

## **Understanding differences in teaching approaches in higher education: An evidence-based perspective**

*Ann Stes, Vincent Donche and Peter Van Petegem*

*University of Antwerp, Institute for Education and Information Sciences*

### **ABSTRACT**

Previous research has shown the interrelatedness of teaching conceptions, teaching strategies and approaches. The importance of studying teaching approaches in close relationship with a variety of personal and contextual factors has been underlined too. In this study we use examples from previous research studies in various countries in order to elaborate a framework that seeks to contribute to a better theoretical understanding of differences in teaching approaches in higher education. Rather than developing a comparative perspective, we present an evidence-based framework accounting for the complex, but also dynamic, nature of teaching. A broad picture of personal and contextual factors influencing teaching approaches is drawn and illustrates the complex issue of understanding differences in teaching approaches.

### **INTRODUCTION**

In the last decade many empirical studies in higher education contexts have focused on the nature and differences in teaching approaches in higher education and which factors have an explanatory value. The growing evidence base allows for further theoretical reflection regarding the construct ‘teaching approach’, as well as regarding the factors related to it. In this article we present an integrated perspective on how differences in teaching approaches are present in higher education and how they can be explained. We critically reflect upon the results of studies examining the interrelationship between teaching conceptions, teaching strategies and approaches in higher education. We examine this interrelationship by taking into account personal and contextual factors that in recent studies have been found to be sound predictors regarding differences in teaching approaches. Using examples from previous research studies in various countries we construct a holistic view explaining differences in teaching approaches rather than developing a comparative perspective. That way we broaden the view regarding how teachers think about teaching explains how they teach (Calderhead and Robson, 1991). Inspired by a more complexity theory-driven view (Senge, 1990) on instruction and previous research findings we assume that teaching approaches are interwoven with many influencing factors and, therefore, it seems appropriate to focus not only on the teaching approaches as such, but also on the interrelationships with multiple personal and contextual influencing factors. By drawing a broader picture in framing differences in teaching approaches, this theoretical expansion allows us to explore teaching approaches in a more critical and relational way. That way we hope to contribute to a deeper understanding why teachers teach the way they do.

In this article we first take a closer look at the vast body of research which, on the one hand focuses on the interrelatedness between teaching conceptions and teaching approaches and,

on the other, discusses the influence of personal and contextual factors. Taking into account the complex picture that emerges, we propose a holistic framework for assessment of teaching approaches in higher education, which reveals key issues to be addressed in future research on teaching approaches.

## **THE INTERRELATEDNESS BETWEEN TEACHING CONCEPTIONS AND TEACHING APPROACHES**

Teachers in higher education enter a certain teaching environment with a range of prior conceptions of what is good teaching (Prosser and Trigwell, 1999). Three categories of teaching conceptions were identified by McKenzie (1995) on the basis of earlier studies into teaching conceptions: limited conceptions, intermediate conceptions and complete conceptions. According to these categories, a teacher holding a limited conception is a teacher whose concern about teaching is limited to his own behaviour, namely transmitting knowledge. Intermediate conceptions involve concerns about the content: teachers with these conceptions are concerned about how they can engage students so that they will acquire the knowledge content as well as possible. Finally, a teacher holding a complete conception focuses on developing or changing students' views rather than transmitting his/her own view. Another but similar categorisation of teaching conceptions was made by Kember and Gow (1994). In line with the results of other studies (e.g., Kember, 1997; Samuelowicz and Bain, 2001), they identified two conceptions of or orientations to teaching: knowledge transmission and learning facilitation. In the knowledge transmission conception, transferring information to the student and preparing students for specific professional roles is seen as the primary goal of higher education. The learning facilitation orientation, on the other hand, stresses interactive teaching, meant to motivate students and to guide their learning process. Heimlich and Norland (1994) came up with a categorisation of teaching styles based on two sorts of conceptions: conceptions related to the importance of knowing the students (sensitivity conceptions) and conceptions concerning the importance of active involvement of the learners (inclusion conceptions). Teachers with a content orientation are deemed to have a low sensitivity conception, whereas high sensitivity conceptions are deemed to be typical for teachers with a learner-centred orientation. The inclusion conception is seen as separate and can be combined with low as well as high sensitivity.

