

# **Training of young researchers and PhD supervisors for the future**

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## **Abstract**

If Europe is to develop an integrated knowledge society and ERA, the research practice has to be developed. Further development of the research practice can among others take place through training of young researchers, which is not only based on the principles of apprenticeship, but a training which contributes to break down the usual ways of thinking and to incorporate both intercultural and interdisciplinary principles, and a valued orientation towards trade and industry. The PhD supervisors should also be trained so that light is thrown on the aims, methods and contents of the supervision, and last but not least on a number of actual problems experienced by the PhD students.

## **Introduction**

Haven't we all tried to be at a conference, bored and annoyed with another scientist – young or experienced – who is literally reading his paper, without any visualisation and without any articulation of his words, just using a monotonous vocal pitch? Perhaps even in spite of the fact that the scientist's native language was English. Time was wasted – and maybe 50 people wasted one hour each.

The ability to communicate one's message, either internally to the research community or externally to users and co-operation partners is becoming a more valued competency. Internally in the research community, it is necessary to be able to communicate both to experts within the actual field and also to an interdisciplinary and intercultural group, which is trying to combine knowledge in new ways through co-operation. These processes can be difficult in terms of knowledge and communication, as one has to be aware of own knowledge and at the same time be able to link to other fields of knowledge and the experiences of others.

The ability to communicate one's knowledge to various target groups can be learned, but one has to be just as focused on the development of this competency as to the development of his/her research. At the Doctoral School, Faculty of Engineering and Science, Aalborg University, courses in Professional Communication have been offered to young PhD students for the last 8 years. More and more PhD students apply for these courses, especially as there are about 350 registered students at this Doctoral School of which 33 p.c. come from abroad. In these courses, the training of the young researchers is especially focused on the development of core competencies as communication, intercultural learning and interdisciplinarity. However, there is a need to focus on the training of PhD supervision in order to integrate these aspects into the PhD students' learning process.

## **Intercultural learning, interdisciplinarity and core competencies**

Exactly the intercultural dimension leads to an increased need to formulate, reflect on and develop the meeting between the PhD student and the PhD supervisor. The expectations are determined by culture, as e.g. Danish PhD students are used to be independent, but PhD students from many other cultures expect the PhD supervisor to play an active part in the decision-making processes about their research. Obviously, this leads to a mismatch between expectations and practice – but it could be an excellent starting point for reflections on the intercultural meeting.

But the intercultural meeting is also part of the PhD student's training of the research co-operation itself, and in practice it may also be integrated in the interdisciplinary meeting. EU values interdisciplinarity in all research programmes, so the research community has to develop strategies for competency development. How do we share knowledge? How do we set up project management procedures, which may be determined by culture, for that matter? How do we present results to an interdisciplinary target group or non researchers?

There are no easy answers to these questions, but it is a must that they are included in the actual training of young researchers. In practice, the PhD student could make reflections and experiments and report on his results in e.g. a portfolio.

## **Apprenticeship and scholastic training**

Today, the training of young researchers is at the crossroads between the apprenticeship model on one hand and a scholastic training in organized Doctoral Schools on the other. Of course, there are overlaps, variations between the two poles, but the important thing is that the learning and training methods are very different. They both have their strengths and weaknesses.

The evident advantage of the apprenticeship model is that the PhD students become part of the environment, and in principle they are close to the PhD supervisor's research and way of thinking. The disadvantage is that their training is dependent on the supervisor, and it may often become too closely focused.

Doctoral schools have the advantage that the very idea implies an organization, and thus an organization and structuralization of the courses offered. The power is not held by the individual supervisor, but becomes part of a structure and an organization. The disadvantage is that it may continue a scholastic training, which will not allow independent research growth.

There is a need for both. There are important learning principles implied in the apprenticeship model, as it often copies practice. Copying practice also includes the tacit elements, which are not and cannot be conceptualized. But there is also a learning potential in the scholastic training, which can imply training of core competencies, including the intercultural and interdisciplinary elements that reach beyond the well-known existing practice.

What makes the relationship between the PhD student and the PhD supervisor even more complicated is the different economic sources for the PhD study. Normally, there are three different sources for PhD scholarships:

- Ordinary PhD scholarships financed by the university
- Part of externally financed programme
- Company/university scholarships

Difficulties may occur especially if the PhD supervisor is at the same time the person, who was responsible for applying for external financing, and if that gives rise to problems. In co-financed projects like e.g. company/university financed scholarships, problems can be even more significant, as not only is the supervisor the person, who applied for funds; but there is even a third party, who finances the project and who has expectations from the project.

## **Difficulties in PhD supervision**

Basically, it is a widely accepted myth that once you have become a researcher, an associate professor or a professor, you do not need any further education. You may well be a professor within an expert field without concepts for supervision. In Denmark, the task of PhD supervisors has gradually changed from a PhD being an individual project and based on individual scientific interest. The supervisor of such a project was an acknowledged expert in the field of research. Responsibility for the progress of the project remained primarily with the candidate. The main task of the supervisor was to give feedback on request and of course to indicate when the thesis was ready for public defense.

Nowadays, most PhD students enrol in a PhD programme. Next to their research project, they have to follow a series of courses. The expectations that the supervisor have to meet have changed, and she or he has become responsible for a variety of different tasks. She/he has to be the expert teacher, as well as a facilitator, facilitating core competencies, as well as a judge of the progress. Several of the supervisors who are called upon to fulfil this role find themselves lacking in some of the necessary skills.

The consequences are clearly manifested in the efficiency of the PhD programmes. A growing number of PhD projects are seriously delayed. Both for the PhD students as well as for the supervisors this causes much unnecessary frustration. Furthermore, interviews of PhD students indicated many serious problems related to the position of the PhD student, problems like not wanting to disturb the supervisor, problems in understanding the PhD supervisor's way of thinking, and not least concerns about being respected and recognized by the supervisor.

## **Perspectives**

No matter which future scenario we make, the training of core competencies is an important element in the young researchers' development. They have to be able to reach further, to communicate their knowledge, and to co-operate with all target groups, nationalities, professions and trades. But these competencies are also important to experienced researchers, and it is important to knock holes in the myth that experienced researchers have reached such a high level that they do not need further education. Their expertise may well be within limited expert fields, and thus lifelong learning is a necessity within academia.

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