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On management of scientific efforts: guiding doctoral students

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Abstract

Ten years ago the idea to increase number of doctoral dissertation had many supporters, e.g. the Finnish government built a scenario of success for Finland based on high skills and knowledge. The increased number of citizens with academic basic degree then wanted to continue their studies. Hence, there was a real need to intensify doctoral education. In this paper I shall describe some efforts to help doctoral students. Reading three new articles per month seems to create a suitable learning environment, which offers students similar tasks needed in dissertation preparation. It also offers a teacher a possibility to keep her/his knowledge up-to-date. As a side product the list of some important articles in some journals offers students a chance to pick up the new articles interesting themselves. Some objective and subjective feedback on those arrangements are also given.

Introduction

Management of scientific efforts covers, for example, managing research projects and guiding research work. In this paper I concentrate on the latter. It concerns both senior and junior scientists, and I again limit my consideration the latter, especially doctoral students who like to prepare their dissertation.

In practice, the job design and organizational structure are some key objects for management. But in scientific work where the researchers are experts such arrangements as job enrichment and matrix organization are not key issues. Instead of that relationship between a professor and a doctoral student can be co-operation or mentoring. Scientific work itself functions as a motivator, and the only instrumental motivational factor is positive feedback. It is important to remember that a professor her/himself can have the most influence on doctoral students by functioning as an example.

In addition to those general guidelines there are still possibilities how a professor can support doctoral students' dissertation preparation. In this paper I shall present some fresh ideas and arrangements I have used. To my mind, reading and reviewing good scientific articles can demonstrate acceptable ways to do research work to doctoral students.

The rest of the paper is structured as follows. First, I present the overview structure of our doctoral seminar and its different activities or items. Thereafter I explain its specialties, selection, reading and reviewing articles. Finally, I try to self-evaluate the merits of our activities.

An overview of our seminar

In order to help a reader to follow my presentation I located some important tasks and event into the time scale (Figure 1). I did not include reading drafts of papers nor commenting sketches of dissertations into my schedule, because they are given without any exact time table. The schedule contains both the traditional and novel tasks. To my mind, asking the students' research plans (item 4), preparation comments on them (item 5) and discussion about the plans in the seminar (item 7)

belong to the traditional tasks. Instead item 1 where a teacher surveys new articles in journals and selects 3 articles to be read and discussed in the seminar is the novel task. Those 3 articles are electronically distributed to the active students (item 2). The teacher then prepares the Finnish summaries and English reviews of those 3 papers and sends those reviews to the authors (item 3). The preparation of the agenda of the next seminar (item 6) will take place just before the seminar (item 7) and writing the minutes (item 8) just after the seminar.

