RÅDET FÖR HÖGRE UTBILDNING
COUNCIL FOR THE RENEWAL OF HIGHER EDUCATION

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Process Orientation in Postgraduate Teaching

Abstract

The division of Quality Technology at Linköping University has some previous experience of process orientation of the activities taking part within the division. The purpose of this was obtaining higher quality and efficiency within basic education, doctoral education and research. Presently, this division has merged with the division of Industrial Ergonomics to the division of Quality and Human-Systems Engineering, and the present project is intended to develop the doctoral education by structuring it according to processes.

The aim is to develop a process-oriented concept for post-graduate, to implement and evaluate this in practice. Great emphasis is put on the spread to and participation of all supervisors and PhD students at the division.

The work is based on the needs of the customers, i.e. the PhD students. The intended results are better quality supervision, a clearer mental picture of the research education, shorter throughput times, better efficiency and smoother adaptation to post-graduate studies for the PhD students.

Several small formally organised project groups with substantive PhD student participation will develop different parts of this. Each group works for a limited time period, and has the task to produce documentation of the processes and another document with the experiences obtained. A project coordination group and a reference group coordinate the work. If unsuitable results are reached, there will be improvement and charges of the concept, in order to reach the level of improvements intended. This may mean that longer time periods are needed in order to obtain the desired results.

PROPOSTE

Process orientation in post graduate teaching

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1 Introduction

This is a project concerned with efficiency and quality at the highest level of our educational system – the research training provided to doctors to be. It is taking note of the remarkable changes that our industrial environment went through during the last part of the previous century. Information technology with all its ramifications has very potently penetrated all sectors of our society. The traditional industry is being gradually restructured to enable satisfying the requests for customer orientation with large demands on flexibility and rapid changes. New ideas and new technique are being developed and applied to handle ideals earlier considered to be incompatible such as mass production combined with customer orientation.

Natural questions in this connection concern our educational system and whether it is in phase with the industrial development. Are we able to respond to the continuous changes that put increased demands on the future work force? New organisational ideals that clearly builds on a philosophy of change, such as continuous improvements, teamwork and learning organisations require, for their success, curious, creative and flexible fellow workers with theoretical as well as social competence. For the much discussed process orientation it is more difficult to apply success factors. In a way it fosters a more rigid behaviour if the processes are understood and applied as permanent rules and regulations. If, on the other hand, the processes are seen as the best available guidelines that are subject to revision at any time they may stimulate the creative minds. In both of the above situations, the fellow workers must be able to quickly grasp new problems and actively look for improvement options; ability to explorative and developmentally guided learning is assigned a high economic value.

Academic education and research have not yet accepted process thinking to the same extent as industry. There are some attempts that have been reported in vocational training and in undergraduate teaching. However, there is a trend towards an increasing number of Total Quality Management concepts in university teaching. We have not found any comprehensive attempt to orientate the doctoral education process in the sense that we intend. There are, however, several cases that discuss supervision processes and research education processes.

Process orientation may be seen as a form of standardisation and description of work activities to take place. The focus here is post-graduate teaching. There are two major contradictory views on standardisation. According to the quality movement, especially researchers from Japan, standardisation supports learning and creativity. Most companies, even large and complex ones, can be broken down into fewer than 20 major processes (Davenport,

1993). Process orientation is quite common in industry and one of the basic elements in a successful Total Quality Management strategy (Bergman and Klefsjö, 1994).

The other standpoint can be found in university activities. According to Jern (1997) the post-graduate teaching of tradition is flexible and dynamic and as a consequence it is difficult to describe the education in terms of a structured processes. The post-graduate process for many supervisors is only an intellectual process instead of contextual human activities (Lindén, 1998). This has lead to that principles for supervision have been unreflected. There are some research concerning supervision from the supervisors and post-graduate student point of view (Lindén, 1998, supervision and the post-graduate student competence development phases and research education processes (Yorke, 1999). There are few studies focusing on process orientation in post-graduate teaching. Two exceptions are Jern (1997) and Houston and Rees (1999).

