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Assessment of the BSc dissertation process from the perspective of students and supervisors

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The Bachelor degree in Biology at University of Copenhagen includes a dissertation towards the end of the obligatory study programme (Act on universities 2011). The project is weighted 15 ETCS-points out of a total of 120 ECTS-points (equal to one fourth of an annual study programme) (Studieordning 2009). Hence, for finalising their studies and achieving their scientific degree BSc students write a dissertation – a process including supervision.

Supervision is different from other teaching forms mostly because it aims at supporting and guiding individual students over a relatively long time period (e.g. Cook 1980, Handal & Lauvås 2007, Biggs & Tang 2007). Furthermore, supervision often takes place behind closed doors (e.g. Handal & Lauvås 2005) and has received relatively less attention compared to other teaching forms resulting in limited descriptions of how to perform good pedagogically supervision and how supervision should be evaluated (reviewed by Wichmann-Hansen et al. (2007), but see also (Handal & Lauvås 2005, Derounian 2011)).

For many students, the BSc project is their first encounter with such a direct interaction with a teacher where the personal connection plays a role in the successful completion of the process (e.g. Cook 1980). For most students, this project is also the first individual written larger assignment and they are expected to demonstrate the ability to formulate, analyse and process a scientific problem. This is normally carried out by conducting a research oriented project where the students additionally are required to show qualifications within e.g. data handling, analyses and formulation skills (Studieordning 2009). Thus, the BSc students are expected to apply

large parts of their obtained skills during the BSc project process. As a consequence, many students most likely view the BSc project as the most substantial and independent task they so far have undertaken during their university studies (e.g Derounian 2011). Many students also feel that this is a great chance to work within a favourite topic and make use of their achieved skills (Derounian 2011).

Most lectures and professors have supervision as one of their main teaching activities. With the increasing importance and student awareness of the BSc project as well as a growing demand by students for quality (interesting) projects, supervisors may also experience increasing competition to attract students. However, because of the different nature of this teaching form, teachers may not always be well prepared (Cook 1980) and there seem to be a need of guidelines (e.g. Rowley & Slack 2004, Handal & Lauvås 2005) or training opportunities (Handal & Lauvås 2005). Furthermore, often early career post docs and PhD students perform the day-to-day supervision of BSc student projects in which case the above would most certainly apply (Cook 1980). Hence, students and supervisors may experience that the process of the BSc project includes (a growing degree of) challenges of educational, communicational or organisational character besides the strictly scientific part of the process.

Since both students and supervisors shape the final outcome of the project process, a way to improve the process would be to introduce guidelines or tools for supervisors. Unfortunately, there is limited knowledge available in the literature, especially regarding supervision of BSc level project (Rowley & Slack 2004). A recent literature review focussing on published empirical studies were able to include 50 references on supervision. Of these, 11 were concerned with supervision of undergraduate projects (Wichmann-Hansen et al. 2007). However, much of the literature available is focussed on technical aspects such as keeping time limes, ability to write clearly and organisational skills (Rowley & Slack 2004). The importance of looking closer at supervision of undergraduate projects in particular is further underlined as very little knowledge from post-graduate level supervision is likely to apply directly to under-graduates (Rowley & Slack 2004).

One of the most efficient ways of increasing teaching skills is by evaluation (Biggs & Tang 2007). However, because of the higher degree of personal relations supervision and the difficulty of setting up an anonymous assessment evaluation of the supervision process, it is certainly very different from approaches used in other teaching form. Furthermore, tools

for conducting evaluations of supervision are not very common or broadly applied (but see Handal & Lauvås 2005, Derounian 2011).

My objective was to evaluate students and supervisors expectations to the project process and to what degree they match expectations before and during the project period as well as assessing the current extent and ways of evaluating the project process.

