

Spanning Boundaries between Academia and Practice in Information Systems (IS): A Case Study of a Community and Network of Practice

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Abstract While Information Systems (IS) has strong ties in practice, it is extremely important that academic and practice perspectives share the same ground in research and education. While there are different research communities in IS which are called communities of practice and knowing (CoP&K), there exists a gap between academic CoP&K and practitioner CoP&K in doctoral IS education. This paper describes a working approach on boundary spanning between academic- and practitioner CoP&K's in doctoral education. In presented case example, a doctoral program has been organized in the field of IS for professionally qualified doctoral students with significant industry experience. This doctoral seminar program has been going on for over twenty years and has produced numerous doctors for the field among other things. Based on this example a research model for studying the exchange of knowing and knowledge between different CoP&K's in doctoral education in Information Systems and research questions for further research are presented. This article suggests that the gap between academia and practice does not need to be as deep as it appears to be, and that there is an understudied field in the intersection between CoP&K's in the IS research field. Thus authors propose a research agenda, where focus is on narrowing the gap between academia and practice in IS through proper use of CoP&K's in doctoral education.

Keywords. Academic, practitioner, professionally qualified doctoral candidate, community and network of practice, perspective making and perspective taking, doctoral education in Information Systems

1. Introduction

There is a broad consensus that Information Systems (IS) research must respond to a dual mission: to make theoretical contributions and assist in solving the current and anticipated problems of practitioners (Benbasat & Zmud, 1999; Orlikowski & Barley, 2001; Iivari, 2003; Gill & Bhattacharjee, 2009). However, there is a communication gap in knowledge and knowing between academics and professionally qualified doctoral students in doctoral IS education (Klein & Hirschheim, 2008).

In doctoral IS education the knowledge bases of the academics and practitioners are different. The primary value of academia has been theoretical knowledge that is intellectually interesting, as rigorous as possible and based on rules of evidence (Klein & Hirschheim, 2008). In contrast, practitioners tend to value experience and what has been proven to work in practice regardless of whether it is theoretically grounded and generalizable. According to Klein & Hirschheim (2008), practitioners' knowledge is experience-based or application-based. In addition, Klein & Rowe (2008) report the rigor-relevance problem between academic and practitioner knowledge. Apart from this, it can be argued that all kind of information, knowledge and knowing may emerge in doctoral IS education.

When studying communities of practice and knowledge, it is essential to understand what kind of role knowledge plays in this interactive dialogue between two different types of communities of practice. In the data-information-knowledge hierarchy *knowledge* can be regarded as a high-value form of information, or information that is distilled from specific context and can be generalized to other contexts (Kettinger & Li, 2010). Then again, Nonaka (1994) separates two types of knowledge, explicit and tacit knowledge. Explicit knowledge refers to knowledge that is transmittable, in formal systematic language. Tacit knowledge or continuous activity of knowing (Polanyi, 1966) has personal quality, which makes it hard to formalize and communicate. *Knowing* is rooted in action, commitment, and involvement in a specific context (Nonaka, 1994). Explicit knowledge can be shared through various communication media, but that is not possible in the case of knowing (Nonaka, 1994; Becerra-Fernandez & Sabherwal, 2001).

Knowledge is shared through the interaction between tacit knowing and explicit knowledge in four possible modes: socialization, externalization, internalization, and combination (*ibid.*). Socialization is the sharing of tacit knowledge between individuals through joint activities. Externalization involves the expression of tacit knowledge into comprehensible forms. Internalization converts explicit knowledge into tacit knowledge. Combination involves the conversion of explicit knowledge into more complex sets of explicit knowledge.

Cook & Brown (1999) see knowledge and knowing as complementary and mutually enabling. The interplay of knowledge and knowing is a potentially generative phenomenon. For human groups, the source of new knowledge and knowing lies in the use of knowledge as a tool of knowing within situated interaction with the social and physical world. In this article the view of Cook and Brown (1999) is adopted.

In the following section the research problem and methodological questions are discussed. This is followed by section, which covers introduction into doctoral education within Information Systems (IS) and deeper insights on Communities of Practice (CoP), along with possibilities for boundary spanning between academics and practitioners within IS field. In the end of the section, the studied case is described in detail. This is followed by section covering detailed analysis of the studied case and suggestions for further research. Section where discussion of results takes place, followed by practical conclusions, ends this chapter.

2. Research setting and method

In this article a case study “Academic & Practice IS Doctoral Seminars” is presented and analyzed from the viewpoints of academics and professionally qualified doctoral candidates. In addition a research model for further research is presented. Used methodology in this study is an intensive interpretative case (Cunningham, 1997; Järvinen, 2012a, 74). Intensive interpretative case is a single case study and while less rigorous and more provocative than other case studies, it provides histories or examples of new ideas or approaches. Purpose of this method is to develop theory from intensive exploration by using creativity through comparison with existing theories. In this process, various viewpoints can be used in triangulation.

The research problem of this study is: *What kind of doctoral seminar process within Information Systems (IS) is possible outside the university campus region for professionally qualified Ph.D. candidates working in spatially dispersed workplaces?* Authors argue, that reading and reviewing scientific articles, preparing short research plans, and articulating both orally and literally about practice based relevant research problems in monthly organized academic seminars, *advance the dissertation process and dialogue between academic supervisors and professionally qualified doctoral candidates.* At the same time the seminar process might advance the selection of practical and relevant research topics (Straub & Ang, 2008), and produce new practical knowledge (Klein & Rowe, 2008).

