From Ph.D. student to professional researcher – a scholarly community as a learning environment for doctoral studies

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Abstract

In order to become a researcher, participation in a scholarly community and culture is key. In other words, the quality of Ph.D. training can be conceived of as being dependent on the learning environment provided by the scholarly community. Our paper explores Ph.D. students’ ideas about themselves as a part of this community, and their perceptions of their learning environment in the context of University of Helsinki, Finland. The study is a part of a larger national research project. The present study includes data collected from four faculties: arts, medicine, psychology and education. Altogether, 602 doctoral candidates responded to the survey. Results suggested that both the definitions of “scholarly community” given by the students and their experience of membership in this very community varied considerably. About one third of the Ph.D. students did not perceive themselves as being members of any scholarly community at all. There was significant variation between the four research contexts, with the educational Ph.D. students reporting that they felt themost isolated. There appears to be an urgent need for more effective means of fostering Ph.D students’ experience of active agency within scholarly communities.

Keywords: Ph.D. education; Scholarly community; Ph.D. students’ perceptions about their learning environment; Stress

The scholarly community as a learning environment for Ph.D. students

PhD studies always take place within a particular context and are influenced by the social practices of the scholarly community in question. A scholarly community provides a learning environment that includes various complementary elements such as supervision, knowledge, learning and assessment practices, as well as the physical learning environment (e.g. Gardner, 2007). The experience of the learning environment may affect, for example, professional identity and the development of expertise of Ph.D. students.
The relationship between a Ph.D. student and their learning environment is mediated by individual attributes such as students’ and his/her supervisors’ prior learning experience, goals and strategies, and situational factors (e.g. Murphy, Bain & Conrad, 2007). This means, for example, that Ph.D. student’s (mis)conceptions of thesis work and of themselves as scholars mediate the process of learning (e.g. Murtonen, 2005; Åkerlind, 2008). Although Ph.D. students are a highly selected and talented group, they do have culturally driven spontaneous representations about the Ph.D. process or of conducting scholarly research that may be contradictory with existing scientific conceptions. Therefore it is important that students are provided with the opportunity to process these implicit theories of conducting research during their studies. This helps to identify default assumptions in one’s representations and coping strategies. The process of reflecting also helps to discover essential problems in the domain of study itself. Such insights can then be formulated into questions and problems to be solved during the process of becoming a professional researcher.

Similarly, supervision practices are influenced by the supervisor’s ideas of supervision, research (Brew, 2001; Kiley & Mullins, 2005) or knowledge. Postgraduate and undergraduate students’ perceptions about their learning environment have been shown to be related to the way teachers’ approach teaching and supervision, and to their ideas of research (Trigwell et al, 1999; Sambrook, Stewart & Roberts, 2008). Furthermore, Watkins (2001) found in his meta-analysis that important aspects of university students’ perceptions of their learning environment were an experienced heavy workload, a hard study pace and the experience of not getting feedback. These experiences were often related to surface approaches of learning or non-functional learning practices. Hence it is important to take into account Ph.D. students’ perceptions of their learning environment when analyzing the quality of Ph.D. education.

There is a constant dynamic interplay between the learner and her/his learning environment that may both promote and inhibit meaningful learning (Vermunt & Verloop 1999; Watkins 2001). It has been shown that open learning environments that require the student’s own initiative, planning, experimentation and reflection in collaboration with peers and senior members of scholarly community may promote meaningful learning (e.g. John-Steiner 2000; Mandel, Gruber & Renkel, 1996; Moss, G. & Kubacki, 2007; Rothe et al. 2007; Soini, 1999).

Biggs (1999) used the concept of “constructive alignment” to describe an ideal learning environment in which students would adopt approaches to learning
which allow understanding of the learning material, and in which all aspects of supervision and assessment are aligned to and support, these approaches. An ideal learning environment for learning researcher’s expertise would provide shared control, where supervisors and senior members of scholarly community would intentionally facilitate and promote learning by using activating and student-centered methods in order to help Ph.D. students develop their research skills (e.g. Styles & Randloff, 2001). This process would then create a constructive friction (see more about the concept of friction in Vermunt & Verloop, 1999), the urge to gradually develop more and more sophisticated academic skills and knowledge. In turn, destructive friction may inhibit meaningful and self-regulative learning within Ph.D. education and increase the risk of dropping out. For instance, Vermunt and Verloop (1999) proposed that when the learning environment is authoritarian and strictly teacher-controlled, students who are self-regulated may experience a destructive friction when they are trying to adapt. Lindblom-Ylänne and Lonka (1999; 2001) empirically demonstrated such destructive frictions in a traditional medical school among undergraduate students. They also demonstrated a constructive friction in a psychology programme where student activating methods were introduced (Lindblom-Ylänne & Lonka, 2000). If, on the other hand, the learning environment is loose, that is, not enough guidance and support is given, students may experience a destructive friction and experience helplessness.