Methods

I prepared two separate questionnaires for students and supervisors holding 20 and 13 questions, respectively (Appendix A and B). Key questions where formulated so that the results could be directly compared. The questionnaires were handed out to 13 students and 13 supervisors from Section for Ecology and Evolution at Department of Biology and the Zoological Museum both departments at Faculty of Science. Half the supervisors were temporary employed (PhD-students and post docs) and half were holding a faculty position (associate or full professors). Only supervisors who had acted as the day-to-day supervisor of at least one BSc-student within the last two years (not necessarily the responsible supervisor as this would exclude the group of temporary employed supervisors) were included. Both current and former BSc-students were included i.e. both students in the process of conducting their BSc projects as well as students already finished. In connection to most questions, I asked for additional specific information that could increase understanding of the replies and also leave an option for additional comments. Questionnaires were filled out anonymously. Since my main objective was to assess the experience of the entire process in general, I made no attempt to couple the students with supervisors.

Expectations

For both groups, I aimed the first of the main questions at the expectations of learning outcomes and additionally for students what issues they focussed on when choosing their project and supervisor. The latter was repeated as the second last question in an attempt to force the students to re-think their choice and maybe report on what would be most important for the successful completion of the project. Furthermore, questions were included with the aim of exploring to what degree expectations were discussed prior and during the supervision process.

Starting up

The next issues focus on understanding the process of project development. Students were asked how easy they experienced the work with formulating the project and both groups were asked how this initial part of their collaboration was working. The purpose here was to obtain information on how much influence the students have on the project they are going to work on.

During the project period

I also aimed at achieving knowledge on how time allocation was experienced in the two groups. I therefore asked both groups how many supervision meetings they had and how much time the supervisor used on the project. Also part of the process is preparation for the exam so towards to end of the questionnaire, both groups were asked about degree of exam preparation in the supervision.

Evaluation of the project process

From here I moved on to questions regarding evaluation of the process. I asked both groups whether they evaluated the entire process after the exam because I was very much interested in knowing more about how common student evaluation of the supervisor performance is.

Finally, students were asked to indicate overall satisfaction after finishing their project and to list the two most important things that they learned from their project.

Results

Nine and 11 out of the 13 questionnaires handed out to students and supervisors were returned, respectively. Please note that unequal number of replies between subjects is caused by the fact that not all questions were answered by all persons in the survey.

Expectations

Ten of the 11 supervisors answered that expectations where discussed before and during the process of the project while only four out of nine stu-

dents had the same experience. Eight of the students and seven of the supervisors were not aware of the Intended Learning Objectives (ILO's) for a BSc project.

When students were asked to judge the most important issues influencing their choice of project and supervisor, future job possibilities and student environment did not apply. Instead topic and supervisor seem to be most important. When asked to rethink this question in "retro respect", having a good feeling about or recommendation of the supervisor increased in importance (figure 25.1). This result was very much in agreement with the replies from the supervisors (figure 25.2). Overall, six of nine students stated that their projects lived up to their expectations.

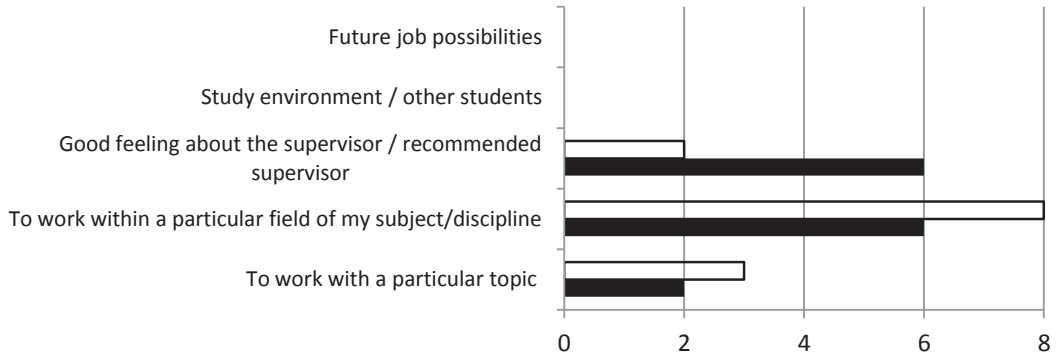

Fig. 25.1. Students were first asked: What is the most important issue when choosing project/supervisor? (closed bars) and again same question in retro respect (open bars).