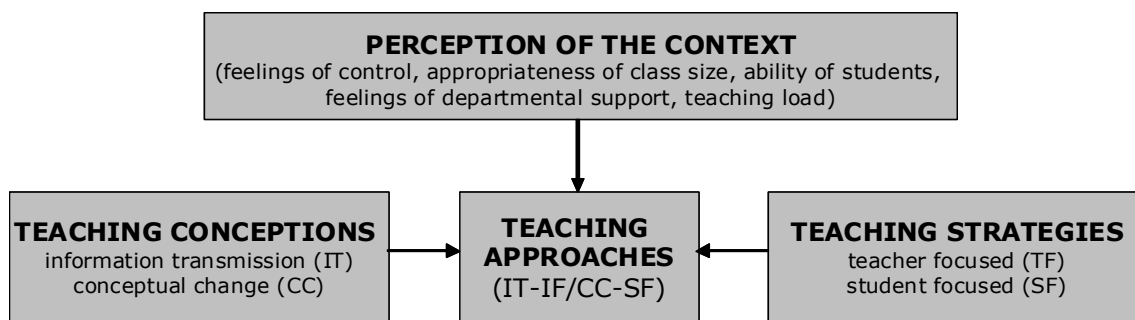
A quantitative study by Trigwell and Prosser (1996), with 58 first-year university physics and chemistry teachers in Australia, revealed a close relationship between teachers' conceptions of teaching and the way they approach their teaching in a specific teaching context. Teaching approaches in higher education have already been investigated to a considerable degree (Trigwell, Prosser and Waterhouse, 1999). The ATI-research of Prosser and Trigwell (1999) made an important contribution to the research field of teaching approaches. They categorized approaches to teaching into two different types: a conceptual change/student-focused approach and an information transmission/teacher-focused approach. The conceptual change/student-focused approach is intended to change student ways of seeing through a teaching strategy which focuses on the student. In the information transmission/teacher focused approach the intention is to transmit information by using a teacher-focused strategy. Teachers who show student-focused behaviour in a

course have a more complete conception of their teaching of that course. A teacher who uses a teacher-focused strategy in a course conceives his teaching of that course in a limited way. There is coherence between a teacher's conception of teaching and his/her actual approach or behaviour. As a consequence, if a teacher wants to change his/her teaching behaviour, he/she will need to reconsider his/her conceptions of teaching (Prosser and Trigwell, 1999). Later studies (e.g., Gibbs and Coffey, 2004; Lindblom-Ylänne et al., 2006; Nevgi, Postareff and Lindblom-Ylänne 2004) confirmed the presence of teaching approaches in a variety of contexts. Also Kember and Gow (1994) stress the importance of being aware of the relationship between conceptions of teaching and the way courses are taught. Since the teaching behaviour of a lecturer affects the quality of student learning and the actual approach of a teacher is linked to his conception, teachers' conceptions of teaching can, indirectly, have a profound effect on the learning outcomes of students. In their quantitative study, with 170 lecturers out of 15 departments in two polytechnics in Hong Kong, they used a Teaching Orientation Questionnaire, self-developed on the basis of interviews with 39 lecturers. The questionnaire identified lecturers' teaching orientations at institutions of higher education. The research results show that in departments where the predominant conception is towards knowledge transmission, the students' use of deep approaches to learning is discouraged. On the other hand, a learning facilitation conception is clearly related to a meaningful student learning approach. Other studies about the implications of teacher teaching orientations for student study approaches and learning outcomes show similar results (e.g. Nichols and Miller, 1994; Trigwell et al., 1998; Trigwell, Prosser and Waterhouse, 1999).

The relation between teacher conceptions of teaching and their actual teaching behaviour in a course is, however, not as straightforward as it may seem. In their study, Trigwell and Prosser (1996) found that an expected consistency between teaching conceptions and teaching strategies is not always apparent as a number of teachers were found who were less learner-focused in teaching strategies than would have been expected from their reported conceptions. On the basis of a survey of 39 business teachers, similar inconsistencies were also found by Murray and McDonald (1997). Because teaching occurs in a certain context (defined by elements such as the number and ability of students, support of colleagues, teacher's work load and teaching experience) the freedom of a teacher to teach the way he/she wants (i.e., in accordance with the way he/she conceives teaching) is undoubtedly limited. In addition, not only the teaching context itself, but also the teacher's perception of this context may affect the way he/she acts. In their quantitative study with 46 teachers of first-year university physics and chemistry courses in several Australian universities, Prosser and Trigwell (1997) used a Perception of the Teaching Environment Inventory. This was self-developed on the basis of interviews with 13 teachers of first-year university physics and chemistry courses in two Australian universities, in order to identify university teachers' perceptions of their teaching environment. Five aspects were seen to affect the approach of teachers: feelings of control over how and what to teach, perception of appropriateness of class size, view on the (diverse) ability of students, feelings of departmental support for teaching, perception of appropriateness of teaching load. The results show that a conceptual change/student-focused teaching approach is associated with a feeling of control over teaching and the perception of an appropriate class size, an appropriate ability of students and an appropriate teaching load. An information transmission/teacher-focused approach, on the other hand, is associated with a feeling of

lack of individual control and lack of departmental support. These findings underline the importance of studying teaching approaches in close relationship with a variety of personal and contextual factors.

