackle attitudes towards teaching by means of guided and visualized reflections.

module	topic of the module in the certificate program	didactical intervention to support conceptual change/conceptual development
kick-off	introduction to the certificate program	unfreezing: awareness of current conceptions: drawing a picture of an ideal teaching situation
module 1	teaching and learning at the University XXX	unfreezing & moving: enriching current conceptions
module 2	planning lessons	moving: enriching current conceptions
module 3	teaching lessons	moving: enriching current conceptions
module 4	microteaching in small groups	unfreezing: confrontation by means of drawings from the kick-off after the teaching sequence
module 5	assessing competence development of students	moving: enriching current conceptions
module 6	reflection of own teaching competence development	freezing: drawing a picture of a new ideal teaching situation and reflecting on that

Figure 3: Didactic design for the conceptual development in the basic course program

The conceptual change approach by LEWIN (1951/1947) was used to scaffold the conceptual development process in the certificate program at the University of St. Gallen. To unfreeze existing conceptions of teaching, they first need to be made explicit and visible. During the kick-off, participants had to sketch an experience which they remember as good teaching quality. The moving phase was facilitated throughout the content-specific modules 1-5, where participants had the chance to deepen their knowledge about teaching and could discuss their elaborated conceptions with peers. During the microteaching session, trainee teachers were confronted with their sketch and statement about their idea of good teaching from the kick-off. The reflection stimulus focused on the explication of possible incongruent parts, i.e. how the picture from the kick-off fits together with their actual micro-teaching performance. In module 6, participants were asked to draw a new picture about what they perceive good teaching to be. After the sketching, focus groups were conducted to compare both pictures and reflect about the conceptual development paths of the participants.

In every module, reflection tasks on trainee teachers' conceptions of teaching were integrated in order to connect their ideas on an ideal teaching situation with their actual teaching practice. The reflection of the individuals' conception of teaching with reference to their actual teaching approach and practice may reveal dissonant parts of attitudes towards teaching. The awareness of dissonances between an ideal image of teaching and the individually created teaching reality initiates an unfreezing phase and facilitates valuable learning experiences for conceptual development or change (LINDBLOM-YLÄNNE, NEVGI & TRIGWELL, 2011; MEZIROW, 1981).

2.3 Tracing the individual conceptual development

2.3.1 Data collection and longitudinal study participants

The use of interrelating quantitative and qualitative methods in a longitudinal research design is expected to reveal the nature of the conceptual development or change of teachers in higher education participating in a faculty development program (c.f. POSTAREFF, LINDBLOM-YLÄNNE & NEVGI, 2007). In practice, the tools used for data collection included problem-based individual interviews and focus groups with open questions about their perceived conceptual development. Furthermore, we used methods of image presentation such as verbalized metaphors and drawing pictures about what good teaching looks like to them individually. We also carried out participant observation during the workshops conducted by the author, documentation of the transfer tasks given in between workshops to the participants, as well as quantitative questionnaire data about the development of approaches to teaching (ATI-R, TRIGWELL & PROSSER, 1996). The results of the quantitative research have not been reported in this paper because of the focus on the individual conceptual development of trainee teachers. In total, 300 artifacts consisting of interview transcripts, handed-in transfer tasks, pictures and field notes were collected in the qualitative research during the basic coursework of the certificate program (fig. 3). Problem-based individual interviews were conducted afterwards including 17 theoretically sampled participants of two cohorts. Interviews

lasted 29 – 79 minutes and were recorded and transcribed with informed consent of the participants.

The 37 participants were divided into two cohorts within the mixed methods evaluation study and mainly consisted of novice teachers. Only a few of the participants of both cohorts were experienced university teachers and they held a range of different academic positions: doctoral students with no teaching duties, senior lecturers or assistant professors. Teachers in the 10 ECTS-certificate program aim to receive a Certificate of Advanced Studies (CAS) in Higher Education and have various disciplinary backgrounds, e.g. economics, law, political science, psychology or philosophy. Both cohorts were accompanied by the author for the basic coursework (fig. 3) from autumn 2013 to spring 2015.

The two cohorts were treated with a similar training design regarding the intended conceptual development. In the second workshop of the program about conducting lessons, every participant of the first cohort was asked to define a metaphor that represents good teaching whereas the second cohort starting one year later in 2014 was asked to draw a picture of a good teaching sequence during kick-off. Both cohorts were confronted with their sketch or metaphor at least once in the micro-teaching and in the final session. Both groups had to reflect on their individual conceptual development with peers in moderated group discussions at different stages of the training.