Starting up

Students were asked how they experienced the initial part of the BSc-project process. Eight of the nine replied that they found it easy or very easy to get in contact with the supervisor (the last was "neutral"). From their short descriptions of how they established contact it was seen that four had a personal relation (e.g. from former teaching), three got into contact through a third person (e.g. via another student) and two reacted on a "public" project announcement (e.g. on Bioliv). Regarding the formulation of their project four of the nine found it easy while two found it difficult (3 were "neutral").

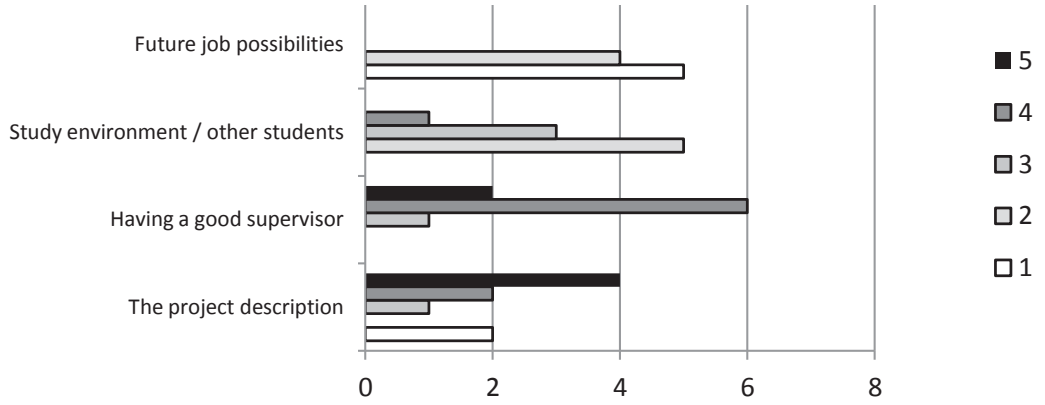

Fig. 25.2. Supervisors were asked: Based on your experience as a supervisor, please indicate the importance of the following issues for students during their BSc project? Values 1-5 were given (1 open bars to 5 filled, 5 is best).

Supervisors seem very much involved in the project formulation. Although, eight out of ten replied that they formulate the project but still develop or change the project in collaboration with the student and most (five of the eight) even offer alternative projects. Supervisors not involved in formulating the projects leave a similar impression as the projects are developed together with the students in one way or the other. As an example, one responded that he/she "*gives a topic within which the students formulated the project.*"

During the project period

In both groups they all reply that face-to-face discussions are either important or very important. As seen in figure 25.3 and 25.4, I found quite a large scatter in the number of meetings and time allocation by supervisors. Nine of 11 supervisors used more than 30 hours or replied that they used sufficient time and a very similar pattern was seen in the student replies.

Only one student (of 5 replies) stated that he/she was not prepared for the exam. All supervisors replied that they prepared students. However, seven of the 11 did only provide "some" preparation (figure 25.5).

Evaluation of the project process

Half the supervisors replied that they performed a self-evaluation after the project. This was most commonly done by reflecting on own performance

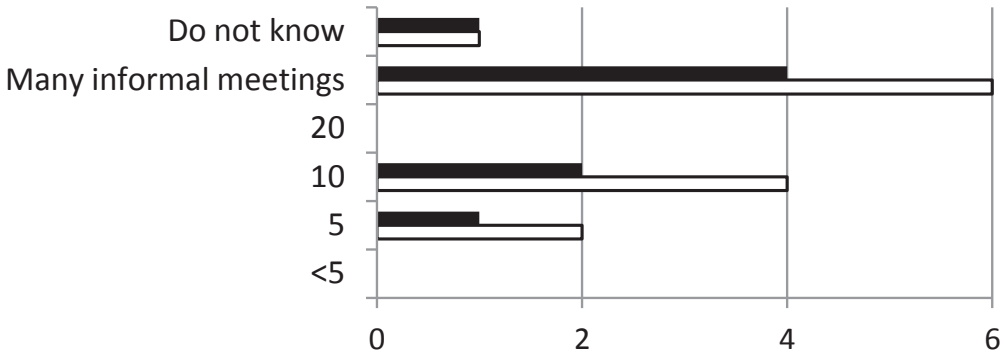

Fig. 25.3. Students (closed bars) and supervisors (open bars) were asked: How many supervision meetings do you have during the project?