It is possible that continuous destructive frictions between students and learning environments may lead to study problems. Mental distress during education may have a negative impact and lead to withdrawal from study. Lonka et al. (2008) developed the MED NORD questionnaire in order to investigate medical students’ well-being. This instrument is a combination of several measures that have been proven to be reliable and valid in previous research (e.g. Elo, Leppänen & Jahkola, 2003; Dahlin, Joneborg & Runeson, 2005; Mäkinen, Olkinuora & Lonka, 2004). Lonka et al. (2008) found that exhaustion, anxiety and stress composed a factor named “Dysfunctional study orientation”. This orientation correlated positively with disengagement, experiencing a high workload and worrying. It also correlated negatively with the feeling of getting enough feedback. There was also a significant negative correlation between dysfunctional orientation and reported grades. Students with a dysfunctional study orientation were the least satisfied with their learning environment in a medical school.

On the basis of previous research on undergraduate students it may also be assumed that the experience of Ph.D. training may be highly dependent on the learning environment provided by the scholarly community. This environment may either promote well-being and satisfaction or dysfunctional emotions and
withdrawal from study. The goal of the present study was to explore the factors that possibly promote or hinder a successful Ph.D. process.

**The study design**

*The context of the study*

This study is a part of a larger national research project (2006-2008) on Ph.D. Education in Finland that aims to understand the process of Ph.D. education from four complementary perspectives: (a) central regulators and preconditions for a successful Ph.D. process, (b) interaction between the student and their supervisor during the supervision process, (c) the dynamics of research groups as learning environments for fostering academic expertise and literacy and (d) describing the best practices of post-graduate training. The work has and will be carried out by using multiple methods (e.g., surveys, participant observations, mind-maps and interviews). The data will be collected in three different levels of Ph.D. education from: a) students, b) supervisors and c) scientific communities (e.g. research groups or seminars). The present part study focuses on the question of Ph.D. students’ perceptions of the scholarly community and how they see themselves as members of that community.

*The aim of this study*

The present study aims to gain better understanding of Finnish doctoral students’ conceptions of the scholarly community and themselves as members of the community, and how these perceptions may lead to commitment and persistence in Ph.D. studies. The students’ ideas concerning scholarly community were explored in relation to the perception of their learning environment (Dahlin et al., 2005), prolongation in Ph.D. studies and considering withdrawal from study. This paper focuses on analysing Ph.D. students’ perceptions of the scholarly community and their role in it.

*Participants*

This part study included data collected from four Faculties at the Helsinki University: Arts, Medicine, Psychology and Educational Science. Altogether 602 (female: 441; male: 158; mean age:38; Med:35) doctoral candidates responded in the baseline survey. All the participants were in different phases of their doctoral studies and they all had either MA’s or licentiate degrees. The total response rate was 38.4%.
Measurements and data collection

The Ph.D. student survey was conducted May 2006. The survey consisted of both Likert-type statements and open-ended questions. The themes of the survey were: Ph.D. students' ideas of the Ph.D. process and its main regulators (e.g., problems and critical incidents), perceptions of themselves as a part of the scientific community and the student–supervisor interaction. Ph.D. students' perceptions of their learning environment, experienced stress, anxiety and their ideas about academic writing and themselves as writers were measured by 14 scales including 49 items. The Ph.D. student survey contained in total 81 questions: 8 open ended questions, 55 Likert-scale statements (one item from the learning environment scale was excluded from construction summary variables) and 18 background variables. It took about 30-45 minutes to complete the survey. This paper focuses on those questions that addressed students' ideas about the scholarly community, their perceptions about their learning environment and well-being.