The theoretical foundation of this study is based on communities and networks of practice (Lave and Wenger, 1991; Wenger, 1998; Brown & Duguid, 2001; Klein & Rowe, 2008). Studied case is described from the viewpoint of an academic and a professionally experienced doctoral candidate. The viewpoint of academics is presented according to the reflection of an experienced professor responsible for the seminar implementation process. The viewpoint of professionally experienced doctoral candidates is presented according to the reflection of a seminar participant based on the classification of novice researchers, proficient technicians and knowledge producers (Feldman et al., 2009). The seminar process is analyzed based on the process of perspective making and perspective taking (Boland & Tenkasi, 1995) of an academic supervisor and professionally experienced doctoral

candidates. Based on the analysis a research model for further research is formulated.

3. Doctoral Education in Information Systems

In many countries professional doctorate programs are separated from the academic Ph.D. programs. For instance, professional doctorate programs emerge in United Kingdom, Australia and New Zealand, as well as in Germany (Gill & Hoppe, 2009; Fink, 2006). Doctorate programs differ in a sense of career focus, research topic, type and focus, full-time vs. part-time study, integration of work and study vs. practice and theory, duration of the dissertation process, research outcomes, assessment, and breadth of the dissertation (Gill & Hoppe, 2009). Tennant (2004) argues that professional doctorates are the principal vehicle through which ‘working knowledge’ is incorporated into doctoral education. Gill & Bhattacharjee (2009) recommend hybrid academic-practitioner doctoral programs for qualified practitioners with the objective that they continue working in industry while simultaneously enrolling in doctoral programs. In countries where professional doctorate programs do not exist, there are alternative special Ph.D. programs available for professionally qualified doctoral students with significant industry experience looking for a career change by becoming research-oriented academics while at the same time, maintaining their industry interactions to serve as external boundary spanners (Klein & Hirschheim, 2008; Klein & Rowe, 2008). For instance, there are no professional doctorate programs in Scandinavia. Thus similar Ph.D. programs as suggested by Klein & Hirschheim (2008) might be appropriate.

In doctoral education the notion doctoral candidate as a doctoral student refers to a person who has demonstrated readiness to write a doctoral dissertation, and is admitted to candidacy (Davis, 2003). Advising refers to the process of providing guidance, advice and quality assurance for a doctoral candidate during preparatory work and doing a dissertation. Doctoral candidates are advised in IS literature (Davis & Parker, 1997; Davis, 2003; Slyke et al., 2003). For instance, completion and quality for a dissertation can be promoted by employing 1) topic analyses to promote early evaluation of ideas for dissertations; 2) dissertation proposal; 3) dissertation proposal defence (formal or informal); 4) project’s time schedule and budget; and 5) agendas, summaries of meetings, memos on significant decisions, and cover memos of chapters. Authors of this article argue that advising doctoral candidates’ preparatory work is an evaluative and long lasting process, especially when professionally qualified doctoral candidates are concerned.

Communities and Networks of Practice as Arenas to Span Boundaries Between Academics and Practitioners in Doctoral IS Education

In order to encourage dialogue and to improve common understanding between academics and practitioners means for learning and understanding each other's ways to learn and act are essential. Authors suggest that communities of practice (Lave & Wenger, 1991; Wenger, 1998; Klein & Rowe, 2008; Probst & Borzillo, 2008; Terrell et al., 2009) and networks of practice (Brown & Duguid, 2001), provide appropriate arenas for this.

Communities of practice (CoP) means sharing of practice in a learning community with strong ties, i.e. having long lasting and close relations spatially and temporally within community participants, e.g. in workplace practice and academic research practice. The CoP can be thought as an informal aggregation of individuals engaged in a common enterprise in a way in which members share action and interpretations as a CoP's world view including knowledge, concepts, observations, values, meanings, assumptions and beliefs (Klein & Hirschheim, 2008). A CoP involves frequent interaction among members, routines of interaction, evolution of a core group, ability to selectively absorb newcomers, and porous boundary formation which distinguishes the CoP from other communities and surrounding context.

Networks of practice (NoP) can expand the CoP with weaker ties. For instance, in a NoP participants can belong to the network in spatially and temporally fragmented learning groups as in a globally dispersed scientific community. A NoP constitutes the collective of practitioners of a common practice (Duguid, 2005; Klein & Hirschheim, 2008) whose members do not necessarily expect to be face-to-face as members of a CoP do. Newcomers, e.g. graduate students or graduate IS practitioners, learn the tools and routines of practice and enter the NoP through a CoP, e.g. graduate department. However, the CoP retains control and coordination of the reproduction, e.g. getting and absorbing new members, of a group and its practice.

Professionally qualified doctoral candidates have several years of work experience and a good background in the practical domain of business knowledge and knowing, IT or IS knowledge and knowing, as well as social networking and communication skills (Klein & Rowe, 2008). A substantial part of the knowledge that CoP members share cannot be clearly articulated (ibid.). This kind of knowing can only be acquired, e.g. through apprenticeship, workshops and mentoring (ibid.). Academics need to be able to speak the language of academic research as well as the language of those they study in that research, i.e. the language of practitioners (Hoffman, 2004). Hoffman (2004) proposes to build intellectual practitioner communities in order to develop better research.

Through participation in CoP's professionally qualified doctoral candidates acquire familiarity with specialized work languages, command of work and social practices that are not fully documented, and effective intuition related to their

work through implicit learning processes (Klein & Rowe, 2008). From the viewpoint of academics CoP's are proposed to encourage student-to-student and student-to-faculty interaction encapsulating the collaborative effort of a CoP. From collaborative effort over time, a strong positive sense of community is achieved (Terrell et al., 2009). Enlarging CoP as a NoP online communication is proposed using and supporting, e.g. e-mail, discussion forums, blogs, wikis, social networking, and voice-over-Internet protocol (VoIP) (ibid.).

