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Conceptions of learning and teaching in teachers

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Summary

This thesis addresses teachers' conceptions of learning and teaching in the context of student-centred curricula in Medicine. Starting from the viewpoint of faculty development, the thesis presents different research studies, combining qualitative and quantitative methods, and focuses on the central research question, 'how do teachers' conceptions of learning and teaching explain teaching behaviour, in a student-centred curriculum?'

Chapter 1 starts with an overview of faculty development activities in medical education. It presents a categorization in individual or group activities, formal and informal activities and mentorship. Subsequently, it elaborates on the impact of the transfer of faculty development activities to teachers' daily practice. Furthermore, current insights into transfer are presented, based on a review in higher education and management studies. To optimize the transfer of faculty development, not only the design of the intervention is important, but so are learner characteristics and work environment. The learner characteristics encompass teachers' conceptions of learning and teaching. Next, this chapter provides an overview of the literature on conceptions of learning and teaching and related terms, such as beliefs, intentions, perspectives, teaching strategies and approaches. An important characteristic of conceptions of learning and teaching is their dynamic nature, which implies that teachers' conceptions can be changed. Therefore, it might seem reasonable that faculty development activities aimed at changing teaching behaviour also attempt to influence teachers' conceptions of learning and teaching. Since teachers' conceptions are partly unconscious, it is important to measure them in a reliable and valid way. An overview of available instruments for measuring conceptions and related terms is also presented in this chapter. Our research studies focused on student-centred curricula in Medicine, which are gaining ground worldwide. The characteristics of these curricula are presented and compared with more traditional lecture-based curricula. Next, the implications for faculty development are discussed.

The central research question of this thesis is 'How do teachers' conceptions of learning and teaching explain teaching behaviour, in a student-centred curriculum?'. This central question was subdivided into three specific research questions. Firstly, can teachers' conceptions of learning and teaching be measured? Secondly, which patterns of conceptions can be determined? And finally, what factors influence conceptions of learning and teaching,

and what are the mechanisms? All three specific research questions were explored by investigating the conceptions of teachers in two Dutch medical schools, VU University Medical Centre, Amsterdam, and Maastricht University Medical Centre, Maastricht. These medical schools have different traditions in student-centred education; in Amsterdam, a student-centred curriculum was implemented in 2005, replacing a traditional lecture based curriculum, whereas the school in Maastricht has offered PBL (problem-based learning) since its foundation in 1974.

Chapter 2 describes a study that combined qualitative and quantitative methods to develop an instrument for measuring teachers' conceptions of learning and teaching in student-centred medical curricula. The development process consisted of several steps: a meeting with experts, individual interviews and a Delphi procedure (Part I). Next, a digital questionnaire was sent electronically to a large sample of teachers of VU University Medical Centre, Amsterdam, and Maastricht University Medical Centre, Maastricht (Part II; N= 646). The initial questionnaire was completed by 324 teachers (50.2%). Subsequently, the data were analysed using a confirmatory factor analysis and a reliability analysis. This resulted in the so-called Conceptions of Learning and Teaching (COLT) questionnaire, an instrument with eighteen items that reflect three underlying scales: 'teacher centredness', 'appreciation of active learning', and 'orientation to professional practice'. The scales 'appreciation of active learning' and 'orientation to professional practice' are new and presumably particularly appropriate for student-centred medical education. Significant differences in COLT scores were found between the two medical schools. Teachers in Maastricht had fewer 'teacher-centred' conceptions, more 'appreciation of active learning' and more 'orientation to professional practice' than teachers in Amsterdam. The internal and external validity of the COLT were supported by both the Delphi procedure and the confirmative factor analysis, and by the instrument's ability to demonstrate differences in teachers' conceptions of learning and teaching in two medical schools with different traditions in student-centred education. As Cronbach's alphas were acceptable for the three scales (0,73 for the scale teacher-centredness, 0,57 for the scale 'appreciation of active learning' and 0,63 for the scale 'orientation to professional practice') we inferred that the COLT produced reliable scores.

Answering the first specific research question, 'can teachers' conceptions of learning and teaching be measured?', it is concluded that the COLT-questionnaire enabled us to measure teachers' conceptions of learning and teaching in a student-centred context.