2.3.2 Data analysis and triangulation of multiple types of data

The analysis of data follows three steps. The first one includes a structured analysis of images (BRECKNER, 2010) for the purpose of clustering participants in order to identify which conceptual stages they were currently in. Visualized teaching sequences have been analyzed by looking at the appearance and position of the depicted teacher in the picture compared to the students and the classroom action displayed. For instance, an oversized teacher or no students on the picture may indicate a tendency towards teacher-centeredness of the trainee teacher. Focus groups and individual interview transcripts were used to gain deeper insights about participants' conceptions of teaching. The conceptual stages of each participant had

been discussed with other researchers in three image analyzing workshops and classified into the five conceptual development stages of KEMBER (1997).

Qualitative Content Analysis (MAYRING, 2010) of the transcripts from the individual and focus group interviews was used as a second analysis step to a) enrich data gathered from the image analysis and b) gain structured information about individually relevant influencing factors on transfer. In order to categorize the statements on participants' conceptions, the five dimensions of KEMBER (1997) had been used in order to approach each individual development stage. We slightly adapted the dimensions as data revealed insights about the trainee teachers' perceived role, their basic assumptions of teaching, on students, own subject and other teachers (fig. 4). Kember's dimension *knowledge* did not appear in our data and therefore was replaced with *other teachers* because this topic showed up in data more frequently. The dimensions in Figure 4 were suitable to clearly assign a particular conceptual development stage (fig. 1) to every trainee teacher. The case studies were chosen on the basis of this allocation.

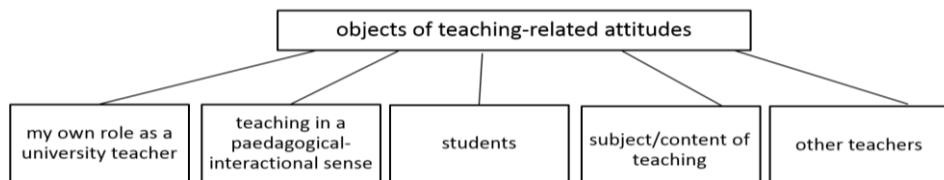


Figure 4: Dimensions of conceptions of teaching adapted from KEMBER (1997)

The third step of data analysis built three case studies. Three major pathways evolved from the former two analysis steps and provided further insights into the individual perceptions of influencing factors on teaching transfer (c.f. TEDDLIE & TASHAKKORI, 2006). During this step of analysis, the variety of artifacts collected, namely documentation of written reflection statements handed in from participants, field notes from the author, visual representations of the individual perceptions about good teaching, and interview transcripts, were read three times and step by step cross-fertilized and integrated into three case studies. For further enrich-

ment of the cases, the qualitative and quantitative data had been triangulated (FLICK, 2013). The iteration steps supported the compression and cross-fertilization of data. This led to an understanding of the bigger picture of the individual conceptual development paths of trainee teachers.

3 Personalized teacher training by addressing the individual developmental paths

3.1 Making conceptual enrichment visible

Three major clusters of conceptual development could be derived from the image and the content analysis, which are based on KEMBER (1997): Participants either started teacher- or student-centered, or with conceptions of teaching on a transitional stage, regardless of their teaching experience. Teachers with a disciplinary background in humanities tend to start the teacher training in a transitional stage or with moderate student-centered conceptions of teaching. A background in hard disciplines corresponds with participants starting the certificate program rather teacher-centered (c.f. KREBER & CASTLEDEN, 2009). As no statistical test had been conducted about this and as we investigated only a small data set, it is unclear if these tendencies are reliable. All participants that held teacher-centered conceptions from the start of the program, showed conceptual development or even a change to student-centeredness within the investigated period (fig. 5). As depicted in the first drawing, the teacher is transmitting content and students are passive recipients. After the exemplary trainee teacher participated in the basic coursework and reflected deeply and continuously on attitudes towards teaching, the second drawing showed conceptual progress. The communication mode also developed: Teacher and students now meet on the same level. The related interview data showed that the teacher still provides the content and defines the learning steps. But the conceptions of this trainee teacher appear more elaborate after the basic coursework.



Figure 5: Example of a visualized conceptual development path of a teacher-centered teacher

The transitional stage appeared to be most challenging in the training. In conceptual transition, teachers are convinced about the benefit of student-centered teaching but cannot refrain from defining detailed content in a lecture or seminar. They are consequently unable to empower their students to be self-regulated learners (c.f. KEMBER, 1997). At this stage, it is especially important to reflect on factors that might influence the transfer to the individuals' teaching practice. Discussions with peers helped the teachers in the transitional stage to discover common concerns and good practices, which encouraged them to overcome obstacles and gain self-confidence in their own teaching competence.

The analyzed interview data clearly showed that most of the investigated participants who had a strong focus on student-centered teaching from the beginning of the program could stabilize their conceptions of teaching through group discussions and guided reflections in microteaching sequences. In this group, trainee teachers were able to increase awareness about the importance of structure in their teaching practice during the training (see the added circle structure indicated by arrows in the second drawing in fig. 6 as one example). Both drawings depict the students as active, self-regulated learners. In the second picture, drawn by the end of the coursework, the teacher takes on the role as a guide for students providing them with tools they need for their self-regulated learning process. Before the training, this teacher has been already aware that student-centered teaching is important. Within the discussion at the final session of the program, the teacher clearly stressed out that an underlying structure of teaching, i.e. the facilitation of an intended learning cycle, raised the quality of the own teaching practice. The aware-

ness to better structure teaching was regarded a valuable teaching competence development step.