The ideas of CoP's presented by Probst & Borzillo (2008), although originally applied in business context, are applicable also to academia. According to Probst & Borzillo (2008), successful CoP's are well-balanced systems that oscillate between exploring new practices and exploiting existing ones. While Wenger & Snyder (2000) suggest, that CoP's mostly self-organize spontaneously through the needs expressed by their potential members, Probst & Borzillo (2008) argue that these structures have to be guided by strategic objectives. While university environment provides means and possibilities for self-organizing, the need for stronger guidance is often necessary, especially when novice researchers are involved. Here simple and easily understandable concepts prove out to be usable means for coordinating the process and a CoP. Probst & Borzillo (2008) also suggest that successful CoP's are found in an organizational context in which experts enjoy total freedom with regard to network collaboration across their respective units. Circumstances like this exist in university environment, providing a good ground for forming CoP's. When practitioners alike are invited to join joint doctoral seminars, a CoP has already been formally founded – and it is essentially spanning the boundaries of CoP within the IS discipline into a CoP in IS.

Probst & Borzillo (2008) suggest that guiding a CoP successfully mainly requires the constant presence of a sponsor who must liaise between the management and the CoP, and ensure that the CoP sets objectives that conform to the organization's strategy. In this case there are two different interest groups. Universities expect new doctoral candidates with practical research topics, who can finish their studies in time, and usually funding is based on these visible results. Practice, on the other hand, has different interests. Acquired university-degrees are not seen as important as improved professional skills, extended knowledge, or new personal networks, although achieved university degrees are not ignored either. As a consequence, a CoP and a NoP provide an appropriate arena to organize doctoral IS education for professionally qualified doctoral candidates.

Opportunities for boundary spanning between academics and practitioners in doctoral IS education

In any professional or academic community, different languages and different levels of knowledge and knowing may emerge. Spanning boundaries in the communication of knowledge and knowing between academic professors and profession-

ally qualified doctoral candidates in doctoral IS education can be based on community of knowing (Boland & Tenkasi, 1995).

In order to cooperate and to attain common understanding and shared meaning of the same phenomenon academics and practitioners have to find *boundary objects*, concepts and tools belonging to the expertise domain of both academics and practitioners. In this cooperation endeavour perspective making and perspective taking as a community of knowing (Boland & Tenkasi, 1995) are required. *Perspective making* is the process whereby a community of knowing develops and strengthens its own knowledge domain and practices. As perspective strengthens, it becomes more complex and better for doing knowledge work by using language games in a social practice. In *perspective taking* the knowing of what others know is a necessary component for coordinated action. Producing knowledge requires the ability to make strong perspectives within a community, as well as the ability to take the perspective of another into account. Knowledge work of perspective making and perspective taking requires individual cognition and group communication.

Malfroy & Yates (2003) argue that a dilemma in professional doctorates appears to be enabling students to move from an acknowledgement of current good professional practice into working up a scholarly articulation of their applied knowledge at a deeper and broader level. Hoffman (2004) states, that the work of academics may be biased by specific structural and institutional controls that channel it mainly in academic direction. Academic journals and seminars exclude practitioner journals, while seminars and meetings weaken the literacy of academics in the language of practitioners. Klein & Rowe (2008) argue that the problem between research and practice is not merely a communication problem. There is also a serious knowledge production problem. The knowledge academic research produces is not regarded as being sufficiently grounded in the problems encountered in practice. The problem is the practical relevance of the knowledge. Klein & Rowe (2008) state, that applicative knowledge is important for increasing the relevance of research. Without the experience of dwelling in the CoP under study researchers are unable to grasp the tacit beliefs and meanings of the practitioners under study. Professionally qualified doctoral candidates are uniquely capable of translating applicative knowledge into theory providing a solution to the knowledge production problem and the academia-practice communication gap (Klein & Rowe, 2008).

Perspective making and perspective taking (Boland & Tenkasi, 1995) is an alternative for advancing the boundary spanning of the communication gap between academic supervisors and professionally qualified doctoral candidates in doctoral IS education. A potential arena for this could be Klein & Hirschheim's (2008) notion of community of practice and knowing (CoP&K), that is based on a CoP and a NoP. A dialogue between academic supervisors and professionally qualified doctoral candidates in doctoral education can take place in a long doctoral seminar process. The seminar process might include, for instance: a half or a full day face-to-face and video conference meetings once a month. Between the seminar meetings e-mail lists, databases and other online tools might also be used in communi-

cation and material delivery. The seminar process organized this way forms an arena in which academic supervisors and professionally qualified doctoral candidates can have a dialogue in a sense of perspective making and perspective taking.

A case “Academic & Practice IS Doctoral Seminars”

In order to clarify the boundary spanning between academics and practitioners in doctoral IS education the description and analysis of “Academic & Practice IS Doctoral Seminars”, is presented. The analysis is based on perspective making and perspective taking (Boland & Tenkasi, 1995) of the academic and practitioner CoP&K (Klein & Hirschheim, 2008). First, the general process of “Academic & Practice IS Doctoral Seminars” is described. The seminars analyzed took place between 1990 and 2014. Second, the seminar process implementation from the viewpoint of an academic supervisor is described. Third, based on Feldman et al. (2009) the seminar implementation from the viewpoint of a professionally qualified doctoral candidate is described. Then the analysis of the case is presented.

The seminars have been implemented on a monthly basis between September and May. In seminars, two main working modes have been used. The first working mode covers, reading, analyzing and reviewing scientific articles in IS, three articles per month. Participants read the articles before seminars and write reviews of the articles, which are then discussed in the seminar. In second working mode, participants present their own research plans (2-3 per seminar), which are discussed, evaluated and guided by the professor, or seminar host (e.g. if not professor, a dedicated seminar alumni). In addition to this, general academic and practical knowledge is exchanged in seminars.