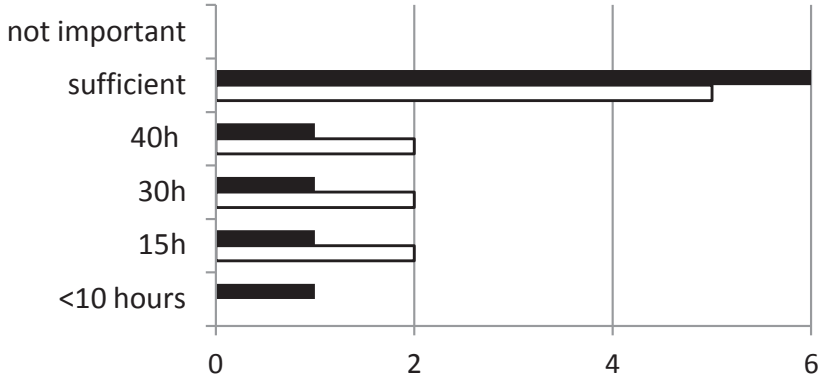

Fig. 25.4. Students (closed bars) and supervisors (open bars) were asked: How much supervisor time is allocated for each project in total?

and only two of the 11 have been in dialog with the student during or after the project process. Interestingly, half the students replied that they had been asked by their supervisor to evaluate the supervisor's performance. Only one student seemed to have evaluated own performance.

Half the supervisors replied that they used time with the students after the exam to evaluate the entire project process. As some students were in the process of conducting their projects, number of student replies is smaller in this section. However, only one out of six was of the impression that their supervisor used time to evaluate the entire process after the exam (figure 25.5).

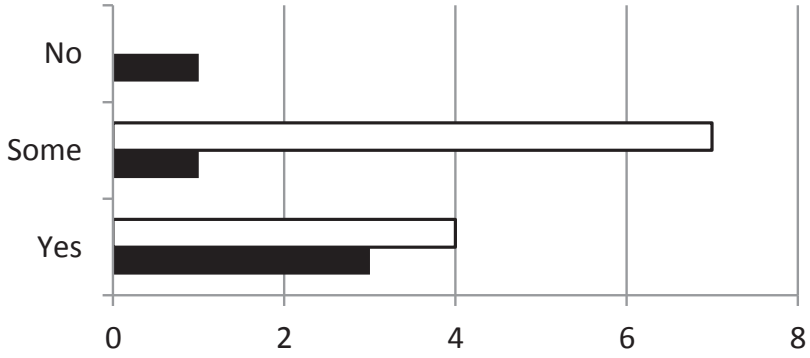

Fig. 25.5. Students (closed bars) and supervisors (open bars) were asked: How much supervisor time is allocated for each project in total?

Discussion

The general pattern found was that most students experienced a sufficient number of meeting and time allocation by their supervisors. The large scatter that was seen in the reported number of meetings being held and the time allocation by supervisors, most likely reflect the large individual variation in supervision demand by students. Most students indicated that the project lived up to their expectations which further supports that students generally found the process to be a success.

Also in the group of supervisors there were some indications that supervision is highly individual. The supervisors were generally not replying very well to questions regarding project formulation and development. Since all replies included added explanations under these questions, it seems likely that this is the results of their very individual and personal approach to supervision. This is in agreement with the conclusion made by Wichmann-Hansen et al. (2007) after their thorough literature review and the discussion by Handal & Lauvås (2007). Handal & Lauvås (2005) and Wichmann-Hansen et al. (2007) argue that the reason for the relatively little focus on improving supervision is caused by the high degree of individual variation between supervisor, subjects, disciplines, educational level and countries.