The instrument

In the present part of the study, the Ph.D. students' perceptions of the scholarly community and themselves as a part of the community were explored with the open ended question “How do you perceive your role in your scholarly community?”. Doctoral students' perceptions of their learning environment and their well-being were explored using a modified version of the MED NORD questionnaire (Lonka et al., 2008). Students’ perceptions of their learning environments were measured with 13 items that formed the scales: 1) atmosphere, 2) receiving feedback, 3) workload 4) worry and 5) satisfaction (Dahlin et al., 2005). In addition, PhD students’ well being was measured with 10 items that measured Stress (Elo et al., 2003), Exhaustion (Maslach & Jackson, 1981), as well as Anxiety and Lack of interest from the Inventory of General Study Orientations (IGSO) (Mäkinen et al., 2004). Moreover, background variables (margin between starting year and estimated graduation year) were explored to find out whether there were differences in perceptions of scholarly community between those students who had considered dropping out of their studies and those who had not, and whether the perceptions were related to prolongation of the studies (limit for prolongation was over 10 years).

Analyses

The open-ended question on students’ role in the scholarly community was content analysed using an abductive strategy. The strategy of the content analyses was thus compatible with the idea of hermeneutic circle; continuous dialogue was maintained between the theoretical presumptions and the phenomena manifested in the empirical data. Empirical findings and theoretical
ideas took turns and completed each other, gradually, resulting in the final categories. The analysis constituted three exclusive categories: a) **member of scholarly community**: perceiving one self as a member of scholarly community, b) **outsiders**: not perceiving one self as member of any scholarly community and c) **incoherent role**: those students who considered their role contradictory or whose idea about their role was unclear.

Statistical analyses on modified MED NORD questions were carried out to measure the internal consistency (Cronbach’s Alpha) of the scales. The scales were particular variables based on a principal component analysis performed with Varimax rotation by using SPSS version 12. The statistical analyses resulted in the decision to discard individual items, in order to obtain higher reliability as discussed in the results section below. One item from the learning environment scale was excluded from construction summary variables.

An Independent Sample (2-tailed) Student T-test (significance level p < .05 ) was carried out to test if there were differences in perceptions of role in the scholarly community between those students who had considered withdrawing from study and those who had not. In addition, a one-way analysis of variances (ANOVA) was conducted to find out if there were was covariation between the perceptions of the learning environment and how the postgraduates perceived their role in the scholarly community. The categories that resulted from the content analysis were cross tabulated with the study context to find out whether there were interconnections between the students’ perceptions of their role in the scholarly community and the study context. Relations between the perceived role and the context were measured with a Chi-square test (significance level p< .05).

**Results**

*Ph.D. students as members of a scholarly community?*

More than half (55%) of the Ph.D. students perceived themselves as members of some scholarly community, though different meanings and interpretations of this existed.

"In a way, I see myself still as a student, but at the same time I’m taking my first steps as an independent researcher. I plan on participating more in conferences in the future, so I can get more contacts, which are in my opinion very important for a Ph.D. student in order to integrate.”
"An M.A. is scum, whose degree is worth nothing. A white collar slave, whose job is to sell his soul with a minimum salary and to work 24/7 and eventually burn out, while the director just collects the money and the honour."

Definitions of “scholarly community” given by the students varied considerably, ranging from “a research group” to “the international community”. Also, the experience of membership in the community varied, from seeing one’s self as a junior researcher or a student, to just seeing one’s self as cheap labour. At the same time, about a third (29%) of the students did not perceive themselves to be members of any scholarly community at all. Hence they considered themselves to be outsiders of the community.

“I'm an outsider, because I don't belong to any research group and therefore I don't have a feeling of relatedness. As a Ph.D. student I would already like to be a part of a community of researchers.”

A minority of the Ph.D. students’ had incoherent perceptions about their role as a member of their scholarly community. These students experienced their role either as contradictory (7%) or did not have any idea about their own role in the community (9%).

“It varies a lot. Sometimes you can contribute something meaningful and participate in the so-called academic activity. Sometimes you are a burden and you feel ashamed of yourself.”

“These are really tough questions. I don’t quite understand this. Apparently, [my role as a Ph.D. student is] pretty good, but I don’t understand why, because I have no proof of it or much to give to the scholarly community.”

Furthermore, these categories were cross tabulated with the study context to find out if there was a relationship between the students’ perceptions of their role in the scholarly community and the study context.

Table 1. Cross-tabling of the study context and the perceived role in scholarly community (N=602).

<table>
<thead>
<tr>
<th>Member</th>
<th>Outsider</th>
<th>Incoherent</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Faculty of Arts</td>
<td>179</td>
<td>91</td>
<td>54</td>
</tr>
<tr>
<td>55,2%</td>
<td>28,1%</td>
<td>16,7%</td>
<td>100,0%</td>
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</tbody>
</table>
The results indicated that there was significant variation between the four research contexts. The relation between the context and the perceived role in the scholarly community was statistically significant (ChiSquare = .044, df = 6, p < 0.05).

