

Factors explaining learning of generic skills in university: A study of students' experiences

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Abstract: Generic skills are greatly valued in current discussions in both education and working life. However, little is known about how students learn generic skills or how to best develop those skills. This study examines what kinds of pedagogical practices are behind the learning of certain generic skills. The data were collected with a questionnaire administered to university students (n=123). The results from regression analyses showed that often pedagogical practices involving collaboration explain learning of these skills. The individual forms of learning and teaching (i.e., lecturing, working alone and reading) loaded even negativity in the regression models. The study also showed that the positive atmosphere of learning situations, acting in the interface between theory and practice, and the practising different forms of assessment explain the learning of generic skills. In sum, this study offers important and detailed information about the pedagogical practices that nurture generic skills learning in university contexts.

Keywords: generic skills, learning, teaching, university pedagogy, university students

Theoretical framework

Generic skills (also referred to as 'generic attributes', 'key skills' and 'core competencies', for example) are highly valued in current debates in society, education and working life. For example, at the beginning of the millennium, an OECD project entitled 'Definition and Selection of Key Competencies' defined which key competencies all citizens need for successful lives and well-functioning society (Rychen & Salganik, 2003). Generic skills have also been emphasised in the national and international assessments and comparisons of education systems. For instance, the OECD recently conducted its Assessment of Higher Education Learning Outcomes – Feasibility Study (AHELO – FS) among higher education students in which the purpose was to examine whether it is possible to compare the knowledge and skills of higher education students in different countries (Coates & Richardson, 2011; Tremblay, Lacencette & Roseveare, 2012). The idea of generic skills has also been used to describe what kind of skills education systems should impart to their students. For example, the European Qualifications Framework (EQF) enables a comparison of learners' knowledge, skills and competencies regardless of where they earned their qualifications. In addition, numerous business leaders, politicians and educators from around the world have recently developed frameworks outlining the twenty-first century skills that children and students need in their lives and work, both today and in the future (Ananiadou & Claro, 2009; ATC21S; P21; Gordon et al., 2009).

There are explicit signs that the role of generic skills will be emphasised in the future (e.g., Forbes, 2013; Future work skills 2020; New skills for new jobs, 2010). Recent findings from different fields have shown that the most important skills that the workers need to complete their work duties are related to generic skills, such as social skills, organising skill, skills for knowledge acquisition and problem-solving skills (e.g., Kilpeläinen & Lautanen, 2014; Virtanen, Tynjälä & Collin, 2009).

Although generic skills have received wide attention from both policy-makers and educationalists, little is known, however, about how students learn generic skills or how to best develop those skills. Generally speaking, in the university setting, generic skills have been taught, for example, in separate courses (e.g., courses in speech communication, scientific writing or presentation skills), as integrated with other subjects (e.g., an information retrieval course as a part of a research seminar) or they have been seen to develop as by-products of subject studies. According to the findings of several studies, the teaching practices and methods that demand active interaction and collaboration, and which utilise the features of constructivist learning environments, seem to foster the learning of generic skills (e.g., Ballantine & McCourt Larres, 2007; Kember, 2009; Kember & Leung, 2005; Kember, Leung, & Ma, 2007; Smith & Bath, 2006). Yet, elaborate information is still missing; i.e., what kinds of teaching practices and methods foster the learning of specific generic skills, such as problem solving skills, critical thinking or creativity. Therefore, the aim of this study is to examine what kinds of pedagogical practices are behind the learning of certain generic skills.

Methods

Research materials were collected from students (N=163) of three university courses in three different subjects: chemistry, physical education and teacher education. In total, 123 students (75%) answered the questionnaire. In the questionnaire the students were asked to assess pedagogical practices of the course they attended and their development of different generic skills during the course. A confirmatory regression analysis (stepwise model) was used in examining what kind of pedagogical practices explain the learning of certain generic skills among university students.

The selected generic skills, i.e. the dependent variables of the regression models were: resourcefulness, innovativeness and creativity; the ability to operate in new situations; critical thinking skills; problem solving skills; decision making skills; self-assessment skills; interaction skills and collaboration skills. These skills were drawn from the frameworks of twenty-first century skills (Binkley et al., 2012; also Ananiadou & Claro, 2009; ATC21S; P21; Gordon et al., 2009). These eight skills have also been central in debates about generic skills (e.g., Ang, D'Alessandro & Winzar, 2014; Barrie, 2006; Clanchy & Ballard, 1995; Jones, 2009; Krause, 2014).

Independent variables of the regression models, i.e. pedagogical practices consisted of the following components: 1) different forms of teaching and learning, such as lecturing, working together and reading (e.g., Lueddeke, 2003; Neumann, Parry & Becher, 2002; Smeby, 1996; Ylijoki, 2000); 2) the features of constructivist learning environments (e.g., Duffy, Lowyck & Johassen, 1993; Loyens & Gijbels, 2008; Tynjälä, 1999; Tynjälä & Gijbels, 2012; Tynjälä, Pirhonen, Vartiainen & Helle, 2009; von Glasersfeld 1995) and the model of integrative pedagogy, which has been seen as a promising starting point for the development of expertise (e.g., Tynjälä, 2008; 2009); 3) the atmosphere of the courses, particularly because the positive atmosphere of the learning situation has been seen to support the learning of creativity (e.g., Binkley et al., 2012; Eteläpelto & Lahti, 2008; Hämäläinen & Vähäsantanen, 2011); and 4) the assessment, because assessment has been recognized as significant for guiding students' learning (e.g., Biggs & Tang, 2007; Struyven, Dochy & Janssens, 2005).

Findings and conclusion

According to our preliminary results, the regression models explained 18–58% of the variation in the learning of different generic skills among university students. Those degrees of explanation are rather high for educational research. The pedagogical features and practices of this study best explained the learning of social skills among university students; the degree of explanation in collaboration skills was 58%, and for interaction skills it was 57%. Rather high degrees of the explanations were also seen in problem-solving skills (49%) and students' ability to operate in new situations (42%). Pedagogical practices involving collaboration were often the strongest explanatory factors of learning of these skills. Interestingly, the individual actions of students (i.e., reading and working alone) and lecturing, a very traditional form of university teaching, loaded even negatively to the regression models.

The results of this study are in line with earlier findings (e.g., Ballantine & McCourt Larres, 2007; Kember, 2009; Kember & Leung, 2005; Kember, Leung, & Ma, 2007; Smith & Bath, 2006). At the same time, this study brings fresh knowledge about the learning of generic skills. For example, the practising different forms of assessment were not only important for the learning of self-assessment skills, but also for the learning of decision making skills and problem solving skills. In addition, the positive atmosphere of learning explained the learning of skills concerning creativity (see also Binkley et al., 2012; Eteläpelto & Lahti, 2008; Hämäläinen & Vähäsantanen, 2011). Similarly, acting in the interface between theory and practice was crucial for the learning of problem solving skills (see Tynjälä, 2008; Tynjälä, Häkkinen & Hämäläinen, 2014). In sum, this study will offer remarkable information about the pedagogical features and practices that support and foster generic skills learning in university contexts.