In the former section, we illustrated that teaching approaches and strategies are not only related to teaching conceptions but also to the teachers' perceptions of the context which is illustrated in Figure 1. Based on recent studies concerning the influence of additional personal and contextual factors on teachers' conceptions of teaching and teaching approaches, we made an integrative attempt to compose a more refined research model, which is not meant to be exhaustive but merely an attempt to capture more complexity in studying differences in teaching approaches. The need for integration of the personal and contextual factors in the model is discussed in the following sections.



**Figure 1:** Relating teaching conceptions, perceptions, approaches and strategies

## THE INFLUENCE OF PERSONAL FACTORS

Firstly, we take a closer look at the relevancy of the integration of the following personal factors: gender, prior education, approaches to learning, and the amount of teaching experience.

### Gender

Nevgi, Postareff and Lindblom-Ylänne (2004) examined the effect of gender on teaching approaches by asking 340 university teachers in Finland and the United Kingdom to fill in the Approaches to Teaching Inventory (ATI, Prosser and Trigwell, 1999). Women and men were found to differ significantly in their approaches to teaching, with men scoring significantly higher on the teacher-focused approach. An effect of gender was also found by the research of Lacey, Saleh and Gorman (1998) in which 36 university teachers in the USA were questioned about their teaching style preference by way of the VanTilburg/Heimlich Teaching Style Preference Inventory. Men and women were both convinced of the importance of meeting student needs. However, the female teachers allowed the learners more freedom concerning what and how to learn. Male professors preferred a teaching and learning process controlled and structured by the teacher himself. In Singer's study (1996), gender emerged as a significant predictor of the teaching

conceptions embraced by faculty. The results indicate that female faculty are less likely to espouse a teaching paradigm in which the focus is on the subject, and are more likely to adopt a conception which prioritizes the development of students' critical thinking or the involvement of students. We conclude earlier studies from various countries show an influence of gender on teaching approach, with women being more inclined than men to adopt an approach focusing on the student.

### **Prior education**

Prior education is a second personal factor influencing teacher's teaching approach. Studies by Kagan (1992), Pajares (1992) and Wubbels (1992) have pointed out that conceptions of teaching and personally constructed theories of teaching are influenced by many years of classroom observation. This prior knowledge about teaching is also understood to serve as an interfering filter during teacher education (Hollingsworth, 1989). Some researchers suggest that these theories about teaching are rather hard to change, despite efforts of teacher training (Pajares, 1992). This can lead to the assumption that prior education experiences can have a predictive value regarding teachers' conceptions of teaching and teaching approaches.

### **Approaches to learning**

Powell (1992) found that student teachers reported that they were influenced by their own ways of learning when constructing teaching lessons. Also Stofflett and Stoddart (1994) showed that pre-service teachers learning in a more meaning-oriented way, were found to attach more importance to knowledge construction in the planning of their lessons. Huibregtse, Korthagen and Wubbels (1994) found that learning approaches can have an impact on how student teachers think about teaching and learning to teach. Also teacher learning activities at the workplace, such as, for instance, experimenting with ideas of colleagues in their own classroom, was found to be related to certain changes in teaching beliefs (Meirinck et al., 2009). Pre-service teacher learning approaches were also found to be predictive for their preferences of learning environments. Survival-orientated and reproductive-unregulated learners do less prefer to realise student focused teaching in their own teaching practice (Donche and Van Petegem, 2005; Van Petegem, Donche, and Vanhoof, 2005). On the basis of these examples of studies from various countries, we conclude teachers' approaches to learning influence their approaches to teaching.

### **Teaching experience**

A final personal factor often mentioned in previous research into teacher's teaching approach concerns teacher's teaching experience. Prosser and others (2003) examined the relationship between approaches to teaching and teaching experience, thereby distinguishing two groups of teachers on the basis of the amount of teaching experience. A positive relationship between the conceptual change/student-focused approach and the information transmission/teacher-focused approach was labelled as dissonant; a consonant relationship meant that the two approaches were negatively related. More than 8000 students in 51 different subjects were questioned about their approaches to study by way of a subject-specific version of the Study Process Questionnaire (Biggs 1987) and about their

perceptions of the learning context using a subject-specific version of the Course Experience Questionnaire (Ramsden, 1991). Their teachers ( $n = 408$ ) were administered the Approaches to Teaching Inventory (Prosser and Trigwell, 1999). When students reported a deep learning approach and perceived that the learning environment was encouraging such an approach, there was a difference between junior and senior teachers in terms of the relationship between their approaches to teaching. For senior staff the relationship was consonant, for the more junior staff the results showed dissonance. When students reported a low-quality learning experience (surface learning approach and perception of the learning environment as encouraging such an approach) the relationship between approaches to teaching was dissonant for junior as well as for senior staff. Research by Beijaard and others (2000) also showed a positive relationship between professional experience and the conceptions of teachers about teaching. In a large-scale study with 443 teachers spread across 163 colleges and universities in the United States, Singer (1996) examined the effect of professional age on the teaching conceptions of teachers. To investigate teaching conceptions she designed an own survey instrument which she validated. No significant effects of professional age on teaching conceptions were found. We conclude some studies show teaching experience as a factor influencing teacher's teaching approach, while others (e.g. Singer, 1996) didn't find an influencing effect of teaching experience.

