

„Influence of the Practical Phase on the Structuring of Physics Lessons“

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Teacher students often demand more practice during their university education (Makrinus 2013). Lately, the educational policy attributes more importance to the practical phases in the university teacher education than in the past decades. For example, in 2014, a full practical semester has been established for ongoing middle school teachers in Lower Saxony. However, solely more practice is not enough; important is a useful connection between the practical and theoretical parts, especially because of the often mentioned disconnect between the academic and school-based components of university education (Zeichner 2010). The necessary research on learning processes of teacher students while planning, executing and reflecting physics lessons in practical semesters does hardly exist (cf. Hascher 2006). Consequently the purpose of this study is to deliver new insights into the application of students' theoretical content knowledge and pedagogical content knowledge to the planning of and reflecting on physics lessons. Furthermore, the study tries to examine in what way students assess and use their theoretical knowledge and if there is a change in their attitudes and focal points.

Therefore, sixteen teacher students were accompanied in their six week long practical training, including the time periods before and after this phase. This sample provides conditions that allow ascertaining a differentiated general impression. Also, a comparison between the individual students is possible because of their same educational background. The six week long practical training is adapted for the mentioned aims too, because the students are obligated to teach a whole lesson unit on their own. Before and after the practical training, the students constructed concept maps with the topic "physics lessons with experimental phases". The introducing question was: "What aspects are important for you, when you plan and execute physics lessons that include experimental phases?" And after gathering key words for the concept map, this question follows: "What aims do you want to achieve with your physics lesson?" After gathering key words to this question, the students arranged the key words and connected them with each other. A focused interview followed: The students were asked how they used their knowledge while planning physics lessons, which attitudes and motivations they followed and how the practical experience influenced their view on the practical application of theoretical knowledge. Six of the sixteen students were chosen by the maximum contrast with the focus on their focal points in planning physics lessons. These six students were accompanied intensively during their practical training. Based on the used planning material, these students had to explain their planning decisions and their perspectives on the connection between certain elements of knowledge.

The data acquisition and the preparation of the transcripts are completed; analyses of the data are in progress. Planning materials and the concept maps served primarily to start the communication with the teacher students about their educational structuring of school lessons. Main focus of the analyses is on the interviews. The data will be evaluated using qualitative interpretative methods. Established criteria define categories which help to analyse the empirical data applying different searching directions. One is the meaning of the pupils' conceptions for the teacher students' learning processes. So far, the analyses show that in some way the teacher students were stabilised during their practical work, but also had to face uncertainties in their conceptions and their knowledge.

References

- Hascher, T. (2006). Veränderungen im Praktikum: Veränderungen durch das Praktikum. Eine empirische Untersuchung zur Wirkung von schulpraktischen Studien in der Lehrerbildung. *Zeitschrift für Pädagogik, Beiheft 51* 130-148.
- Makrinus, L. (2013). *Der Wunsch nach mehr Praxis: Zur Bedeutung von Praxisphasen im Studium*. Wiesbaden: Springer VS.
- Zeichner, K. (2010). Rethinking the Connections Between Campus Courses and Field Experiences in College- and University-Based Teacher Education. *Journal of Teacher Education* 61 (1-2) 89-99.