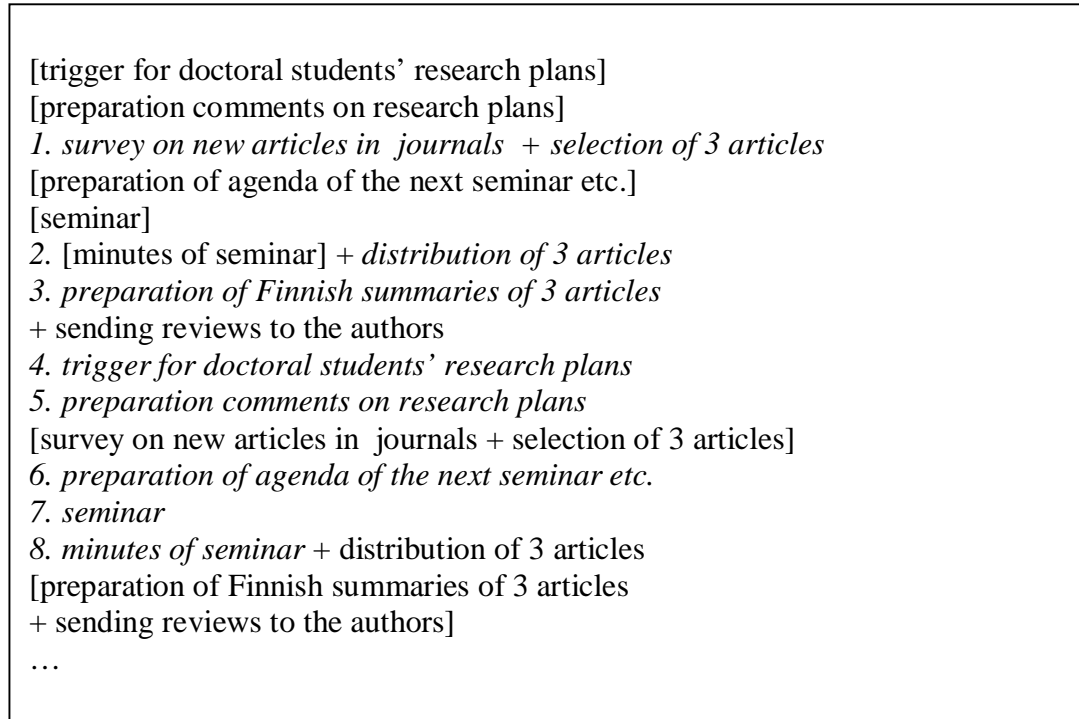


Figure 1. The schedule of some important tasks and events in my doctoral seminar

Numbering follows the chronological order of tasks and events. Some task (item 1, selection of 3 articles to be read) must be performed before the previous seminar, although those 3 papers are discussed later. The tasks intended to either the earlier or the later period are enclosed in brackets ([,]). – All the items 1-8 are described in detail in the next sections.

A short description of seminar activities or items

In this section I shall describe how and why I have performed items 4, 5, 6, 7 and 8. *Item 4* (trigger for doctoral students' research plans) contains one e-mail message where I ask two or more students who have promised to tell about their stage in the dissertation process to send the 4-6 pages long presentation electronically. I could then distribute that presentation all the members in my mailing list. I also wish that every student would write some actual question s/he just then has to be discussed in the seminar. After receiving that presentation I try to immediately distribute it, and I hope that everybody could read and comment the presentation either in the next seminar or directly to the student.

For *item 5* (preparation comments on research plans) I must carefully read the text and think my comments. Depending on generality of my comments I prepare a separate 1-2 pages long presentation photocopied to seminar participants. I then use that plan as a learning environment where I try to demonstrate the type of this study, its suitable methods and data gathering techniques,

and potential references to be read. Concerning the type and method I refer to our method book (Järvinen and Järvinen 2004, Järvinen 2004), and concerning some articles to our list of the read articles (<http://www.cs.uta.fi/is/opetus/jatko/OTSall.htm>) and their Finnish summaries since 1990.

Item 6 (preparation of agenda of the next seminar etc.) contains some administrative tasks as photocopying all the Finnish summaries I prepared, a preparation and photocopying an agenda to seminar participants. Also the list of new three articles is selected to be given for reading after the seminar. The abstracts of those articles are included into the agenda. The abstracts inform those who could not participate in the seminar.

In the seminar (*item 7*) the 2-3 research plans were first considered and discussed. The student colleagues normally give very good comments based on their own study or mainly on their long experiences in practice. In the middle of the four hours seminar meeting we have a coffee break. During it many relations for co-operation or exchange of references are built. After the coffee break those three articles under consideration are discussed. Those participants who made their summary and review have 20 copies of their text that are distributed. S/he who knows best the article orally presents the content of the article and her/his criticism. One is selected to prepare the cleaned version of summary and review containing the aspects arouse in discussion. The cleaned versions are yearly published under title "IS Reviews nnnn" since year 1990, the last ones electronically (Järvinen 2004-2006).

The minutes of the seminar (*item 8*) contain the similar content as the agenda supplemented by credits. I give 0.2 credits (credit = one work week) for participation to the seminar and usually 0.6 credits for one summary and review on a certain article. In addition to distribution the minutes to the members in my mailing list, I also send (*item 2*) the three new articles selected (*item 1*) to be read for the next seminar to the active members of the seminars. Those who belong to the category of non-active can ask those articles from me.

Survey on new articles in journals (*item 1*)

In 1990s I visited once per month in the library of our university and looked at the newest numbers of the journals in my list. Later when the journals became electronically available I see the newest articles on my PC. After a quick review of the candidate I must decide whether I shall bypass this candidate, or send its copy to a particular doctoral student or take its paper copy. For the next seminar I normally collect 20-30 articles in the paper form. I take their first 2 pages and circulate the bunch of those cover pages during the first part of seminar. Everybody who likes a certain article could write her/his name on the cover page. The bunch is then given to our secretary who will take photo copies of the whole articles for those who wished so. This is an important service the doctoral students who are part-time students and are not living in the university town, i.e. close to the scientific library.