In addition to personal factors, contextual factors may have an influence on teacher's teaching approach as well. In the next section we take a look at studies examining teacher's teaching approach in relation to contextual factors.

## THE INFLUENCE OF CONTEXTUAL FACTORS

Many studies have argued for attention to context-related variables in studying teaching approaches. Firstly, we make a distinction between factors situated within the broad context of the learning environment in which teaching practice takes place. In this context, we argue for integration of the variables like discipline, class size and level and the prevalent climate regarding student-teacher interactions and assessment. The way in which the leadership of teaching is conceived of is an important variable to take into account as well. Secondly, as teachers are confronted with professional development in the context of informal and formal training, we integrate the influence of professional development or training activities and support of, and collaboration with peers in our model (Figure 2).

### Discipline

A first factor within the broad context of teaching concerns discipline. Prior research by Lindblom-Ylänne and others (2006) of 204 Finnish teachers and 136 teachers from the United Kingdom showed consistent evidence of discipline affecting teachers' approaches to teaching. Lecturers working in a 'pure hard' discipline (e.g., chemistry) scored significantly lower on the student-focused scale of the Approaches to Teaching Inventory (ATI, Prosser and Trigwell, 1999) than teachers belonging to a 'soft' discipline (e.g., history, education). These findings are in line with the results of a study by Lueddeke (2003) of 300 teachers in the United Kingdom, indicating a significant difference between faculty/discipline and the type of teaching concept held by a teacher, as measured by the ATI. In their study of 170

teachers from two polytechnics in Hong Kong, Kember and Gow (1994) did not find any obvious relationship between the predominant teaching conception of the lecturers in a department (as measured by means of a self-designed and validated questionnaire) and their field of study. Results of the study by Singer (1996) show a significant relationship between discipline and the teaching conceptions of the college faculty. Teachers in 'hard disciplines', such as biology and mathematics, are more likely to adopt a content-oriented conception. We conclude some studies show discipline as a factor influencing teacher's teaching approach, while others (e.g. Kember and Gow, 1994) didn't find an influencing effect of discipline.

### **Class size and class level**

A second contextual factor considered in earlier studies is class size and class level. Singer's (1996) research indicates that as class size and class level increase, teachers are more inclined to conceptualize their teaching role as imparting facts and principles. The research by Lindblom-Ylänne and others (2006) showed the student-focused teaching approach from teachers being sensitive to influences from the course-context variables of number of students and study phase of students.

### **Student-teacher interactions and assessment**

A factor within the broad context of teaching which may influence teacher's teaching approach as well concerns the prevalent climate regarding student-teacher interactions and assessment. How teachers respond to individual differences in learning and assess learning outcomes can affect the way students learn (Entwistle, McCune, and Hounsell, 2003). Kember and Gow (1994) found in their study that teachers' teaching approaches were in line with how their students learn. As mentioned above, they investigated the teaching approach of 170 teachers in Hong Kong by way of a self-designed questionnaire; the learning approaches from their students were examined with the Biggs Study Process Questionnaire (SPQ; Biggs, 1987). The reverse, where teachers adapt their teaching approaches to the diverse learning approaches and assessment needs of students, can also be expected (Donche, De Maeyer, Coertjens, Van Daal, and Van Petegem, 2013). Increasing student-teacher interactions and an assessment climate valuing process orientated teaching, was reported by teachers in higher education to be an important factor to enhance more student-focused teaching in practice (Van Petegem and Donche, 2008).

### **Academic leadership**

A more policy-orientated context characteristic, namely the way the leadership of teaching is conceived of, might be related to a teacher's teaching approach too. An empirical study by Martin, Trigwell, Prosser, and Ramsden (2003) with 28 teachers of first-year students showed that no teacher who perceives the leadership in his subject as being based upon discussion among peers and as having a focus on continuous development adopted an information transmission/teacher-focused approach in his teaching of that subject. When teachers perceive the academic leadership as providing clear goals and enabling change, they are more inclined to adopt a student-focused teaching approach (Ramsden, 1998). In their study of 2007, Ramsden, Prosser, Trigwell, and Martin remark that the link between

experiences of leadership and approaches to teaching is only indirect. They assembled questionnaire data for 439 teachers at 11 Australian universities across four fields of study (health sciences, humanities and social sciences, economics and law, and science and engineering). On the basis of their analysis of these data they conclude that when teachers perceive the on-going academic leadership as value-driven, engaging all team members, setting clear goals and contingent rewards, and creating a sphere of openness, they have the feeling that high quality teaching and student learning are really valued. It is that feeling that is in turn associated with being inclined to adopt a conceptual change/student-focused teaching approach.