Most of the Ph.D. students majoring in medicine, arts and psychology perceived themselves as members of scholarly community. At the same time about the third of the Ph.D. students within these contexts perceived themselves as outsiders of scholarly community. The educational Ph.D. students felt most isolated, with the most dominant category within this context being the students that perceived themselves as outsiders of scholarly community.

Perceptions about the learning environment and experienced stress

The descriptive analyses of the scales with number of items, internal consistency (Cronbach’s Alpha), scale means, standard deviations and Likert points are presented in Table 2. The results show that the reliability (Alpha) is satisfactory or good for each scale. The only Alpha levels below .60 were for Satisfaction .505, Worry .508 and Workload .582.

Table 2 Descriptive analyses of the scales (n = 602), number of items (N), internal consistency (Cronbach’s Alpha), scales’ mean values, standard deviations (SD), and minimum and maximum values.

<table>
<thead>
<tr>
<th>Items</th>
<th>N</th>
<th>Alpha</th>
<th>Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>1</td>
<td>2.8</td>
<td>1.17</td>
<td>1.00</td>
<td>5.00</td>
<td></td>
</tr>
<tr>
<td>Exhaustion</td>
<td>4</td>
<td>.824</td>
<td>2.8</td>
<td>.92</td>
<td>1.00</td>
<td>5.00</td>
</tr>
<tr>
<td>Lack of interest</td>
<td>2</td>
<td>.775</td>
<td>2.1</td>
<td>1.07</td>
<td>1.00</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Anxiety 3 .651 2.7 .97 1.00 5.00

Perceptions of the learning environment

Feedback 3 .754 3.2 .94 1.00 5.00
Workload 2 .582 2.4 .78 1.00 5.00
Satisfaction 3 .505 3.7 .71 1.33 5.00
Poor atmosphere 3 .663 2.5 .83 1.00 5.00
Worry 2 .508 3.0 1.11 1.00 5.00

Correlations among variables

Table 3. shows that students who perceived their learning environment more negatively than others also expressed more stress, exhaustion, anxiety and lack of interest. Negative attributes such as worry, an overly high workload and discontent with atmosphere of the learning environment had a significant positive correlation with stress, exhaustion, anxiety and lack of interest.

Table 3: Pearson correlations between perceptions of the learning environment, stress, exhaustion, anxiety and lack of interest. N = 602

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Stress (1-item)</td>
<td>.675**</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>2. Exhaustion</td>
<td>.536** .588*</td>
<td></td>
<td></td>
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<tr>
<td>3. Anxiety</td>
<td>.588*</td>
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<tr>
<td>4. Lack of interest</td>
<td>.250** .275** .448**</td>
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<tr>
<td>5. Feedback</td>
<td>-.207** -.230** -.241** -.258**</td>
<td></td>
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<tr>
<td>6. Workload</td>
<td>.221** .244** .413** .163** -.028</td>
<td></td>
<td></td>
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<tr>
<td>7. Satisfaction</td>
<td>-.165** -.220** -.224** -.524** .348** -.032</td>
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<tr>
<td>8. Poor Atmosphere</td>
<td>.228** .278** .312** .287** -.349** .157** -.347**</td>
<td></td>
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<tr>
<td>9. Worry</td>
<td>.390** .440** .478** .326** -.166** .152** -.262** .322**</td>
<td></td>
<td></td>
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Note: ** p < 0.001
Those students who were most satisfied with their learning environment and experienced receiving feedback reported the lowest levels of stress, exhaustion and anxiety. They also reported less lack of interest in their studies. Self-reported feedback and satisfaction with studies correlated negatively with worry, poor atmosphere, lack of interest, anxiety, exhaustion and stress, all of which were positively related to each other.

Further investigation showed that those students’ who had considered withdrawing from their studies were more worried about their professional future ($t = 5.881 \text{ df} = 587 \ p = .000$) were less satisfied with their studies($t = -7.635, \text{ df} = 588, \ p = .000$), experienced a poorer atmosphere ($t = 5.361, \text{ df} = 587, \ p = .000$), experienced receiving less feedback ($t = -5.837, \text{ df} = 528.117, \ p = .000$) and reported higher workloads ($t = 3.282, \text{ df} = 530.951, \ p = .001$) than those who had not considered withdrawing from their studies. Moreover, those students whose studies were not prolonged were more satisfied with their studies ($t = -2.307, \text{ df} = 104.422, \ p = .023$), received more feedback ($t = -3.101, \text{ df} = 106.522, \ p = .002$) and were also more satisfied with the atmosphere of their learning environment ($t = 1.991, \text{ df} = 507, \ p = .047$) than students whose studies were prolonged (10 years or longer).