Concerning the selection of those three articles to be read in our seminar, I have some selection criteria. First, I prefer survey or review articles. The reason is that the survey article will report what we already know. It will help a researcher in many ways. At the beginning of the study the survey article will tell what are good research questions (Webster and Watson 2002). At the end of the research process the survey article will give advice to the researcher to decide whether her/his results are new or not, and in which way does her/his contribution have implication to science. Our newest examples of survey articles are e. g., Leidner and Kayworth (2006), Gallivan and Srite (2005) and Jeyaraj et al. (2006). Secondly, I appreciate a new theory, method or construct if the new article contains such one. It then helps us to widen our view to look at research objects by

giving new lenses through which we can analyze a part of reality. Finally, I sometimes follow a certain theme or a particular author I consider important. I have selected many articles on research methods and their content is later included into our books (Järvinen 2004, Järvinen P. and A. Järvinen 2004). I have selected many articles written by Orlikowski (e.g. such classical articles as Orlikowski 1991, 1992, 2000, and 2002, and Orlikowski and Iacono 2001) and Markus (1983, 2004, Markus et al. 2002, and Markus and Robey 1988), because their articles contain a wide literature survey and new fresh ideas, and their articles are well-written.

My many friends (Mikko Ahonen, Ellen Christiaanse, Shirley Gregor, Juhani Iivari, Kalle Kangas, Eero Lähteenmäki, Lynne Markus, Marko Mäkipää, Mikko Ruohonen, Hannu Salmela and Reima Suomi) have helped me and sent many important articles to be read in our seminar. In this context, I would like to transmit my warm thanks them for their support.

On reading and reviewing new articles (*item 3*)

This section concerns those three articles selected to be read for the next seminar. I as a teacher normally prepare 3-5 pages long Finnish summary, copies of the abstract and some important aspects of the paper, I call highlights, and my review. The Finnish summary is important to a quick introduction to the Finnish doctoral students into the article. Prof. Per Flensburg once paid my attention to the fact that the summary is prepared in mother tongue. Although English is dominating language in our field we are still thinking our field with concepts based on our mother tongue.

The copy of abstract in its original form is sometimes enough when we are in our own study referring to that article. The highlights are needed when our reference covers the longer citation or more profound consideration.

In my review I evaluate the paper by showing its merits and weaknesses from my point of view. During the last years I have sent my review to the authors when it has been possible. More than half of the authors have friendly replied me by explaining more their views and evidence. Their replies have clearly helped us in understanding the background and rationale of the paper.

My use of the articles is based on some ideas. I can use the articles as learning environments. Doctoral students must prepare their dissertation either as one long report or a set of articles. The latter competes with senior researchers, i.e. with the top researchers in the world in conferences and journals. With the good articles to be read I can transmit many spoken and unspoken conventions on research work to doctoral students. I especially pay attention to motivation from science and practice in Introduction, to the special terminology of scientific research, to the structure of the article, the theory and method used and the implications to science and practice in Discussion.

To demand a summary means that the reader must carefully read the paper and in addition to that also write its main content into a file. It is a clear difference between reading the paper or reading and writing a summary on the paper. Based on my experience writing requires that the person has understood the main message of the paper and can present it in the written form in mother tongue.

Students' and the teacher's self-reflection

The distribution of research plans before the seminar meeting to everybody on my mailing list informs about questions doctoral students are interested in. In the e-mail message I ask respondents comment the plan either directly to the doctoral student or in the seminar. Direct comments are coming from different sources, from foreigners in my mailing list, from my doctors or senior

friends or from colleague students who cannot participate in the seminar. Those “outsider” comments have been very valuable.

The students’ own reactions to my seminars are mainly positive. I wrote some early ideas of my seminar (Järvinen 1998). Seven doctoral students evaluated my seminar ideas in practice (Järvinen 2003). I was interested in knowledge processes started by reading the articles. The findings show that about half of our subjects related the knowledge in the article with their work and shared it with their colleagues in the working organization. This means that from the utilization at work point of view the scientific articles can give something useful and practical to part-time doctoral students coming from practice. This result is parallel with the view that the professional has three types of knowledge work tasks: job-specific, knowledge-building and maintenance, and work management (Davis 2002), and the reading articles positively supports knowledge-building and maintenance. But because of the main purpose of our doctoral seminar is to support the doctoral dissertation process, this objective is seen in responses. Many respondents emphasize contribution of the articles to their thesis work.

The articles read in our seminar have been as good that doctoral students have used them in their dissertations. About 30% of references was the normal portion of all the references in my students’ dissertations, but the highest figure was about 70 %.

I have used those articles in updating our method book (Järvinen and Järvinen 2004, Järvinen 2004). Reading some carefully selected new articles might keep my own knowledge up-to-date. The Finnish summaries have helped the doctoral students who first time came into the seminar in their start of doctoral studies. I have been able to give them both some original articles and their Finnish summaries.

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