Jern (1997) tried to describe a general model without weaken the flexible and dynamic character of a PhD education. He divides the education in the following stages

1) Theoretical knowledge acquirement
2) Practice of methodological skills
3) The own research task

The concrete tasks (process goals) is specified in each stage and put together to an action plan.

Houston and Rees (1999) reports a student based action research project into quality management within a postgraduate education programme. The intention was to develop a quality manual for the programme based on a generic quality system standard. It became apparent for them that may processes in the programme either were ad hoc or were only partially formalised. It was clear that a substantial amount of input was needed for staff to fully develop formal processes. The number of processes "under development" was surprising. Some of the processes appeared to be missing altogether. The group, as students, found it very difficult to effect any change on the organization. According to Houston and Rees (1999) people were willing to offer advice and document and have meetings, but they were not so willing to be involved.

2 Project aim

The aim of this project is to develop a formalised structure of the doctoral education and to collect experiences from this. On such a basis a procedure can be designed for the evolution of appropriate and comprehensive documentation of the costs and benefits for everyone concerned.

In a first phase the intention is to look into what processes can be defined to help increasing the quality of the doctoral education. With a longer perspective we expect that also the basic education will gain from more knowledgeable teachers. Thereafter, all that is needed - but still difficult to

obtain and maintain - is a disciplined adherence to defined sub-goals, goals and deadlines.

3 Working methods

The work of documenting and creating the processes have partly been inspired by previous concepts developed by Bo Bergman, former Professor in Quality Technology at Linköping University. This project was largely driven by a group of eight Ph D students at the research area of Quality and Human-Systems Engineering at Linköping University. Most of the Ph D students have used 20% of their working time for different periods of time during the project.

The first concern was to develop a formalised project plan for the project. The first year was a start up phase. Two subprojects were initiated in August 2001. One PhD student made a search for similar approaches elsewhere. There was also a literature review of the field to give a theoretical background to the project. The other subproject group contained four PhD students that reviewed previous process description regarding the activities that took place at one division within Linköping University, namely Quality Technology and Management. The outputs from these two subprojects were one literature overview and four tasks suggested for further work. This lead to four subproject titles:

- An overall process description
- Checklists
- The supervision process
- Creativity and process standardization

The necessary work effort to develop these steps were estimated and compared to available resources. After the selection of the task, three groups were formed and they discussed and specified the necessary subproject inputs/outputs. The fourth task was postponed due to lack of resources.

During the project, the project subgroups worked with the relevant process descriptions. When there were no relevant materials available, new processes were proposed. If present practice was not very helpful, the reasons for the shortcomings were identified and new processes were proposed. The three subproject groups worked from September 2001 to June 2002.The following PhD students performed most of this work:
Marc Antoni
Cecilia Chressman
Anette Erlandsson
Peter Kammerlind
Beata Kollberg
Bozena Poksinska
Cecilia Rapp
Simon Schütte
Linda Törnström

The steering group followed up the work on its meetings and all group members met on a regular basis in cross-subproject work meetings. The final proposition of the process description was presented for all staff at the research area in August 2002. The proposals were discussed and changed according to these discussions, and the final process descriptions were established and displayed on a webpage, www.ikp.liu.se/proposte

4 Result - Process model

The result from the project is a process model that describes the postgraduate education process. The process is described in the four phases Introduction, Planning, Project and Writing. These four phases are overlapping and repeated once. Supervision, Pedagogical development and Evaluation are also included in the Process model as important factors. Each phase is described with a one-page description with the headlines aim, description, milestones and checklists. To each phase is a set of checklists appended. The process model is given in figure 1 with the milestones Licentiate Degree and PhD Degree.