### **Professionalization activities**

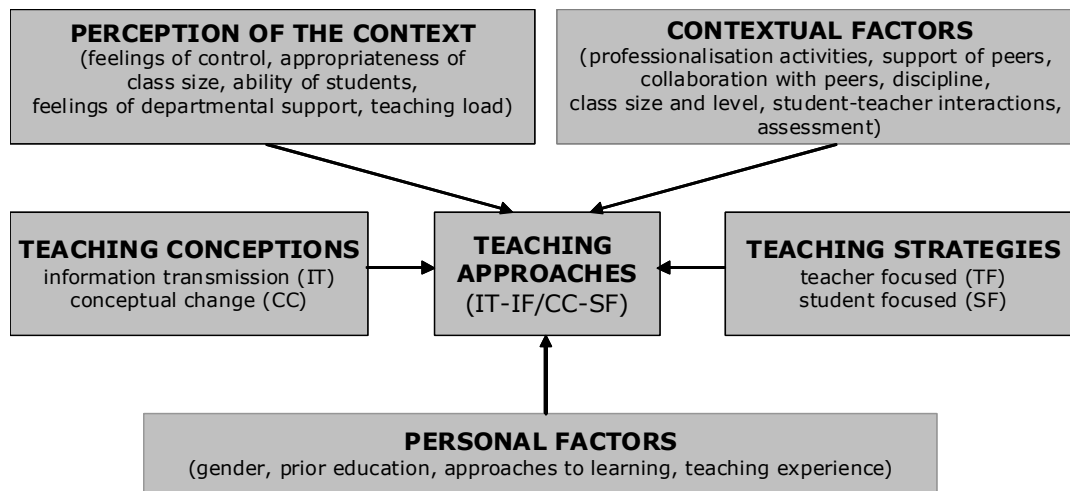
As teachers can be confronted with professional development in the context of formal training, we searched for studies into the influence of professional development or training activities on teachers' teaching approach as well. In a large-scale study, involving 20 universities in 8 countries, Gibbs and Coffey (2004) found that professionalization activities can increase the extent to which teachers adopt a student-focused approach (as measured by the ATI). A study by Postareff, Lindblom-Ylänne and Nevgi (2007) of 200 teachers of the University of Helsinki (Finland) also supports the idea that teacher training in higher education does have an effect on teaching. Training had an effect on scales measuring a conceptual change/student-focused approach (measured by the ATI) and self-efficacy beliefs (measured by some self-developed additional questionnaire items). The effect remained even when the influence of teaching experience was held constant. These results are in line with other studies which show that an active engagement in teaching professionalization can make teachers more aware of their teaching conceptions and encourage them to further develop their teaching approaches (Brouwer and Korthagen, 2005).

### **Support of, and collaboration with peers**

In addition to formal training, informal learning opportunities such as support of, and collaboration with peers might influence a teacher's teaching approach as well. In the context of teacher education, it was found that collaboration among pre-service teachers is positively related with learning to teach (Wideen, Mayer-Smith and Moon, 1998). Besides, many studies pointed out that a collaborative relationship among teachers is important to achieve changes within educational settings (Fullan, 1993; Hargreaves, 1994). The presence of support and collaboration between teachers has been reported by teachers in higher education to be an important and positive influencing factor to enhance a more student-focused approach to teaching (Van Petegem and Donche, 2008). Other studies point out that teacher collaboration at the workplace also can lead to confirmation of one's own teaching ideas or methods and does not always lead to an increase of more innovative teaching practice (Meirink, Meijer and Verloop, 2007).

## CONCLUSION, DISCUSSION AND IMPLICATIONS

Based on the examples from previous research studies in various countries as mentioned above, we draw a broad picture of personal and contextual factors influencing teaching approaches illustrating the complex issue of understanding differences in teaching approaches (Figure 2). The proposed model based on previous research can therefore contribute to a better theoretical understanding of differences in teaching approaches. The identification of all influencing factors was not our primary aim. By taking a closer look at the complexity it has been argued that a multiple set of factors can have a differential impact upon teaching approaches. Connections between the three kinds of factors (i.e. perception of the context, contextual factors, and personal factors) might exist. For example, a personal factor like gender can be influenced by a contextual factor such as discipline. The emerging research model accounts for the complex, but also dynamic, nature of teaching. Of course, thorough empirical research is needed to demonstrate the validity of this model. Therefore, we have to be careful by positioning it as a sound and powerful model to explain the variance in teaching approaches.