Wichmann-Hansen et al. (2007) report that one of the main conclusions from a large number of published studies is that students and supervisors should always initiate their collaboration by uncovering and match their expectations and produce a written agreement about possibilities and limitations for the project process. Furthermore, many published studies are

reporting that students have unrealistically high expectations which the supervisor cannot meet (e.g. Derounian 2011). In the present survey, half the students reported that they discussed expectations with their supervisor before and/or during the process. This number is higher than expected but still leaves room for improvement which could be approached by developing and offering tools or general guidelines for supervisors (Rowley & Slack 2004, Derounian 2011).

Both supervisors and students are of the opinion that choosing a good supervisor is important for the students. The weight of this choice actually increased when students were asked to rethink this question in retrorespect. Although, good personal relations should not be the only criteria, two studies reviewed by Wichmann-Hansen et al. (2007) support this as an important factor and one of the main conclusions was that a successful supervision process was determined by a good relationship between student and supervisor. The scientific competence of the supervisor was secondary.

It has many advantages when students take active part in developing their project and formulating the project description e.g. ensuring a general interest, commitment and valuable learning experience (Armstrong and Shanker 2006). Here, most students and supervisors reported that the supervisor did the project formulation and that a large proportion was involved in further developing the project. As students at BSc level may not have an initial knowledge of possible and realistic projects, often initial contact (also seen from these results) is based on project proposals made by supervisors. The students in this survey clearly did this and most supervisors seem to have adapted an approach with high degree of student involvement.

Evaluating teaching and own performance is broadly recognised as efficient and powerful approaches to improve teaching in general (Handal & Lauvås 2007, Biggs & Tang 2007). However, as supervision includes a personal connection over a long time period achieving an honest evaluation may constitute a difficult task. Hence, applying evaluation approaches and techniques that will work for supervision may therefore by a way forward and a key for overall improving skills of individuals as supervisors.

The issues dealt with in this study very much apply to another important part of the supervision namely good ways of giving feedback on students work during the project period. For both students and supervisors, this is a crucial part of the process and therefore it seems relevant to mention it here. Although, focussed on graduate and PhD students, Handal & Lauvås (2005) give eight very insightful and useful advises in regard to using feedback in the most efficient and motivating way for obtaining the best results.

Alongside expectations and exam preparation this is a part of the process that could be improved by post-project evaluations.

In conclusion, there seems to be basic issues within supervision of BSc students that could be improved, hereby improving the process for students and supervisors. There seems to be a clear need of tools and guidelines in how to develop your supervision skills and evaluate your own supervision. One of the most obvious challenges is finding and applying useful and effective approaches for harmonising expectations before and potentially during the project process.

A Student questionnaire

Student questionnaire handed out to 13 current or former BSc students at Department of Biology, Faculty of Science, University of Copenhagen regarding their experiences conducting their BSc dissertation.

1. **At what stage of your BSc project are you currently?** (Mark one or more options below)

Not started
Found a supervisor/subject but not started the project period
First half of the project period
Second half of the project period
Finished

2. **What learning outcomes did you expect to achieve prior to doing your BSc project? (Mark one or more options and/or add**

Learn how to work independently on a specific topic
Learn how to deal with original (biological) data
Learn how to write a scientific report/paper
Get insight of how to do research
Please add any other expectations, here:

3. **What was the most important issue when you chose project/supervisor?**
(Mark one or more options and/or add your own below)

To work with a particular topic
To work within a particular field of my subject/discipline
Good feeling about the supervisor / recommended supervisor
Study environment / other students
Future job possibilities
Please add any other expectations, here:

4. **How easy was it to get in contact with a supervisor?** (Underline one option below)

Very easy Easy Neutral Difficult Very difficult

5. **How easy was it to formulate your project?** (Underline one option below)

Very easy Easy Neutral Difficult Very difficult

How did you get in contact with your supervisor?
Please describe briefly:

