

Educating towards expertise – self-regulated learning methods in geology

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In the future working life, in addition to substantial knowledge in geology, students are required to have extensive skills in project management, information management, co-operation, software-and hardware, oral and written communications and presentation. Moreover, they need metacognitive skills in order to understand the construction of the knowledge during their studies.

To achieve these objectives, education towards expertise, and self-regulated learning methods have been implemented. Here we describe three MSc-level courses; representing problem based learning, project based learning, and portfolio based learning. Problem-based learning course “Aeolian sediments” composed of four sessions of contact teaching and self-regulated weeks between the sessions. In project-based environmental geological course the research topic and limits of the laboratory analyses was introduced by teachers. The students made a research plan, schedule, budget, field work and laboratory analyses as well as wrote the report. Portfolio-based course “Management of groundwater resources” composed of weekly introduction lectures and a written portfolio including supervised assignments, personal evaluations of learning experiences and a supervised summary of the course. According to feedback these activating teaching methods increased study motivation and supported the students towards deep-oriented learning. The students had managed to take responsibility of their learning process and experienced profound development in their studies.