**Figure 2:** A holistic view on teaching approaches

Future empirical studies are needed to further investigate the generalizability of the model. It seems important to further examine the interrelatedness between personal and contextual factors within and across different ‘teaching cultures’ and ‘teaching policies’ of higher education.

This would introduce a next stage of model development in which the differential effects of the factors on teaching approaches can be explored in depth and related to (dis)similarities of the educational context. Also other policy characteristics than academic leadership might be important to take into account to further explore these contextual differences. We refer for instance to the degrees of access which are granted to students to participate in higher

education. It seems plausible that when entry characteristics of first year students are more diverse across higher education contexts, a more differential use of approaches to teaching can be a response. As far as we know, no systematic research has been conducted to examine differences between teaching approaches across contexts which vary regarding open access to higher education. Another important explanatory variable might be the specific quality assurance policy operating within higher education contexts. In order to regularly assess the quality of teaching practice, many institutions of higher education use student evaluation procedures and provide feedback to teachers regarding their teaching qualities. Studies investigating whether teachers change their teaching practices when they are evaluated by their students through means of student evaluation forms are scarce and provide inconclusive results (Lang and Kersting, 2007). However, it remains an important research perspective to investigate whether these quality assurance policies do have an impact on teachers' teaching approaches.

Carrying out research within this model can therefore also be fruitful in relationship with gaining insights for directions for professional development and learning. Over the last decades new teaching concepts, such as competence-based education, powerful learning environments (De Corte, 1990) and student-centred teaching have been embraced in institutions for higher education. Accordingly, a lot of attention has been devoted to the training of teachers in putting these concepts into practice (Donche and Van Petegem, 2011). In these training contexts teachers are encouraged to act as coaches who guide students in their learning process (Marton, Hounsell and Entwistle, 1997) and to challenge their students to become 'active learners'. As a consequence, there is the question of to what extent the teaching of staff can be affected by educational training. As mentioned before, recent studies by Gibbs and Coffey (2004) and Postareff, Lindblom-Ylänne and Nevgi (2007) support the idea that teacher training in higher education can have an effect on teaching. However, altering the conceptions of academics about teaching is not easy (Kember and Gow, 1994). Transfer of what one learns does not occur easily (Price and Driscoll, 1997). Implementing what one has learned during professional training, into daily practice is not evident (Baldwin and Ford, 1988; Thompson, Brooks and Lizarraga, 2003). Also in the context of teacher training, transfer should be explicitly promoted in order to optimise the impact on teaching practice (Showers and Joyce, 1996). Acquiring more empirical information about factors that obstruct or facilitate the transfer of conceptions for which the plea is made in actual training programmes can be helpful to put 'educational change' into a more relational and complex perspective. Teacher characteristics, characteristics of teachers' and students' learning and the course context influence the translation of conceptions into teaching behaviour and should, therefore, be taken into account in the curriculum or programmes of teacher training. Additionally, it seems worthwhile to confront participants in teacher training with the interrelation of their teaching approach and other factors (teacher characteristics, course context, teacher-learning climate). The confrontation can enhance meta-cognition (Flavell, 1985) with regard to teaching and learning to teach, and raise awareness about important factors on a personal and contextual level. It may also enhance a more context-sensitive understanding for those who want to change their own teaching approach.

Concerning the methodological approach of future studies, it seems important to select a variety of research methods. Research on teaching approaches often makes use of self-

report questionnaires to ascertain differences in teaching approaches. As is well known, measuring tools of this kind do not measure actual teaching behaviour. So data gathered in this respect are useful but limited to the dispositions which teachers have with regard to their teaching activities. Another limitation of self-report questionnaires is that only a limited number of items can be used to examine teaching approaches. It would be desirable in subsequent research to include the questioning of a variety of aspects of teaching strategies which might be crucial. It is, therefore, important in future research to make use of more qualitative data collection techniques, such as the use of open observation techniques in contexts and in-depth interviews.

