

„Consequences from the Learning Level of Students for the Lesson Planning in Mathematics“ by Matthias Heinrich

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A learning supporting education requires the adjustment of lessons and the level of requirements of questions and exercises to the students' learning conditions (Helmke, 2014). Such an adjusting education needs a precise diagnosis of these conditions, so that the promotion is suitable for every individual (Hesse & Latzko, 2011). The importance of diagnostic competences on the part of the teaching staff has also been empirically proven (cf. Karing et al., 2011). Effective as well as lasting teaching and learning processes may be initiated by tying in with individual learning levels (Hußmann & Selter, 2013). Politics and society demand, that prospective teachers should already be capable of diagnosing learning levels and using particular promotion measures at the end of their education (cf. KMK, 2004).

This scientific contribution addresses the following research question: What conclusions do student teachers draw from their students' current learning level for their own lessons and why? Two further questions are also relevant in the course of this research project: To what extent are student teachers able to a) design a diagnostic instrument in order to determine the learning level of their students and b) identify the necessary subject-orientated learning conditions of their lesson?

In the context of an empirical-qualitative study, 15 mathematics student teachers planned a mathematics lesson during their practical phase. Afterwards they designed a diagnostic instrument to determine the learning level of their students in school. After that the student teachers revised their planned lesson, if they thought this to be necessary, and then realized the (adjusted) lesson. In addition, an open, partially standardized, guided interview was conducted, in which the student teachers' thoughts and decisions were put into focus. Overall the following documents may be analysed: the first teaching plan, the diagnostic instrument including the students' responses, the modified teaching plan and the interview transcripts.

To date two methods were used to approach the data: Firstly, a case-by-case analysis of two subjects was started. Here, the necessary subject-orientated learning conditions of the lessons, as identified by the student teachers, were compared with expert assessments. Furthermore was analysed, whether the designed diagnostic instruments fulfilled four criteria for having diagnostic potential. When compared to the two expert assessments, both student teachers are generally capable of identifying the necessary subject-orientated learning conditions of their lessons. Both subjects are able to design a mostly valid diagnostic instrument, but only one has diagnostic potential. The first student teacher decides to add comprehensive revisions to his lesson, while the second makes no modifications at all. Secondly, an overview of all adjustments by the student teachers was drawn up. The most frequent modifications are: adding and/or removing a math problem or exercise as well as adding content concerning a past topic. Less frequent adjustments are adding aid material, such as illustrations or solutions cards, and removing technical content concerning the current topic. The question, why the student teachers' draw these conclusions, will be attended to next.

References

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