Chapter 3 reports a quantitative study with a variable-centred approach to answer the second specific research question, ‘which patterns of conceptions can be determined?’ In contrast, chapter 4 presents a person-centred approach to answer the same question. Using a multiple regression analysis, the aim of chapter 3 was to explore which factors predict teachers’ conceptions in student-centred curricula. This study was also conducted in VU University Medical Centre, Amsterdam, and Maastricht University Medical Centre, Maastricht. The literature on this subject yielded several occupational and person variables regarding teachers which might possibly predict teachers’ conceptions of learning and teaching: teaching context, discipline, gender, teaching experience and age. Several multiple regression models were applied to explore if and how these variables predicted the three scales of the COLT questionnaire, ‘teacher-centredness’, ‘appreciation of active learning’ and ‘orientation to professional practice’. The institutional factor was the main predictor for variance in all three scales, and discipline, gender, and teaching experience significantly explained variance in two of the scales. ‘Educational role’ and ‘educational task/lectures only’ contributed to the scale ‘teacher-centredness’. The variable ‘hours spent on educational tasks’ contributed to the scale ‘appreciation of active learning’. The other variables mentioned before were not found to be predictive in our study. More than 80% of the variance could not be explained by the variables mentioned before. Perhaps this indicates that the present study should also have included other variables, such as work engagement, motivation, or agency. A logical explanation for the effect of the factor institute might be the fact that teachers in Maastricht have longer experience in student-centred education than teachers in VUmc Amsterdam; however, other institutional factors, such as differences in curricula, different leadership styles, or different educational climates, might also offer a plausible explanation. This chapter offered suggestions for further exploration in qualitative research.

Chapter 4 presents a quantitative study which uses a person-centred approach to explore if teacher profiles could be assessed based on teachers’ conceptions. These teacher profiles might have implications for individual teachers, for faculty development activities and for institutes. Furthermore, the question if and how the teacher profiles were associated with other teacher characteristics was assessed using a K-means cluster analysis. This technique is used in the social sciences to identify groups of individuals who resemble each other more than other individuals. This approach resulted in five teacher profiles based on the teachers’ conceptions, as measured by the COLT. The five teacher profiles were named Transmitters

(most traditional), Organizers, Intermediates, Facilitators and Conceptual Change Agents (most modern). These teacher profiles differed from each other in personal and occupational characteristics, which was tested by calculating chi squares. Teachers with the profile 'Transmitters' had a preference for teacher-centred education and a low appreciation of active learning, while 'Facilitators' and 'Conceptual Change Agents' preferred student-centred education formats. Teachers clustered in the profile 'Intermediates' demonstrated conceptions that fit in with both teacher-centred education and student-centred education. Future research is needed to confirm if and how teachers' conceptions develop from 'Transmitters' towards 'Conceptual Change Agents'. In line with the previous studies, a significant difference was found between the two medical schools in the distribution of teacher profiles. The medical school with the longest tradition in student-centred education had significantly more teachers with the Conceptual Change Agent profile than the other medical school. The five teacher profiles identified in this chapter can be used for giving feedback to individual teachers as well as in faculty development and in an organization-wide overview. The chapter also provides suggestions for further qualitative research, which was subsequently carried out and is described in chapter 5.

Chapter 5 presents the results of a qualitative study that aims to answer the third specific research question, 'what factors influence conceptions of learning and teaching, and what are the mechanisms?' More specifically, this study aimed to investigate which institutional, departmental and personal characteristics were associated with differences in teachers' conceptions of learning and teaching. Building on insights derived from the previous studies, structured individual interviews were conducted with 13 teachers representing different teacher profiles. The interviews were analysed by means of a template analysis. They revealed large personal differences between teachers, but also some common themes at the micro level (individual teachers), the meso level (department and educational context) and the macro level (medical school). This resulted in a preliminary model representing personal and contextual characteristics that affect teachers' conceptions, intentions and teaching behaviour. Important personal characteristics were agency, experience with PBL, personal development, motivation and work engagement, as well as high content expertise combined with late PBL experience. The contextual factors can be subdivided into department, educational context, medical school and curriculum. Departmental factors appeared to be most important, notably the leadership style of department chairs. Presumably, the departmental characteristics vary largely within one institute. Other characteristics were

affordances and support provided by the departments, as well as the leadership style of course coordinators, support and relatedness, and students' characteristics (educational context). Regarding medical school and curriculum, tradition and/or curriculum change were mentioned, as well as the leadership style of the dean or programme director, support from the educational department, and management and finances. The preliminary model developed in this chapter provides insight into the development of conceptions of learning and teaching, as well as insights into future implications for faculty development and research.

Chapter 6 combines the results of the research projects of this thesis and provides overall conclusions on the research questions. One of the conclusions is that the COLT questionnaire enables us to measure teachers' conceptions of learning and teaching in a student-centred context. Further, with respect to patterns in teachers' conceptions, a multiple regression analysis demonstrated that 'medical school' was the most important predictor for all three COLT scales, but 80 percent of the variance could not be explained by the variables included. Another pattern found were the five teacher profiles. These were named Transmitters (most traditional), Organizers, Intermediates, Facilitators and Conceptual Change Agents (most modern). Subsequently, teachers' conceptions of learning and teaching were explored more in-depth by means of individual interviews. These interviews revealed large personal differences between teachers with respect to personal factors and teaching context, which were related to their conceptions of learning and teaching. Another central theme was the pivotal role of department chairs. The outcomes of the interviews were translated into a preliminary model that describes the factors influencing teachers' conceptions of learning and teaching, their intentions and their teaching behaviour. Next, the strengths and limitations of the studies were discussed. Based on the research studies, practical implications were presented for individual teachers, faculty development, medical schools and departments, as well as recommendations for further research.