## REFERENCES

- Baldwin, T.T., and Ford, K.J. 1988. Transfer of training: A review and directions for future research. *Personnel Psychology* 41: 63-105.
- Beijaard, D., Verloop, N., Wubbels, T., and Feiman-Nemser, S. 2000. The professional development of teachers. In *New learning*, ed. Robert-Jan Simons, Jos van der Linden and Tom Duffy, 261-274. Dordrecht/ Boston/ London: Kluwer Academic Publishers.
- Biggs, J. 1987. *Student approaches to learning and studying*. Hawthorn: Australian Council for Educational Research.
- Brouwer, N., and Korthagen, F. 2005. Can teacher education make a difference? *American Educational Research Journal* 42, no. 1: 153-224.
- Calderhead, J., and Robson, M. 1991. Images of teaching: student teachers' early conceptions of classroom practice. *Teaching and Teacher Education* 7, no. 1: 1-8.
- De Corte, E. 1990. Toward powerful learning environments for the acquisition of problem-solving skills. *European Journal of Psychology of Education* 5: 5-19.
- Donche, V., and Van Petegem, P. 2005. Assessing pre-service teachers' orientations to learning to teach and preferences for learning environments. *Scientia Pedagogica Experimentalis* 42, no. 1: 27-52.
- Donche, V., and Van Petegem, P. 2011. Teacher educators' conceptions of learning to teach and related teaching strategies. *Research papers in education* 26, no.2: 207-222.
- Donche, V., De Maeyer, S., Coertjens, L., Van Daal, T., and Van Petegem, P. 2013. Differential use of learning strategies in first year higher education: the impact of personality, academic motivation and teaching strategies. *British Journal of Educational Psychology* 83, no. 2: 238 – 251.
- Entwistle, N., McCune, V., and Hounsell, J. 2003. Investigating ways of enhancing university teaching-learning environments: measuring students' approaches to studying and perceptions of teaching. In *Powerful learning environments: unravelling basic components*

and dimensions, ed. Erik De Corte, Lieven Verschaffel, Noel Entwistle and Jeroen van Merriënboer, 89-107. Amsterdam/Boston/London: Pergamom.

Flavell, J.H.. 1985. *Cognitive development*. New York: Englewood Cliffs.

Fullan, M. 1993. *Change forces: probing the depths of educational reform*. London: Falmer Press.

Gibbs, G., and Coffey, M. 2004. The impact of training of university teachers on their teaching skills, their approach to teaching and the approach to learning of their students. *Active Learning in Higher Education* 5: 87-100.

Hargreaves, A. 1994. *Changing teachers, changing times: teachers' work and culture in a postmodern age*. London: Cassell.

Heimlich, J.E., and Norland, E. 1994. *Developing teaching style in adult education*. San Francisco, CA: Jossey-Bass Publishers.

Hollingsworth, S. 1989. Prior beliefs and cognitive change in learning to teach. *American Educational Research Journal* 26: 160-189.

Huibregtse, I., Korthagen, F., and Wubbels, T. 1994. Physics teachers' conceptions of learning, teaching and professional development. *International Journal of Science Education* 16, no. 5: 539-561.

Kagan, D. 1992. Professional growth among pre-service and beginning teachers. *Review of Educational Research* 62, no. 12: 137-167.

Kember, D. 1997. A re-conceptualisation of research into university academics' conceptions of teaching. *Learning and Instruction* 7, no. 3: 255-275.

Kember, D., and Gow, L. 1994. Orientations to teaching and their effect on the quality of student learning. *Journal of Higher Education* 65: 58-74.

Lang, J.W.B, & Kersting, M. (2007). Regular feedback from student ratings of instruction: do college teachers improve their ratings in the long run? *Instructional Science*, 35, 187-205.

Lacey, C., Saleh, A., and Gorman, R. 1998. *Teaching nine to five: A study of the teaching styles of male and female professors*. Paper presented at the Women in Educational Leadership Annual Conference, October 11-12, Lincoln, Nebraska.

Lindblom-Ylänne, S., Trigwell, K., Nevgi, A., and Ashwin, P. 2006. How approaches to teaching are affected by discipline and teaching context. *Studies in Higher Education* 31: 285-298.

Lueddeke, G.R. 2003. Professionalizing Teaching Practice in Higher Education: a study of disciplinary variation and 'teaching scholarship'. *Studies in Higher Education* 28: 213-228.