**Ph.D. students’ perception about the learning environment and their role in the scholarly community**

Figure 1 shows that those Ph.D. students who perceived themselves as members of the scientific community reported the highest level of received feedback. They were also most satisfied with the atmosphere of their learning environment.
Those Ph.D. students who had an incoherent perception about their role in the scholarly community were the most bothered about their professional future and were the most discontented with the atmosphere of their learning environment. Moreover, those students who considered themselves not to be members of any scholarly community reported the lowest levels of feedback and satisfaction and the highest levels of worry about their professional future. The differences between the three groups was statistically significant in terms of feedback (F = 19.286, df = 2, sig = .000), satisfaction (F = 4.277, df = 2, sig = .014), poor atmosphere (F = 13.114, df = 2, sig. = .000) and how worried students were about their professional future (F = 3.548, df = 2, sig. = .029). The Ph.D. students who considered themselves to be members of a scholarly community experienced the highest amount of feedback, the most satisfaction and were least likely to experience a poor atmosphere. In terms of feedback, these students differed significantly (Scheffe post hoc) both from outsiders (p = .000) and students who had an incoherent (p=.005) perception of their role. Members differed from outsiders (p = .018) also in terms of satisfaction and poor atmosphere (p = .001). At the same time the experience of an incoherent role was related to the highest levels of worrying and also to the poorest atmosphere (p = .000). In the measure ‘worry’, differences were found between outsiders and those whose perception about their role was incoherent (p = .040)
Conclusion and Discussion

Our results demonstrated that there was a great variation in terms of how the Ph.D. students experienced their learning environment. The amount of those who felt that they were not part of a scholarly community, almost 30 per cent, could be put in plain words as simply alarming. The domain of education appeared to be the most isolating in terms of membership in the scholarly community. This may have to do with the nature of the study; in medicine and psychology it is more common to work in research groups. In education, the typical form of publishing is a monography written by a single scholar. In humanities there is a great variation of domains, ranging from individualistic philosophers to archeology groups.

There also appeared to be clear relationship between perception of the learning environment, well-being and persistence in studying. Those who had considered interrupting their Ph.D. studies also more often expressed worrying, poor atmosphere, receiving less feedback and higher workload. In contrast, positive experiences of satisfaction, feedback and atmosphere were more typical of those who proceeded in their studies.

In terms of the learning environment, the profiles of “members”, “outsiders” and “incoherent” experiences were similar in shape. However, it appeared that in terms of well-being, the healthies environment was experienced by those who felt that they were members of the scholarly community. Outsiders experienced receiving the least feedback, whereas an incoherent role was related to worrying and a poor atmosphere. It is not surprising that an incoherent role and identity problems may be related to such ambivalent emotions.

Some methodological reflections

There were some methodological limitations in the study. Although our quantitative measurements appeared to be quite robust and reliable, they were still rather narrow. On the other hand, the very idea behind the MED NORD instrument was to minimize the number of questions. Our questionnaire was quite lengthy. It measured a great variety of phenomena, and the response rate remained low. Trying to capture a richer understanding of well-being would have called for an even more demanding measurement, which could have seriously jeopardised the response rate.

To our knowledge, there are hardly any previous studies that have looked at such phenomena. Therefore mixed methods approach along with an abductive
strategy within open-ended questions were chosen to explore the phenomena. The approach can be criticised for overlooking the epistemology-method link while combining qualitative and quantitative methods. On the other hand, using the approach (Tashakkori & Teddlie, 2003) made it possible to explore the complementary parts of the same phenomenon simultaneously. Moreover, using this approach provided opportunity for triangulation that has been used to improve validity and reliability of findings (e.g. Patton, 1990).

**Educational and theoretical significance**

There appears to be an urgent need for a more efficient means of fostering Ph.D. students’ active agency in scholarly communities. The authors suggest forms of instruction that might be helpful would be using the research group or a peer group as a supervising resource, recruiting post-doctoral fellows as tutors and training the supervisors in constructive feedback strategies. These measures could possibly facilitate collaborative practices and prevent prolongation and dropouts from Ph.D. studies. More attention should be paid on developing Ph.D. training as a meaningful entity, for instance, by providing a collaborative and activating learning environment not only for Ph.D. students, but also for their supervisors.

**References**


