

Chapter 4. Supervision of the research project

4.1 Supervision and constructive feedback

Supervision is not simply giving a first instruction, keeping an eye on how things are going and giving a final assessment. A supervisor is not only supervising a project, but more importantly supervising the learning process of a student. After having finished the project, the student should have taken a big step in becoming a Master of Science. It is therefore important to have an idea about the exit qualifications of a Master's graduate and what knowledge, skills and attitudes a student is expected to gain during a research project. The Board of Examiners of the GS-LS determined learning outcomes and matching assessment criteria, available in the Appendix.

An important part of supervision to guarantee a successful learning process, is giving constructive feedback. In many evaluations students indicate that they would like more and better feedback during their research projects and especially during the writing of the report. Many times they do get feedback on their project, during work discussions and other meetings. However, feedback on their learning process is insufficient. This results in insecurity with the student, who will be wondering whether (s)he is meeting expectations. It is therefore of vital importance to speak about expectations, learning outcomes and the matching assessment criteria, before the start of the project. During the research project, evaluation interviews should take place in which the supervisor and student do not discuss the project, but the learning process of the student, whereby can be referred to the expectations and learning outcomes.

Giving constructive feedback is a hard skill to master. It is not only about what the student is doing well and what (s)he is doing wrong. More importantly it is about why something is right or wrong, and giving advice on how to improve. A supervisor should adjust the way to give feedback to the individual student. Some will appreciate clear, unpleasant feedback, while others might take feedback personal. Using the learning outcomes as a guideline for an evaluation might help to give feedback, because this way it will be constructive directly. Assure the student that the feedback is not meant personally, and always meant to help him/her in the learning process. Do not only drop an opinion ('I think this is not good'), but also give reasons and advice about how to improve things. It is also of vital importance to not only focus on things a student does not do right, but to also mention the good things. An easy trick to make it easier for students to receive feedback is to start with saying what is good and then go further with the aspects that should improve. 'I think your writing is very good, but shortening the sentences might make it easier to read' sounds better than 'The sentences are too long, it's very hard to read. The writing is good however'.

4.2 Supervision during the work phase

During the work phase, the supervisor is responsible for safeguarding the progress, stimulating the student, offering help and fostering the student's practical skills. This requires the supervisor to show active and genuine interest. Not all students are comfortable seeking help when in trouble. In practice, however, the initiative to establish contact is often expected to come from the student. Sometimes students think their problem is not "important" enough to bother their busy supervisor or they are unable to contact the supervisor.

It is therefore of great importance during the start-up phase to lay down clear agreements about contact frequency. During the work phase, it is important to plan a number of consultations and draw up explicit agreements, so that the student has ample opportunity to discuss particular issues of concern. Naturally, students are encouraged to take the initiative to seek contact. Moral support is equally important during this phase. Equipment failure or failed experiments can instil an - irrational - feeling of inadequacy among the students. The role of the supervisor is to give positive encouragement and where necessary offer additional guidance to help the student back on track.

Besides from the arranged meetings and evaluation moments, showing daily interest and casually asking 'how things are going', will at least give the student the idea (s)he is being noticed and the project is not just for practice, but of real importance.

4.3 Supervision on the writing of the report and the presentation

The concluding phase is primarily aimed at giving advice about presentation skills (written and verbal). Proper guidance is important in this respect. It is important to realise that students do not yet have the experience required to write reports relating to sizeable projects. This skill must be

acquired in this phase. The supervisor's dual role as supervisor and assessor is a major factor in this phase in particular. Students may for example delay submitting their "imperfect" work for fear of it affecting their final mark. It is therefore vitally important to lay down agreements during the start-up phase, clearly stating the number of drafts to be submitted and the specific assessment criteria (use the Appendix as a guideline). For example, is the draft report assessed, or only the final version?

Encourage the student to divide the report into a number of rounds: begin with a rough outline with titles of main sentences and paragraphs, followed by the results, and final transformation into complete sentences. It is advisable to give feedback in rounds as well: on the rough outlines, on the content and on the details, dotting the i's and crossing the t's.

The last phase of the research project involves presenting the work orally to the research group. The student is advised to finish the report before the final presentation. It is advisable to let the student practise the presentation beforehand and give feedback on this, before the final presentation will take place.

4.4 Expectations and assessment

What can the supervisor reasonably expect from his/her students? The assessment criteria cover three specific areas: substantive knowledge (contents), academic skills and attitude to work. The flexibility offered by the entrance criteria of the Master's programmes has as a consequence that different students engaged in a particular field of study may have completely different skills and competencies. All students should have an academic, critical attitude, and should be eager to learn and acquire these skills. They should be able to fill gaps in knowledge by reading literature and acquire skills with assistance from their supervisor or an analyst. Not only acquiring knowledge and lab skills, but also formulating a research problem, ordering and integrating data, and testing it critically against the available literature, are important aspects of the learning process.