- Marton, F., Hounsell, D., and Entwistle, N. 1997. *The experience of learning. Implications for teaching and studying in higher education*. Edinburgh: Scottish Academic Press.
- Martin, E., Trigwell, K., Prosser, M., and Ramsden, P. 2003. Variation in the experience of leadership of teaching in higher education. *Studies in Higher Education* 28: 247-259.
- McKenzie, J. 1995. *Changing conceptions of university teaching*. Unpublished doctoral assessment paper, University of Technology, Sydney.
- Meirinck, J.A., Meijer, P.C., and Verloop, N. 2007. A closer look at teachers' individual learning in collaborative settings. *Teachers and Teaching: Theory and Practice* 13, no. 2: 145-164.
- Meirinck, J.A., Meijer, P.C., Verloop, N., and Bergen, T.C.M. 2009. Understanding teacher learning in secondary Education: the relations of teacher activities to changed beliefs about teaching and learning. *Teaching and Teacher education* 25, no. 1: 89-100.
- Murray, K., and McDonald, R. 1997. The disjunction between lecturers' conceptions of teaching and their claimed educational practice. *Higher Education*, 33: 331-349.
- Nevgi, A., Postareff, L., and Lindblom-Ylänne, S. 2004. *The effect of discipline on motivational and self-efficacy beliefs and on approaches to teaching of Finnish and English university teachers*. Paper presented at the EARLI SIG Higher Education Conference, June 18-21.
- Nichols, J., and Miller, R. 1994. Cooperative learning and student motivation. *Contemporary Educational Psychology* 19: 167-178.
- Pajares, M.F. 1992. Teachers' beliefs and educational research: cleaning up a messy product. *Review of Educational Research* 62: 307-332.
- Postareff, L., Lindblom-Ylänne, S., and Nevgi, A. 2007. The effect of pedagogical training on teaching in higher education. *Teaching and Teacher Education* 23: 557-571.
- Powell, R.R. 1992. The influence of prior experiences on pedagogical constructs of traditional and non-traditional pre-service teachers. *Teaching and Teacher Education* 8, no. 3: 225-238.
- Price, E.A., and Driscoll, M.P. 1997. An inquiry into the spontaneous transfer of problem-solving skill. *Contemporary Educational Psychology* 22: 472-494.
- Prosser, M., and Trigwell, K. 1997. Relations between perceptions of the teaching environment and approaches to teaching. *British Journal of Educational Psychology* 67: 25-35.
- Prosser, M., and Trigwell, K. 1999. *Understanding learning and teaching. The experience in Higher Education*. Buckingham: Open University Press.

- Prosser, M., Ramsden, P., Trigwell, K., and Martin, E. 2003. Dissonance in experience of teaching and its relation to the quality of student learning. *Studies in Higher Education* 2: 37-48.
- Ramsden, P. 1991. A performance indicator of teaching quality in higher education: the Course Experience Questionnaire. *Studies in Higher Education* 20: 67-89.
- Ramsden, P. 1998. *Learning to lead in higher education*. London: Routledge.
- Ramsden, P., Prosser, M., Trigwell, K., and Martin, E. 2007. University teachers' experiences of academic leadership and their approaches to teaching. *Learning and Instruction* 17: 140-155.
- Samuelowicz, K., and Bain, J. 2001. Revisiting academics' beliefs about teaching and learning. *Higher Education* 41: 299-325.
- Senge, P. 1990. *The fifth discipline: the art and practice of the learning organization*. New York: Doubleday.
- Showers, B., and Joyce, B. 1996. The evolution of peer coaching. *Educational Leadership* 53: 12-16.
- Singer, E. 1996. Espoused teaching paradigms of college faculty. *Research in Higher Education* 37: 659-679.
- Stofflett, R., and Stoddart, T. 1994. The ability to understand and use conceptual change pedagogy as a function of prior content learning experience. *Journal of Research in Science Teaching* 31, no. 1: 31-51.
- Thompson, D.E., Brooks, K., and Lizarraga, E. 2003. Perceived transfer of learning: From the distance education classroom to the workplace. *Assessment and Evaluation in Higher Education* 28: 539-547.
- Trigwell, K., and Prosser, M. 1996. Congruence between intention and strategy in science teachers' approach to teaching. *Higher Education* 32: 77-87.
- Trigwell, K., Prosser, M., Ramsden, P., and Martin, E. 1998. Improving student learning through a focus on the teaching context. In *Improving student learning*, ed. Graham Gibbs. Oxford: Oxford Centre for Staff Development.
- Trigwell, K., Prosser, M., and Waterhouse, F. 1999. Relations between teachers' approaches to teaching and students' approaches to learning. *Higher Education* 37: 57-70.
- Van Petegem, P., Donche, V., and Van Hoof, J. 2005. Relating pre-service teachers' approaches to learning and preferences for constructivist learning environments. *Learning Environments Research* 8, no. 3: 309-332.

Van Petegem, P., and Donche, V. 2008. Perceptions of factors influencing student-focused teaching approaches in higher education: outcomes of an action research. *Journal of All India Association for Educational Research* 2, no. 3/4: 27-35.

Wideen, M., Mayer-Smith, J., and Moon, B. 1998. A critical analysis of the research on learning to teach: making the case for an ecological perspective on inquiry. *Review of Educational Research* 68, no. 2: 130-178.

Wubbels, T. 1992. Taking account of student teachers' preconceptions. *Teaching and Teacher Education* 8, no. 2: 137-149.

### *Correspondence*

Ann Stes  
University of Antwerp  
Institute for Education and Information Sciences  
Venusstraat 35  
2000 Antwerp (Belgium)  
Phone: +32 3 265 43 53  
E-mail: [ann.stes@uantwerpen.be](mailto:ann.stes@uantwerpen.be)