6. **Project development**

Did you take a project defined by your supervisor? (yes/no)

- **If yes: Did you develop or change the project in collaboration with your supervisor? (yes/no)**
- **If yes: Did your supervisor offer you alternative projects? (yes/no)**
- **If no: Describe how you got the idea for doing this particular project**

7. **Did you discuss expectations to learning outcomes with your supervisor before starting your work (or during project formu**
8. **Did you discuss expectations to learning outcomes with your supervisor during your work period?** Yes/no
9. **Did you know the Intended Learning Objectives (ILO's) for a BSc project before starting?** Yes/no
10. **Do you know the ILO's for a BSc project after finishing?** Yes/no
11. **Did you evaluate your own performance during the project period?** Yes/no

If yes, how?

12. **Did your supervisor ask you to evaluate his/hers supervision after the exam?** Yes/no

If yes, how?

13. **Did you and your supervisor evaluate the entire process?** Yes/no

If yes, how?

14. **How many supervision meetings did you have during the project?** (Underline one option below)

<5 5 10 20 Many infor Do not know

15. **How much time did your supervisor allocate for your project in total?** (Underline your estimate below)

<10 hours 15h 30h 40h sufficient not important

16. **How important is face-to-face discussions of methods, results, etc during the project period?** (Underline one option below)

Very impor Important Neutral not important

17. **Did the supervisor prepare you for the exam?** Yes/some/no

If yes, how?

18. **Did the project live up to your expectations? Yes/no**

If no, please state what did not work out as planned

19. **In retro respect: What is the most important issue when choosing project/supervisor?**
(Mark one or more options and/or add your own below)

To work with a particular topic
To work within a particular field of my subject/discipline
Good feeling about the supervisor / recommended supervisor
Study environment / other students
Future job possibilities
Please add any other expectations, here:

20. **Please list the two most important things you learned from doing the BSc-project:**

B Supervisor questionnaire

Supervisor questionnaire handed out to 13 supervisors at Department of Biology, Faculty of Science, University of Copenhagen regarding their experiences conducting supervision of BSc dissertations.

1. **How many BSc students do you supervise per year (with you as the day-to-day supervisor)?**
2. **What do you expect of your BSc sudents? (Mark one or more options and/or add your own below)**

Learn how to work independently on a specific topic
Learn how to deal with original (biological) data
Learn how to write a scientific report/paper
Get insight of how to do research
Please add any other expectations, here:

3. **Based on your experience as a supervisor, please indicate the importance of the following issues for stude**
(give each issue points from 1-5)

The project description
Having a good supervisor
Study environment / other students
Future job possibilities

4. **Project development**

Do you normally formulate the projects for your students? (yes/no)

- **If yes: Do you further develop or change the project in collaboration with your student? (yes/no)**
- **If yes: Do you offer alternative projects? (yes/no)**
- **If no: Describe shortly a typical project development**

5. **Do you discuss expectations with your student before starting the project?** Yes/no
6. **Do you discuss expectations with your students during your work period?** Yes/no
7. **Are you familiar with the Intended Learning Objectives (ILO's) for a BSc project?** Yes/no
8. **Do you evaluate your own performance as a supervisor after a project?** Yes/no

If yes, how?

9. **Do you evaluate the project period/process with the student after the project?** Yes/no

If yes, how?

10. **How many supervision meetings do you have during the project?** (Underline one option below)

<5 5 10 20 Many infor Do not know

11. **How much time do you allocate for each project in total?** (Underline your estimate below)

<10 hours 15h 30h 40h sufficient not important

12. **How important is face-to-face discussions of methods, results, etc during the project period?** (Underline on

Very impor Important Neutral not important

13. **Do you prepare the student for the exam?** Yes/some/no

If yes, how?

All contributions to this volume can be found at:

http://www.ind.ku.dk/publikationer/up_projekter/2011-4/

The bibliography can be found at:

http://www.ind.ku.dk/publikationer/up_projekter/kapitler/2011_vol4_nr1-2_bibliography.pdf/