Participants gain credit units according to their activities in the seminar. Through the mailing list (52 participants December 2014), the monthly feedback report, which also includes general information about international conferences and other relevant academic events in IS, is delivered. During academic year 2009, the mailing list was changed. Nowadays the mailing list contains only active participants and graduated Ph.Ds. The professor has collected and upgraded a database of the article abstracts and highlights read and reviewed in the seminars. This database is in free research use for the seminar participants. The article reviews are collected and published yearly in a publication *IS Reviews* (Järvinen 2010a, 2010b, 2011, 2012b, 2013, 2014). These IS reviews have been published in electronic format since the year 1991, and are available in the Internet for providing professionally qualified doctoral candidates easy and free access to relevant research article reviews within the discipline.

Table 1 Credit units and active students of the “Academic-Practice Exemplary IS Doctoral Seminars” 1990 – 2014

Seminar location	Credit units	Active students	Year
A	1265,6	691	1990 - 2014
B	608	209	2001 - 2014
C	102	21	2000 - 2002
D	23,4	19	2003 - 2004
Total	1975,6	940	1990 - 2014

Since the year 1990 the seminars have been implemented in various spatially dispersed locations (Table 1). In Table 1 the credit units are presented using ECTS credits (European Credit Transfer System). Active students represent the total number of those students who have earned credit units in each seminar session. According to the records, seminar participants have achieved 32 Ph.D. degrees from the year 1994 to 2014. The mailing list of the seminar, the database of the article abstracts and highlights, as well as the publication of IS Reviews extend the CoP to NoP in such a way, that participants with weaker ties to the seminar can get support and useful information for their dissertation process as well as for their daily work practice.

It is to be noted, that during recent years, the seminar alumni have been (and still are) helping with the seminar. Alumni can partly host the seminars (e.g. CoP), while professor is still managing and coordinating the whole CoP&K. The commitment on CoP&K and pure interest on research appears to be motivating these alumni’s. They have gotten their Ph.D.’s long time ago.

Viewpoint of an academic supervisor

From the viewpoint of a professor as an academic supervisor, reading and reviewing good scientific articles can demonstrate acceptable ways to do research work. The professor reflects the seminar process and presents following overview structure of the doctoral seminars and their different activities or items as illustrated in Figure 1. In Figure 1 the tasks intended to take place either earlier or the later in process are enclosed in brackets [].

...

[trigger for doctoral candidates' research plans]
 [preparation comments on research plans]
1. survey on new articles in journals + selection of 3 articles
 [preparation of agenda of the next seminar etc.]
 [seminar]
 2. [minutes of seminar] + *distribution of 3 articles*
 3. *preparation of Finnish summaries of 3 articles*
 + sending reviews to the authors
 4. *trigger for doctoral candidates' research plans*
 5. *preparation comments on research plans*
 [survey on new articles in journals + selection of 3 articles]
 6. *preparation of agenda of the next seminar etc.*
 7. *seminar*
 8. *minutes of seminar* + distribution of 3 articles
 [preparation of Finnish summaries of 3 articles
 + sending reviews to the authors]
 ...

Figure 1 The schedule of some important tasks and events in doctoral IS seminar

Tasks and events presented in the seminar schedule are discussed in detail in the following list:

- Item 1:* In the beginning of the seminar practice, professor used to collect 20-30 relevant articles for the following seminar and circulate cover pages of those articles among the seminar attendees during the first part of the seminar. Seminar participants could then select those articles they want to read. The secretary made photo copies of the chosen articles. Today interesting articles and online resources, which support knowledge building processes of the doctoral candidates, are shared using email. This service is important for part-time doctoral candidates. There are three criteria to following in selection of those three articles to be read and reviewed in the seminar. First, survey or review articles will tell, what are good research questions, whether results are new or not, and in which way the article contribution has implication to science. Second, a new theory, method or construct is appreciated. Third, a certain theme or an author is followed. The selection criterion of the article tries to contribute on general scientific literacy as well as on participants' dissertation topics. Participants have possibility for proposing articles for reading in the seminars.
- Item 2:* The selected three articles are electronically distributed to the active students.

- Item 3:* Before the seminar the professor prepares the summary, copies of the abstracts, highlights, and his own reviews of selected three articles. The summary written in native language provides a quick introduction into the article. Usually, but not always, the abstract in its original form provides necessary information about the value of the article for doctoral candidates' own study. Highlights are needed when more profound consideration is required. During the last years the professor has sent his own reviews to the authors of the articles. More than a half of the authors have replied by explaining their views and evidence helping to understand the background and rationale of the article. These replies are then discussed in the seminar. The articles are used as learning environments in order to transmit spoken and unspoken conventions on research work to doctoral candidates. Attention is paid to motivation from science and practice in Introduction chapter, the special terminology of scientific research, the structure of the article, the theory and method used, and the implications to science and practice in Discussion chapter. Writing a review requires that doctoral candidate has understood the main message of the article and can present it in the written form using native language, a language the participant's thinking skills are based on.
- Item 4:* Two or more students, who are willing to discuss their progress in the dissertation process, are asked to provide a 4-6 pages long written presentation electronically, along with relevant questions to be discussed in the seminar. The presentations are then distributed to the members of the mailing list of the seminar. In this way the seminar participants can read and comment the presentations in the next seminar or directly to the student by e-mail.
- Item 5:* The professor prepares his written comments of the students' presentation that is shared to seminar participants. This forms an arena for discussion and feedback in the form of learning environment. Comments emphasize the type of the study, suitable methods and data gathering techniques as well as potential references to be read.
- Item 6:* Preparation of agenda for the next seminar contains some administrative tasks, e.g. the article summaries in native language as well as the agenda to the seminar participants. The abstracts of the new three articles are included into the agenda. The abstracts inform those who could not participate in the seminar.
- Item 7:* In the beginning of the seminar 2-3 seminar participants' research plans are considered and discussed based on participants' own studies and their experiences in practice. During the coffee break, while discussing the three articles under consideration, also social networking takes place. One of the participants, who have prepared written article summaries for distribution to other participants, orally presents the article content, its strong points and critique. One of the summaries is selected to be prepared and published in the publication of IS Reviews as an en-

hanced version, including review and the aspects that did emerge in discussion.

