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The development and alignment of pedagogical conceptions of health education

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HIGHLIGHTS

- Conceptions did not develop in a more complex direction during teacher training.
- After the gaining of work experience a positive conceptual change could be detected.
- Students had a fairly coherent picture of health education.
- Students' prevailing conceptions should be addressed better during teacher training.
- More complex conceptions were expressed in interviews than in essays.

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ABSTRACT

This study examined the development and alignment of conceptions of health education as a subject, and of its teaching and learning, among Finnish health education student teachers (n = 20). Longitudinal phenomenographic data (essays, interviews) were collected at two time points during health education studies, and at one time point after the participants had gained 1–3 years of work experience. The proportion of participants expressing the most sophisticated pedagogical conceptions decreased during teacher training, but increased after the gaining of work experience. Moreover, fewer than half of the participants expressed pedagogical conceptions that advanced in broad alignment with regard to the subject, the teaching, and the learning. Some methodological considerations and suggestions for teacher training are presented.

1. Introduction

Over three decades, there has been a good deal of scholarly interest in conceptions of *teaching*, *learning*, and *subject matter* – here referred to as *pedagogical conceptions*. Researchers, often working within a phenomenographic research tradition, have aimed at describing students' and teachers' qualitatively differing pedagogical conceptions. They have argued that such research is important because of the supposed association between the teacher's conceptions and his/her teaching practices (e.g. Marton & Booth, 1997). Some studies do indeed appear to indicate an association between conceptions and practices (Kember, Kwan, & Ladesma, 2001; Lam & Kember, 2006; Trigwell & Prosser, 1996), however, the results are conflicting (Laksov, Nikkola, & Lonka, 2008; Markley, Miller, Kneeshaw, & Herbert, 2009; Meyer, Tabachnick, Hewson, Lemberger, & Park, 1999), and there appears to be no clear link indicating a direction of causality (cf. Kember & Kwan, 2000).

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The importance of studying students' and student teachers' conceptions has also been stressed in research on conceptual change (e.g. Limón & Mason, 2002; Vosniadou, 2008). The learning of scientific knowledge can be inhibited by the learners' prior knowledge, their ways of seeing the world, or simply by misconceptions. This being so, a useful approach in guiding learning processes has proven to be the explication of existing conceptions, and challenges to these conceptions via scientific explanations (e.g. Mikkilä-Erdmann, 2002; Murphy & Alexander, 2008). Within phenomenographic research, similar pedagogical notions have been put forward, highlighting the importance of detecting the variation in students' conceptions, and homing in on the critical aspects in that variation (Marton & Pang, 2008).

At the same time, discussion has taken place concerning how the conceptions change or develop, and the extent to which the conceptions of teaching, learning, and the subject matter run parallel with each other. Assessments of such changes are crucial if the aim is to develop students' and teachers' thinking (van Rossum & Hamer 2010), and the only truly effective way of studying changes in conceptions is via a longitudinal approach (Entwistle & Walker, 2000). Moreover, if the teacher's conceptions are intertwined with his/her actual teaching practices and eventually with students' approaches to learning (Trigwell, Prosser, & Waterhouse, 1999), it can be expected that a sophisticated and coherent view of pedagogical conceptions will have a strong potential for bringing about purposeful learning among students. This implies that there is also a need to study the *alignment* of the conceptions – the extent to which they advance in parallel in terms of the three domains already referred to, namely the *subject*, the *learning* of the subject, and the *teaching* of the subject.

Despite the acknowledged need for longitudinal studies, research targeting developmental trends in pedagogical conceptions has been scarce, especially with regard to student teachers, and more specifically, health education student teachers. The present paper reports a study aimed at addressing this lack.

