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Teachers' beliefs have a significant role in classroom activities of teachers and students' achievement. For example, constructivist beliefs have a positive effect on students' achievement in mathematics (Dubberke et al., 2011; Staub & Stern, 2002). Recent research primarily analyses transmission and construction beliefs (e.g. Kunter et al., 2011; OECD, 2009), while other beliefs remain neglected. Therefore, the presented studies additionally consider participation and nurturing. The main research question was, whether these beliefs could be identified in teachers' views on learning and teaching and whether they could be measured reliable and valid by means of a quantitative questionnaire. Further, the relation of teachers' beliefs at different stages of teachers' career and the relation between epistemological beliefs and beliefs about learning and teaching represented the research desiderata. To answer the research questions, an interview study ( $N = 50$ ) and two questionnaire studies ( $N = 276$ ;  $N = 190$ ) were carried out. The reliability and construct validity of the questionnaire were analyzed in the first questionnaire study and were assessed satisfactorily. An exploratory factor analysis confirmed the 4-factor-structure of the questionnaire with the factors transmission, construction, participation and nurturing. These beliefs were already identified in the interviews. Although student teachers at the beginning of their studies and experienced teachers were similar in their preference for transmission and nurturing, there were specific belief patterns depending on the stage of the teachers' career (the beginning, the middle, and the end of the studies, beginning and experienced teachers). These belief patterns were identified in both questionnaire studies. The results indicated the prevalence of transmission and nurturing beliefs at the beginning of the studies, whereby these beliefs lost their prevalence during the studies. Contrary, the construction and participation beliefs were not very significant at the beginning of the studies and appeared more important in the middle and at the end of the studies. In comparison to bachelor student teachers (study 2), who scored highly at the transmission belief, master student teachers (study 2) showed their preference for participation belief and the student teachers at the end of their studies (study 3) showed their preference for construction belief. Moreover, the regression analysis demonstrated higher values in participation and construction beliefs with rising semesters. However, experienced teachers of the interview study seemed to return to a preference for transmission and nurturing beliefs and understand teaching in terms of construction and participation to a lesser extent. The results of the third study are in line with the current research and show associations between transmission and naïve epistemological beliefs as well as associations between construction and sophisticated epistemological beliefs. Contrary, the participation and nurturing beliefs seemed to be uncorrelated with

epistemological beliefs. These beliefs focused on students, rather than on learning contents and learning processes. Therefore they seemed to be distinct from the epistemological beliefs. In summary, the present studies analyzed four beliefs rather than the two beliefs transmission and construction. Also, participation and nurturing beliefs were analyzed by means of qualitative and quantitative methods. In all three studies, different belief patterns were found to be dependent on the stage of teachers' career. The main outcome of the present work is the development of a questionnaire to measure the four teachers' beliefs about learning and teaching – transmission, construction, participation and nurturing. This questionnaire could be used in teaching and teachers' professional training.