Item 8: The minutes of the seminar has similar content as the agenda supplemented by the credits given to the students. The minutes are distributed to the seminar participants. In addition, also the three new articles selected to be read for the next seminar are distributed to the active members of the seminars. Non-active members can ask the articles from the professor.

Viewpoint of a professionally qualified doctoral candidate

Doctoral IS seminars can be seen as communities of practice. As in every community of practice, it can be argued that there are different levels of practical skills. Table 2 describes the phases and activities of the seminar process from the viewpoints of novice researchers, proficient technicians, and knowledge producers (Feldman et al., 2009). The phases of the seminar include preparation of the seminar, the seminar, after the seminar, and between the seminars. Park et al. (2009) have described, that the scientific process is not well-thought linear process. From doctoral candidates' viewpoint, the continuously repeated procedures allow research ideas to be elaborated in a continuous and safe peer-reviewed process, even though in many cases an individual research process might not be a well-thought linear process. Participants of the seminar have practitioner expertise from industry and other IT applying organisations. They master various practical expertise areas, but their academic knowledge and skills are often weak. Most of the participants want to acquire academic knowledge and skills in the context of their own practical expertise areas. Activities of the professionally qualified doctoral candidates are next described in each phase of the seminar process.

Preparation for the seminar: Reading good articles provides good examples on how to conduct research. Novice researchers can get new ideas by reading articles and preparing reviews of them. Besides this, proficient technicians can get new ideas for their research topics and research plans. Knowledge producers can embody their current research.

The seminar: The seminar day has always the same timetable. The same time table and similar conventions in the seminars are supported by the principles of a CoP. During the seminar session two or three research presentations are commented, and article reviews are discussed. Novice researchers can get totally new ideas from the presentations of the other participants' article reviews and research plans, and learn to articulate article reviews. Proficient technicians are able to analyze their current research plans and get comments on them, as well as discuss other research plans and articulated articles. Knowledge producers are able to present and defend their current research plans and get comments on them, as well as discuss other presented research plans and articulated articles.

Table 2 Phases and activities of the seminar process from the viewpoint of professionally qualified doctoral candidates' skill levels

	General activities	Professor	Novice Researchers	Proficient Technicians	Knowledge Producers
Preparation for the seminar	<ul style="list-style-type: none"> • Preparations for the seminar in the form of reading research articles, preparing reviews and preparing presentations 	<ul style="list-style-type: none"> • Selection of three articles to be read and reviewed • Emphasis on finding good articles • Selection from current journal articles 	<ul style="list-style-type: none"> • Totally new ideas from articles • Reading and preparing reviews from the articles 	<ul style="list-style-type: none"> • Reading and preparing reviews from the articles • Preparing presentations 	<ul style="list-style-type: none"> • Reading and preparing reviews from the articles • Embodying review articles to their current research • Preparing presentations
The seminar	<ul style="list-style-type: none"> • During the seminar two or three researchers present their research • Research presentations are commented by the participants and the professor • Article reviews by participating researchers are presented and discussed 	<ul style="list-style-type: none"> • Comments by the professor • Distributing article collection • Article reviews by the professor 	<ul style="list-style-type: none"> • Totally new ideas from presentations • Possible research presentation • Comments on others research presentations • Articulated article reviews 	<ul style="list-style-type: none"> • Analyzing current research • Possible research presentation • Comments on research presentations • Articulated article reviews 	<ul style="list-style-type: none"> • Defending theses of own research • Possible research presentation • Comments on research presentations • Articulated article reviews

Right after the seminar	<ul style="list-style-type: none"> • <i>Selected participants collect the article reviews together into a one “polished” article review which will yearly be included in IS Reviews</i> 	<ul style="list-style-type: none"> • Selection the writers of the article reviews to be included in IS Reviews 	<ul style="list-style-type: none"> • First experiences collecting scientific texts together 	<ul style="list-style-type: none"> • Analyzing current research 	<ul style="list-style-type: none"> • Elaborating own research
Between the seminars	<ul style="list-style-type: none"> • <i>Between the seminars the dialogue between professor and seminar participants continues</i> • <i>Members of a NoP will continuously receive information about academic conferences, events, grants and open positions.</i> 	<ul style="list-style-type: none"> • Distributing and forwarding call of papers • Reading and commenting written presentations to the researchers 	<ul style="list-style-type: none"> • First experiences of writing scientific text • Presenting first research ideas 	<ul style="list-style-type: none"> • Experiences of writing scientific text • Detailing own research ideas 	<ul style="list-style-type: none"> • Elaborating own research

Right after the seminar: A selected participant collects the article reviews and discussions together and prepares a “polished” review for the publication IS Reviews. Novice researchers are able to get first experiences in collecting scientific texts together. Proficient technicians are able to analyze their current research according to the comments and discussions during the seminar session. Knowledge producers are able to elaborate their own research further.

Between the seminars: Dialogue between the professor and seminar participants continues via e-mail. Members of the NoP continuously receive information about academic events, conferences, grants and open positions. Novice researchers can get their first experiences in writing scientific texts and presenting their first own research ideas. Proficient technicians are able to get experiences of writing scientific texts and detailing their own research ideas. Knowledge producers are able to elaborate their own research further.

Seminar participants’ opportunity to present their own research plans move participants’ research forward. Preparation of a presentation clarifies the participants’ own research ideas. Written and oral presentations give practice to present research ideas to the general public or other researchers.

When participants prepare their own review of the selected three articles, they learn scientific literacy and conduct their own research. Discussions and peer reviews during the seminar deepen participants’ scientific knowledge and research motivation. Written and oral presentations, as well as discussions and peer reviews move participants gradually from Novice Researchers to Proficient technicians and Knowledge Producers.