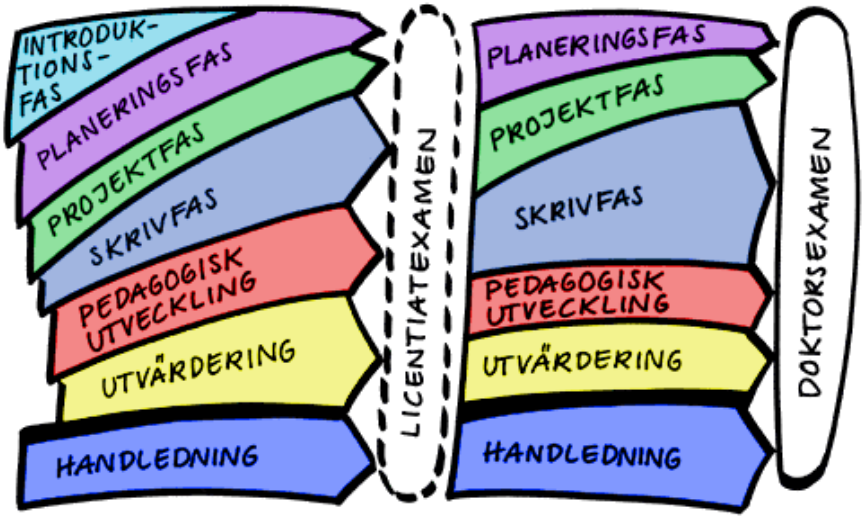

Figure 1: The proposed Process model for Postgraduate Education (in Swedish).

The documentation is mainly electronic and the documents are gathered on a web address, see www.ikp.liu.se/proposte. The reason for this is to ease the routines with modifications and upgrading of the documents. There is also one paper version of the documentation where all phase descriptions and checklists are stored. To give an overview of the each phase the corresponding checklist are given.

Introduction Phase:

- Employment conditions
- Introduction of new PhD students
- Handbook for PhD students
- Departmental work and teaching

Planning phase:

- Individual study plan
- Evaluation of PhD studies (on yearly basis)
- Reflection of supervision
- Suggestions for writing thesis proposal

Project phase

- Evaluation of PhD studies (on yearly basis)
- Guidelines for 30% PhD

Writing phase

- Write an article
- Pre-Licentiate seminarium
- Defending a Licentiate Thesis
- Preparation for the Dissertation
- Defending a PhD Thesis

Evaluation:

- Evaluation of PhD studies (on yearly basis)
- Career planning

5 Implementation of the results

The project finished its work when the process description report was finalised and displayed on the web. All research supervisors at the research area have agreed to work according to these processes during 2003. An evaluation will be carried out in the beginning of 2004, which will decide about modifications and the continuing use of this process orientation of the post-graduate teaching.

6. Discussion

One part of the project contained focus group interviews with PhD students concerning their experience of postgraduate studies. During these sessions the idea behind the project and the earlier versions of the proposed process model was discussed. The process model might not help in solving particular research problems but it was seen as an aid in understanding the overall process and the role of a PhD student. It also helped both doctoral students as well as senior researchers with formal paper work, administrative routines etc that takes time and efforts. One important experience so far is that potentially new Ph D students found the process descriptions very useful in order to get insights of what research studies are about. The documents are thus very supportive in aiding the students and setting their expectations of how the doctoral studies will proceed.

The reactions from most PhD students have been positive since it is an urgent issue, and no generally negative responses have come up so far. The time period as a PhD student is often confusing and the material gathered in the PROPOSTE process model is especially helpful in the introduction phase. There is also a need for more general guidelines for PhD studies and the process model helps partly here, e.g. the guidelines for salary revisions and guidelines for article writing.

One of the biggest challenges with a project such as this is acceptance and implementation, and another is survival. The obstacles and driving forces in this respect are presently followed, and will be reported in the future.

Information about this project has been given at a number of occasions, including internal seminars, seminars at departmental and university levels in Linköping, and at conferences, including the NES conference 2003 and the internal Fredensborg conference 2003. Colleagues at other departments in Linköping and at other universities in Sweden have been informed at different occasions. Also, the webpage is an important means for spreading this information.

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