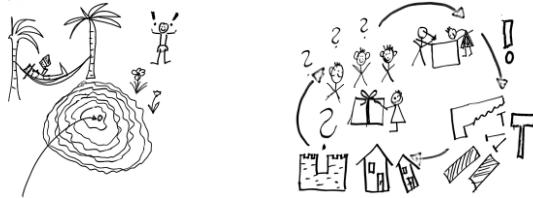


Figure 6: Example of a visualized development path of a student-centered teacher

3.2 The role of individual perceptions about the teaching environment in the conceptual development process

The results of the case studies conducted provide evidence that teacher-centeredness inhibits teachers from becoming aware of influencing factors as their focus lies strongly on themselves (c.f. KUGEL, 1993). For teacher-centered participants, opportunities to practice teaching is of high importance in order to see the relevance of the theoretic reflections on how a good teacher should act. Without possibilities of gaining teaching experience, the investigated trainee teachers lost the motivation to reflect on their conceptions of teaching and on the potential outcomes in their practice. Furthermore, judged by the interview transcripts it seems essential – especially for teachers in transition – to exchange perceptions of influencing factors on the transfer of the developed attitudes towards teaching into practice. Student-centered teaching is only an idea at the transitional stage that needs to be embedded into teaching reality (LEHNER, 2016). In particular, the case study of trainee teachers who started the program in a transitional stage indicated the importance of facilitating reflections with peers about the individual perception of influencing factors on the transfer, because it might strongly affect dealing with those factors in practice. The perception of any inhibiting factor needs to be discussed with experienced peers who managed to overcome the transitional stage and

feel self-confident regarding the transfer of their elaborated conceptions of teaching into practice. In addition, the results showed that especially student-centered teachers perceive environmental factors, like teaching regulations of the organization or time and space constraints, as less restrictive than their peers. Teachers being at this conceptual stage are deeply convinced of the benefit of teaching in a student-centered way and anticipate obstacles or limiting factors. Some of the student-centered participants even turn restrictions of their organization into benefits, e.g. by creatively using fixed interior equipment for student-centered teaching because they are convinced that this is of great importance for initiating deep learning processes.

4 Implications for the development of conceptions of teaching in faculty development

An essential result of the study is that trainee teachers showed the need for personalized support for their individual conceptual progress in faculty development programs due to their different levels of conceptions of teaching ahead of the program start. To be able to address the individual conceptual level in a relevant way in structured trainings, faculty development staff should collect indicators before the program and during kick-off to identify the participants' conceptual stage. This allows the faculty developers to tailor reflection tasks in order to suit the three conceptual development stages: trainee teachers with teacher- or student-centered conceptions or with conceptions of teaching in transition.

Tracing how trainee teachers' conceptions developed made it possible to assign individually relevant reflection tasks, such as confronting faculty with their visualized ideas of good teaching at a later program stage. The design of the complex learning environment for the heterogeneous participants in disciplinary background and teaching experience was assisted by a variety of reflection tasks (e.g. on ones own role as a teacher or on discipline-specific teaching). The five dimensions of conceptions of teaching (fig. 4) proved to be useful in practice for structuring the

data analysis process and for the facilitation of individually relevant reflections. Due to potential incongruities of the individual conceptions of and approaches to teaching, exchanging ideas about teaching needed to be facilitated deliberately within or across participants of the three conceptual developmental stages.

As the case studies revealed, perceptions of influencing factors on the transfer might more depend on the conceptual level than on the teaching experience. That means that experience without reflection might not help teachers to overcome fears and obstacles even though they deeply intend to be student-centered. But being an experienced teacher with an opportunity to reflect and try out new approaches has the potential to boost the individual teaching competence. Faculty development programs therefore should invest great effort into facilitating individual conceptual development or change in order to provide support for sustainable transfer of elaborated conceptions of teaching into teaching practice (c.f. STES et al., 2007).

A valuable learning asset but also a great challenge regarding the support of conceptual elaboration in faculty development programs lies in the sound orchestration of reflection tasks in formal and informal learning opportunities across and within the different individual conceptual development stages of trainee teachers. By advocating for stronger individualization of teacher training we should be aware that supporting faculty along their individual conceptual development paths might be indeed highly motivating for participants and effective for successfully reaching attitudinal learning goals. But it does require adequate resourcing at the same time.

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Author



Dr. Marion LEHNER || ETH Zurich, Educational Development & Technology (LET) || Haldenbachstrasse 44, CH-8092 Zurich
marion.lehner@let.ethz.ch