One important task is forwarding call for papers to the participants. It is obvious, that the number of call for papers is considerable, since there is a lot of activity going on in different related research areas. While Novice Researchers gain experiences and mature as researchers, they can try to submit papers to different forums, since they possess knowledge and knowing about these possibilities.

4. Analysis of the case

During the *seminar process* a CoP (monthly seminar meetings) and a NoP (the mailing list of the seminar, access to the database of the article abstracts and highlights, and the publication of IS Reviews) is formed. The CoP has an established structure, timetable and acting habits with tight ties within the face-to-face seminar sessions. The NoP includes looser ties than the CoP between the seminar participants and the professor. The mailing list as a NoP includes various persons, i.e. active participants, inactive participants, active independent dissertation makers, and advanced academic researchers.

The active participants usually participate the seminar sessions face-to-face or via videoconferencing. The inactive participants are potential active participants observing the material delivered, e.g. the articles and the minutes of the seminar.

The active independent dissertation makers work independently, receiving the delivered material and guidance outside of the seminar sessions. The advanced academic researchers get information about the seminar activities by following the seminar process. Some of the participants may stand in an intermediate position, representing boundary objects between academia and professional practice. They have at the same time connection to their professional daily work as well as to the academic world, e.g. mentoring seminar participants or giving university level lectures.

Problems may emerge in the seminar process. Doctoral candidates' daily work may make the connection to the seminar and the dissertation process looser (both from the CoP and the NoP perspectives) than those doctoral candidates, who can concentrate primarily on their studies. Doctoral candidates' daily work may influence the progress of their dissertation process and possibilities attending seminar sessions.

The seminar process can be seen as an arena where the professor represents an academic CoP&K and the professionally qualified doctoral students represent a practitioner CoP&K. During the years the same seminar participants and the professor have learned similar informal and flexible habits for the dialogue and learning in a sense of perspective making and perspective taking (Boland & Tenkasi, 1995). The seminar process strengthens the ties of the academic supervisor and professionally qualified doctoral candidates making the dialogue easier.

In the seminar process, the information in a form of scientific articles, article reviews and presented research plans is anchored on the commitment and beliefs (Nonaka, 1994) of the professionally qualified doctoral candidates. Based on Cook & Brown (1999) the interplay of the created knowledge and existing academic and professional knowing generates new knowledge and knowing. In the seminar process the use of academic and professional knowledge is a tool of knowing in the social interaction of the CoP.

In the studied case *the viewpoint of academic supervisor* can be seen representing academic perspective making (Boland & Tenkasi, 1995). During the academic perspective making process professionally qualified doctoral candidates learn in their perspective taking process scientific literacy, scientific methods, scientific discussion conventions and skills. Academic perspective making includes also the database of the article abstracts and highlights, the publication IS Reviews, as well as the minutes of the seminars including information about international conferences, scientific journals and other scientific IS events. Learning takes place in a form of scientific article reviews, presentation of research plans, and discussions in the seminar sessions. For the professionally qualified doctoral candidates the use of academic knowledge acts as a tool of learning scientific discussion conventions and skills, e.g. writing academic conference papers.

Problems may emerge in the NoP to keep mailing list participants' research motivation high, specifically among inactive participants. On the other hand, the delivered articles and other seminar material may encourage participants to seek and read more articles facilitating them to find a dissertation topic or maintain the activity of the dissertation process. From the academic viewpoint problems may

emerge in giving academic guidance concerning various professional expertise areas.

The viewpoint of professionally qualified doctoral candidate can be seen representing practitioner perspective making (Boland & Tenkasi, 1995). During the practitioner perspective making process relevant research topics from various professional IS practice areas are acquired for academic IS research (academic perspective taking). For the academic supervisor the use of professional knowledge acts as a tool of learning professional conventions how IS research outcomes are applied in practice.

Novice researchers, proficient technicians and knowledge producers have different possibilities to contribute (perspective making) to the seminar and to receive knowledge and skills (perspective taking) from the seminar. Knowledge producers, proficient technicians and novice researchers can give cognitive and emotional peer support to each other in a form of constructive comments of research plans and article reviews, as well as professionally new insights of the research topics. For the professor new insights from professional practice give possibility to extend the domain of the professor's current or past research to areas in which the professor has an interest and is willing to become reasonable proficient (Davis, 2003). This academic perspective taking process may advance relevance of the IS research.

Professionally qualified doctoral candidates as seminar participants may face problems. Levy & Ellis (2006) refer to Hart (1998) introducing writing problems especially for part-time students, i.e. lack of time, unfamiliarity with academic writing and not used to writing length. The seminar process tries to minimize these problems.

Suggested Research Model for the Exchange of Knowledge and Knowing Between Academic and Practitioner CoP&K's in Doctoral IS Education

The studied case indicates, that there appears to be a possibility for advancing the dissertation process of professionally qualified doctoral candidates, and striving to span the rigor relevance gap in knowledge and knowing between academics and practitioners in IS. Klein & Rowe (2008) argue that professionally qualified doctoral candidates can provide relevant and practical research topics producing new relevant practical knowledge for IS research. Straub & Ang (2008) state that in IS there has been little empirical examination about the gap between practically relevant and scientifically rigor research topics.

The authors argue, that doctoral seminars in IS can act in a form of boundary objects (Klein & Hirschheim, 2008), and through them a dialogue between CoP&K's of academics and practitioners can be enhanced. Therefore, a research model is proposed (Figure 2) based on perspective making and perspective taking (Boland & Tenkasi, 1995) of CoP&K's of academics and practitioners. Dialogue

of perspective making and perspective taking requires individual cognition and group communication which is supported in the case of doctoral IS seminars.

