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Communities of practice supporting doctoral studies

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ABSTRACT

The learning environment for doctoral studies has been seen to be an important factor affecting the quality of doctoral education. Previous studies claim that students should have an opportunity to engage themselves with practising researchers and a community of peers, experts, and others. However, earlier research demonstrates disciplinary differences among learning environments and the students' opportunities to engage with the scientific community. This paper draws on the experiences of three small groups of doctoral students in order to illuminate the importance of communities of practice in doctoral education in terms of students' perceived experiences of doctoral study. The study is set in the context of industrial engineering and management. A qualitative methodology was used to explore students' experiences of participating in small groups and ways in which this participation has contributed to their doctoral studies. An inductive protocol was used to analyse the data gathered through thematic interviews ($N = 10$). The findings of this study suggest that communities of practice can have a positive effect on doctoral students' doctoral experience, and therefore support their doctoral studies. The results suggest that some students need help from faculties and departments in order to develop peer connections.

1. Introduction

Recently, doctoral education has gained much attention all over the world. Among others, the issue of completion rates has gained increasing attention (McAlpine & Norton, 2006; Walker et al. 2008), and there have been many studies aimed at finding ways to strengthen the quality of doctoral education with regard to the effect on poor completion rates (Gardner, 2009; Golde, 2005; Walker et al., 2008). One important factor affecting the quality of doctoral education (Golde, 2005) and doctoral students' research processes and learning experiences (Chiang, 2003) has been seen in the learning environment of doctoral studies. Scholarly communities, defined here as the multiple relationships that result from the pursuit of shared scholarly interests and endeavours, provide the particular context of the learning environment for doctoral studies to take place within certain social practices. Therefore, the learning environments vary greatly from discipline to discipline (Becher, 2001).

The varying experiences of doctoral students have been seen to depend on disciplinary differences (Chiang, 2003; Pyhältö, Stubb, & Lonka, 2009). Studies show that science scholars usually work in collaboration with others, whereas scholars in the humanities or education will typically work in an individual manner, in greater isolation (Chiang, 2003; Gardner, 2009; Golde, 2005). In this study the focus is on industrial engineering and management, which deals with the development, improvement, implementation, and evaluation of integrated systems of people, money, knowledge, information, equipment, energy,

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material, and processes (Salvendy, 1992). Given its direction, the structure of doctoral education in industrial engineering and management mainly reflects the traditions of disciplines in the humanities; in other words, social sciences and management.

Previous studies claim that students should have an opportunity to engage with practising researchers and a community of peers, experts, and others (Pearson & Brew, 2002) provided by communities of practice (Austin, 2009). Unlike the natural and health sciences, the humanities and social sciences take a more individual approach to research, and therefore cannot provide such a community of practice with which to explore experiences as does the team-based research approach (McAlpine & Norton, 2006). If so, then what can be done in order to support students within disciplinary contexts that usually employ an individual approach, so that the students will have the same kinds of opportunities to engage with different kinds of communities as those that exist for students that are part of a team-based research approach? What can departments and faculties do for their students?

This paper draws on the experiences of three small groups of doctoral students in order to illuminate the importance of communities of practice in doctoral education in terms of students' perceived experiences of doctoral study in the context of industrial engineering and management. In this paper the aim is to address two main issues. The first aim is to explore students' experiences of participating in small groups and ways in which this participation has contributed to their doctoral studies. The second aim is to investigate the formation of these groups, as representing communities of practice.

2. Literature review

Previous research argues that doctoral students need opportunities to gain a sense of belonging to scholarly communities during their doctoral training (Conrad, 2007; Pyhältö et al., 2009). A scholarly community always provides a learning environment for doctoral studies within certain social practices. McAlpine and Norton (2006) propose that doctoral education should be seen as an integrative and systemic perspective, the student experience of learning being at its core. They state that "emphasizing the social and complex nature of learning acknowledges that the thinking and learning of professors and students is situated within distinct academic tribes or communities of practice". Tight (2008) states that if communities of practice are seen as a structure, higher education is a series of somewhat overlapping communities of practice.

Previous research demonstrates that it was particularly those scholarly communities that provide students with the feeling of being recognised members of the community that were perceived as being satisfactory (Chiang, 2003), thereby promoting students' well-being (Pyhältö et al., 2009). In particular, those disciplines that provide doctoral students with a chance to work in group settings make available many forms of support for doctoral students (Chiang, 2003). As previous studies (Chiang, 2003; Pole et al., 1997) have shown, doctoral education in engineering includes teamwork, close relationships with supervision, and doctoral students being regarded as members of a group. In contrast, disciplines in the humanities, such as psychology and social sciences and economics, have traditionally emphasised the individual nature of doctoral education. In these disciplines, doctoral studies, and especially the doctoral thesis, are conducted almost in isolation, with doctoral students being regarded as learners and not as full members of the group (Becher, 2001). Moreover, students usually start their doctoral studies with quite broad assumptions with regard to their future thesis topic, and they are supposed to work with their topic inductively (Neumann, 2007).

To overcome the problems identified within doctoral education, such as isolation, communities of practice have been seen to be helpful (Wisker, Robinson, & Shacham, 2007). Lave and Wenger (1991) define communities of practice as "a system of relationships between people, activities and the world; developing over time, and in relation to other tangential and overlapping communities of practice" (p. 98). Lave and Wenger (1991) state that a community of practice can be created with the goal of gaining knowledge related to its members' field. The members learn from each other through the process of sharing information and experience, and have an opportunity to develop themselves personally and professionally (Lave & Wenger, 1991). As used in this study as a definition, a community of practice is therefore an active system including individuals who are united in action and in the meaning that action has for them and for the larger group (Lave & Wenger, 1991). Further, communities of practice, rather than being formal structures, are informal entities. These "exist in the minds of their members, and are glued together by the connections the members have with each other, and their specific shared problems or areas of interest" (Ardichvili, Page, & Wentling, 2003).

Communities of practice are not stable or static entities but evolve over time as new members join and others leave (Wenger, 1999). In this sense, communities of practice cannot be formed (Liedtka, 1999; Roberts, 2006). The evolving nature of communities of practice can be described in terms of different stages. These stages are presented by Wisker et al. (2007) and are presented in Table 1. The potential community often starts with informal interaction (Ruuska, 2005), where a loose network of people shares similar issues and needs (Wisker et al., 2007). In the coalescing stage people come together. finding value in learning activities. After time, in the maturing stage, the community relies on a set of shared meanings that are intimately bound up with the practice of the work itself, the purpose that such work serves and for whom, and on the ongoing development of its individual members (Liedtka, 1999). In the active stage, the community is established and goes through cycles of activities. In order to remain engaged, it needs to sustain energy, the accumulation of a history of shared experiences, and the management of boundaries and the opening of peripheries that allow various degrees of engagement (Wenger, 1999). But if the community does not remain useful to its members and people move on, it begins dispersing (Wisker et al., 2007).

The concept of a community of practice has been shown to be relevant in the context of doctoral studies (Austin, 2009; Boud & Lee, 2005; Devenish et al., 2009; Tight, 2008; Wisker et al., 2007). Higher education, including doctoral education, can be viewed as overlapping communities of practice (Tight, 2008), or, as McAlpine and Norton (2006) describe it, as nested