1.1. Phenomenographic studies on the development and alignment of pedagogical conceptions

The phenomenographic research tradition aims at "mapping the qualitatively different ways in which people experience, conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them" (Marton, 1986, p. 31). It is assumed that there are only a limited number of ways of experiencing something, and that these ways are logically related to each other. The result of a phenomenographic study is called an "outcome space" (Marton, 1994) or a "collection of categories" (Collier-Reed & Ingerman, 2013). It is the entity within which qualitatively different kinds of conceptions (or more precisely the categories corresponding to particular conceptions) are organized in a logical and hierarchical manner. The hierarchical nature of the outcome space means that the conceptions lower in a hierarchy represent less complex, advanced, powerful, or sophisticated ways of experiencing something, whereas the conceptions higher in a hierarchy represent more complex, advanced, powerful, or sophisticated ways of experiencing the same thing (Marton & Booth, 1997, p. 107). In a phenomenographic study it is important to identify not only the different conceptions or categories but also the aspects which critically differentiate the categories from each other and hence reveal the quality differences between them. Thus, the differences between the less and more complex conceptions are expressed and described in terms of these critical aspects. From an educational point of view, they also reveal what is needed to gain a more complex way of understanding (Marton & Booth, 1997, p. 111; Runesson, 2006).

For Marton and Booth (1997), the changes in the critical aspects are what they take to be "the most important kind of learning" (p. 111). Hence, learning and development are considered to be the widening of a person's ways of experiencing or understanding the object of learning. The focus is more on *how* students know, rather than on *what* they know (van Rossum & Hamer, 2010, p. 573), and more importantly, on measuring a change in understanding rather than measuring mere performance (Micari, Light, Calkins, & Streitwieser, 2007). Thus, the conceptual change in phenomenography is not understood as a *replacement* of one conception by another, but as the *expansion* of one's understanding (cf. Åkerlind, 2008). In fact, Åkerlind (2008) prefers not to speak about the conceptual *change* approach in phenomenography, but rather about the conceptual *expansion* approach. Marton and Pang (2008) do not make such a distinction between change and expansion. Nevertheless, they agree that in phenomenography, conceptual change is not really about a change in what a person *has* (e.g. mental representations), or about what can be replaced, changed, or added to, but rather about a change in the world experienced by the person: a person becomes able to see the same thing in a way that is qualitatively more advanced, powerful, or complex. Thus, within phenomenography the basic assumption regarding "what changes in conceptual change" differs from the assumption made by many other researchers on conceptual change (Marton & Pang, 2008, p. 542). In line with this, Ojaniemi (2013) argues that "[p]henomenography's ontological [non-dualistic] stand and the consequent rejection of the separate cognitive world of conceptions as mental representations exclude cognitive structures from being of interest for phenomenographic research" (p. 68). From this point of view, as indicated above, (positive) conceptual change is not a change towards a "correct" way of seeing (cf. Chi, 2008); rather it involves a move in a more complex or sophisticated direction.

Studying changes in conceptions calls for a longitudinal research design. However, phenomenographic research on the conceptions of the subject taught, the teaching, and the learning has usually been cross-sectional in nature, having the aim of identifying participants' conceptions at one particular point in time (e.g. González, 2011; Lam & Kember, 2006; Tsai & Kuo, 2008). One of the few longitudinal studies on student teachers' pedagogical conceptions is that of Wood (2000), who sought to identify and describe student teachers' conceptions of teaching, and to examine the development of these conceptions over a one-year initial teacher training program. The phenomenographic analysis produced three hierarchically ordered categories, varying from a less complex understanding of the teaching to a more complex understanding. It was found that as the students progressed in their studies their conceptions developed in a more complex direction (Wood, 2000; see also So & Watkins, 2005). In addition, longitudinal studies on students' conceptions of their own learning (Boulton-Lewis, Marton, Lewis, & Wilss, 2004; Boulton-Lewis, Smith, McCrindle, Burnett, & Campbell, 2001; Marton, Dall'Alba, & Beaty, 1993; van Rossum & Hamer, 2010) and academics' conceptions of teaching and learning (Ginns, Kitay, & Prosser, 2008) have reported positive findings, indicating that such conceptions may indeed be capable of change. These findings support the view that in educating student teachers the focus of the education should be on developing conceptions in a more advanced direction. Such a view is further supported by indications of an association between teachers' conceptions and their teaching practices (Trigwell & Prosser, 1996; Trigwell et al., 1999).

Studies on the alignment of pedagogical conceptions have focused mainly on teaching and learning conceptions. According to the findings so far, it seems that conceptions of teaching and learning tend to be aligned with each other, though total consistency has not been found (Boulton-Lewis, Wilss, & Lewis, 2001;