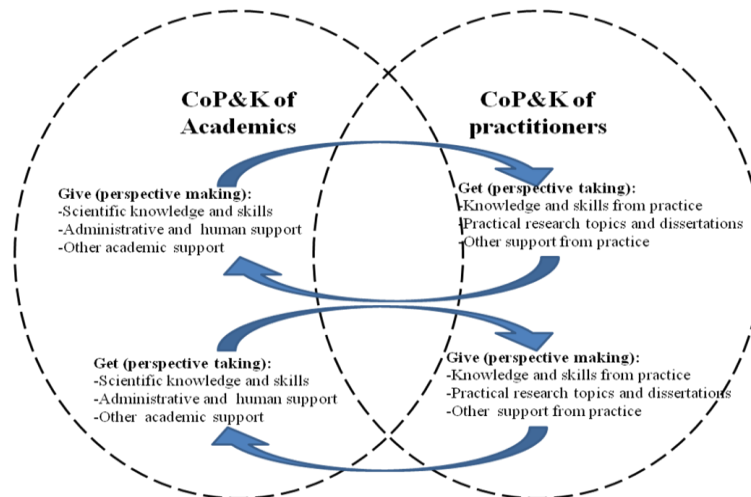


Figure 2 Research model for the exchange of knowledge and knowing between academics and practitioners in doctoral education in IS

In proposed research model academic CoP&K provides scientific knowledge and skills in reading and reviewing scientific articles, administrative (faculty) and human (peer) support, as well as other academic support (perspective making) to the practitioner CoP&K. Practitioner CoP&K is able to receive (perspective taking) scientific knowledge and skills, scientific articles, administrative and human, as well as other academic support. Similar exchange takes place, when practitioner CoP&K provides the academic CoP&K practical knowledge and skills, relevant research topics and dissertations, as well as support from practice (perspective making). Academic CoP&K is able to receive (perspective taking) relevant knowledge and skills, research topics and dissertations, as well as support from practice. Some of the professionally qualified doctoral candidates and academics, e.g. university alumni, may stand in an intermediate position representing boundary objects between academia and professional practice having at the same time connections to their professional daily work and academic world, e.g. mentoring other professionally qualified doctoral candidates or giving university level lectures.

5. Discussion

The focus of this article is on Ph.D. programs for professionally qualified doctoral candidates. Based on CoP&K of academics and professionally qualified doctoral

candidates, authors presented a case study which shows that it might be possible to advance boundary spanning between academics and professionally qualified doctoral candidates in doctoral IS education. In this research setting concrete professional knowledge and practical research topics were excluded, and thus more detailed cases are needed. In addition, a research model was formulated to be used for examining and understanding the dialogue between academics and professionally qualified doctoral candidates.

Klein & Rowe (2008) propose doctoral programs for professionally qualified doctoral candidates for reducing the rigor-relevant problem between academics and practitioners, while Gill & Bhattacharjee (2009) proposed activities for IS academics, such as research collaboration with practice, technology training, professional scholarships, sabbaticals in practice, and consulting. Based on Cook & Brown (1999) authors suggest that the existing academic and professional IS knowledge and knowing are complementary and mutually enabling. New scientific and practical knowledge and knowing in IS can be generated by perspective making and perspective taking (Boland and Tenkasi, 1995).

According to Pearson et al. (2004) diversity is associated with both population of doctoral candidates and approaches to teaching and learning, along with the increasing number of part time professional students in new fields of inquiry with links to industry and community. The community of learning involves a range of activities in which students interact with their peers around the university, i.e. seminars, discussion groups, professional and community contexts, and disciplinary networks (Pearson & Brew, 2002). During a dissertation process time and encouragement in a form of informal reflection, relationship building with peers and supervisor, playful exploration, and risk taking, are needed (Whitelock et al., 2008). The seminar process described supports this diversity, communality and flexibility.

An important challenge in the doctoral IS seminar process is to maintain the CoP and the NoP of the professionally qualified doctoral candidates. The difficulty in maintaining the communities of learning in doctoral education is acknowledged also by Parker (2009). Because the improvements in acquiring academic knowledge and skills might take an extended time, perhaps the length of doctoral degrees and beyond (Parker, 2009), even decades lasting doctoral seminar process is important.

In the studied case the seminar process forms a boundary object between academic and practitioner CoP&K's. For instance, some of the alumni's have an academic career, some have returned to their professional daily work, some have a new professional career, and some are in an intermediate position having their professional daily work and academic career. Many of the alumni still have firm or loose connections with seminar participants, giving cognitive and emotional peer support to them. Some alumni have even started a new seminar process.

Terrell et al. (2009) recommend forming CoP's on the faculty-student and student-student basis, as well as NoP's using various online communication facilities. Terrell et al. (2009) refer to Janson et al. (2004) who report of the students' group as the purpose to share information about the dissertation process. Although the

group's initial intent was to focus on the process, e.g. writing dissertation documents and conducting research, in the course of time they began to talk about their personal dissertation progress. Over time the group evolved from task based support group to a group that offered both task and emotional support. The new group represents an example of an organic 'bottom-led' initiative separate from the 'top-led' initiative (Janson et al., 2004). Therefore, evolutionary and flexible CoP&K's seem to support more the commitment to the dissertation process than shorter time lasting and inflexible CoP&K's.

In the studied case the type of students' online support is based on the information and guidance delivered via e-mail among students and the professor, as well as the article database and the electronic version of the publication IS Reviews. The number of the participants in the e-mailing list is rather big (157), but the participants have various roles, i.e. active and inactive seminar (CoP) participants. The mission of the participants is interest in IS science. Values of the CoP have evolved human centered. Human being is seen to be self-steering and goal oriented. On the other hand, human being is seen as intellectual, but also emotional and an intuitively functioning being, who may encounter experiences which are planned in advance, but also experiences which are unexpected and emergent (Wikström & Isomäki, 2008; Wilenius, 1987).

Goals might be different between various participants. Active participants and inactive independent participants want to prepare a dissertation. Other inactive participants are potential dissertation makers, who are interested in IS. Advanced research persons in the e-mailing list receive information of the CoP and the NoP. All participants have a possibility to use information delivered via the Internet and e-mail in their professional daily work.

Motivation in participating the CoP and the NoP is different. The seminar (CoP) has a stable schedule and the participants have become used to it during time. Emotional ties with supporting peers have become stronger during the years in the CoP. The flexibility of the NoP and the information shared via it may motivate inactive participants to continuously participate the NoP. Some of the NoP participants have individual or professional interest in IS which may keep motivation high. On the other hand, the motivation of some inactive participants may decrease because of the loose ties of the NoP. The professor as the supervisor is responsible for the management of the CoP and the NoP. The authors believe that the studied case responds to the needs of the development of CoP's and NoP's stated by Terrell et al. (2009).

There are limitations in this study. Only a single case is studied based on only one academic reflection and only from one theoretical view point (Feldman et al., 2009) of a professionally qualified doctoral candidate. The closer knowledge and skill contents, e.g. relevant practical dissertation topics, are omitted. Authors suggest that the research model developed could provide a starting point for further research. Therefore, according to the research model (Figure 2) authors propose following research questions for further research.

1. *“What boundaries do exist in communication of knowledge and knowing between academics and practitioners in doctoral IS education?”*
2. *“What knowledge and knowing the academic and practitioner CoP&K do exchange in order to advance boundary spanning between academics and practitioners in doctoral IS education?”*

The focus of this article was on a dialogue between academics and practitioners in IS examining a doctoral IS seminar process outside the university domain for professionally qualified Ph.D. candidates who simultaneously work in spatially dispersed workplaces. The case presented is an endeavour in contributing to the boundary spanning between academics and practitioners in communication of knowledge and knowing in doctoral IS education.

6. Practical Conclusions

Information Systems (IS) research is basically an applied field of science and often operates in interdisciplinary problem domains. Because of this, CoP's within academia as well as between academia and practice are to be encouraged. While there exists a communication gap in knowledge and knowing between academic and professionally qualified doctoral students in doctoral IS education, it is possible to successfully narrow the gap with dynamic practice of CoP&K. In addition, dialogue between academics from supporting disciplines and from IS has proven to enrich IS discipline. Nevertheless, in order to encourage dialogue and to improve common understanding between academics and practitioners, it is essential to learn and understand each other's ways to learn and act, and for this authors suggest the use of CoP's and NoP's.

In many countries professional doctorate programs are separated from the academic Ph.D. programs. Findings from discussed Finnish case study can be useful for enhancing other existing Ph.D. programs, but it is to be noted, that the study was conducted in an context, where separate Ph.D. programs for academic and practise do not exist. Instead all candidates will undergo the very same Ph.D. program, whether coming from industry or not.

Authors suggest, that the role of Ph.D. programs in relation to profession should every now and then be re-evaluated and if needed, programs should be fine tuned in order to keep Ph.D. programs substance and structure up-to-date. Within IT related research, especially in IS field, technological advances have proven out to be surprisingly fast, and to influence the whole society. Because of this, it is essential to make sure that Ph.D. programs can live and evolve in parallel evolving technological advances.

Based on studied case, several important findings can be noted. Studied example of doctoral seminars appears to be extremely effective in several ways: a) It is extremely cost effective way for providing education (program is run by one pro-

fessor with the help of few seminar alumni); b) Seminar produces doctors for the field in continuous manner; c) Several alumni are still actively attending seminars, thus keeping the CoP&K alive, and; d) Described seminar model provides exceptionally good support for students who are studying for their doctoral degrees, while at the same time working on their careers in business.

In the studied case, it has been shown that the dialogue between academia and practice can be improved using simple methods. CoP&K does not necessarily need expensive or complicated arrangements nor facilities, but dedicated and committed coordinating author is required. Otherwise CoP&K can hardly be fully functional, nor reach legitimate status.

Authors suggest, that CoP and NoP are suitable for different purposes in studying process. When closer dialogue with peers and supervisor is necessary, CoP provides excellent means for supporting doctoral candidates. On the other hand, when study process is not that intensive, NoP might prove out to be adequate for keeping the dialogue active, yet not allowing it to stagnate to be far too passive. A good CoP&K covers both.

It appears, that different languages and different levels of knowledge and knowing might emerge in any professional or academic community. For cooperation and in attaining common understanding and shared meaning of the same phenomenon, *boundary objects* (e.g. concepts and tools belonging to the expertise domain of both academics and practitioners) are necessary. In addition *perspective making* and *perspective taking* are required. Former is necessary for community of knowing for developing and strengthening its own knowledge domain and practices. Latter is the knowing of what others know, and it is an important component for coordinated action. It is important to notice, that knowledge work of perspective making and perspective taking requires individual cognition and group communication.

Based on studied case, it can be pointed out, that longer time span in CoP&K supports doctoral candidates far more better, than shorter time lasting and inflexible CoP&K's. Problem is how to provide this? In academia it is common, that before gaining full tenure position, researchers are struggling with short term positions, while CoP&K requires stability and based on studied case, also dedicated and motivated coordinating authority.

Studied case suggests that it appears to be possible to advance the dissertation process of professionally qualified doctoral candidates, and to span the rigor vs. relevance gap in knowledge and knowing between academics and practitioners in IS. However, it is necessary to understand that the interplay of knowledge and knowing is a potentially generative phenomenon. This means that for human groups, the source of new knowledge and knowing lies in the use of knowledge as a tool of knowing within situated interaction with the social and physical world. In IS context, professionally qualified doctoral candidates can provide relevant and practical research topics, which produces new and relevant practical knowledge for IS research, and thus help the discipline evolve and develop further.

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