In the end the research project is aimed at the learning process of the student: how quickly and to what extent do they acquire the skills that they are expected to master when they graduate. The student's attitude to work is an implicit part of the assessment. Does the student develop in actively being involved in the consultations, taking initiative and working independently? These aspects (and others) determine whether the student will be a suitable research candidate after graduation and will therefore partly determine his/her final mark. When drawing up the assessment, take into account not only the student's "end product" (the report), but also the student's speed of learning, the ability to absorb new information and the student's work attitude. Of course a higher starting level might be expected of students doing their second research project, compared to students in their first research project.

4.5 Final assessment

The assessment is performed by the examiner from Utrecht University, in close consultation with a second, independent reviewer and, if applicable, the daily supervisor. The second reviewer is a staff member who is not involved with the student's project directly, and is required to assess the report and presentation. If the daily supervisor was a PhD-student or a post-doc (a non-staff member), (s)he can not act as second reviewer (but may be consulted by the examiner). In case of an external research project, the daily supervisor will be the on-site supervisor (staff member) at the host institute and the second reviewer will be the examiner at Utrecht University. The weighting of the practical work, written report and verbal presentation is 60%, 30% and 10% of the final grade respectively. Some supervisors systematically identify and weight assessment criteria for the different components, which they consider particularly important to arrive at a final mark. Others may weigh up these factors more instinctively. The Appendix contains a list of assessment criteria, which can be used as a guideline for the assessment. Students are entitled to know in which areas they are to be assessed. It is useful to use these criteria during the supervisory phase, to give feedback. This information will enable the student to improve those areas that need improving. By signing the form as an examiner you also state that the report was checked for plagiarism (see Ephorus paragraph below)

Furthermore, there are feedback/assessment forms available on the website of the GS-LS, which can be used to give and receive sufficient feedback during the assessment (please note, these forms never replace the formal assessment via Form 3a 'Assessment research project', see below).

After completing the report, the student has to hand in a (digital or hard) copy of the report to the examiner, the daily supervisor (if applicable), the second reviewer and the programme coordinator. The examiner and second reviewer have to complete the assessment within 10 working days after the student has handed in his/her (final) report, by filling in and signing Form 3a 'Assessment research project'. It is the student's responsibility to deliver the form and a PDF of the report to the Administration Office as soon as possible.

4.6 Ephorus

Ephorus is a plagiarism detection software system, used by Utrecht University. Ephorus compares written reports with other texts, for example with international journal articles but also with other uploaded reports and theses from all Ephorus using educational institutes around the world. The programme then sends a report with its findings to your email. You get a notification when there is more than 10% overlap. It is then up to you to check the results of Ephorus. In some cases it may be only the used references that give an overlap. It is your judgement whether or not the references were used correctly. In case of plagiarism notify the student. It is the responsibility of the examiner to notify the board of examiners in case he/she suspects you meet the plagiarism definition, as described in art. 5.13 of the EER 2011-2012. The Board of examiners will determine if plagiarism occurred and will decide on the sanctions in accordance with art. 5.13 EER. Refer to paragraph 2.6 for tips on how to avoid plagiarism.

Ephorus use

Ephorus can be approached by the student online at; <http://student.ephorus.com>

You may also ask the student to use Ephorus through Blackboard. The student can upload report by him/herself.

Please note that students should only upload the final version, as it will be stored immediately in the database. Uploading a similar text the second time will then give a high percentage of overlap. You need a personal code to give your student. This code is linked to your e-mail account. Depending on the Faculty/organisation where you work you may already have a Ephorus code. The Graduate school will try to facilitate this process.

If you do not have an Ephorus account and/or code please refer to your contact person for Ephorus:

-Faculty of Science: M.Engelbarts@uu.nl (Marjon)

-Faculty of Medicine(UMCU): M.J.Quaak@umcutrecht.nl (Martien)

-Faculty of Veterinary medicine: m.g.j.vanderrijt@uu.nl (Maarten)

The Ephorus manual can be found online:

<http://www.uu.nl/NL/Informatie/medewerkers/ict/ict-voorzieningen/Plagiaatcontrole/Pages/HandleidingEphorus.aspx>

Appendix. Assessment criteria research project

According to current regulations of the Board of Examiners of the Graduate School of Life Sciences

Introduction

The main part of the Life Sciences MSc programmes consists of conducting research (in one or two research projects). In addition, all students have to write a MSc thesis.

In principle, the grade of a research project consists of:

- Research component (practical work): 60%
- Written report: 30% (averaged mark of daily supervisor and 2nd expert)
- Oral presentation: 10% (averaged mark of daily supervisor and 2nd expert)

The grade of the thesis is determined jointly by the examiner and a 2nd reviewer.

In general, post-docs and experienced PhD students (and sometimes a member of staff) will act as daily supervisors for the research projects and thesis. Officially, the 2nd reviewer is a staff member (of Utrecht University or UMC Utrecht), but it is allowed that an experienced post-doc fulfils this role. In any case, the 2nd reviewer is an expert in the field who has not been involved in daily supervision. In all situations, the examiner is responsible for the final grade. Please refer to the Rules and regulations of the board of examiners for details.

Learning outcomes

Which are the learning outcomes that students should achieve by the research project?

The student is capable of:

- translating a Life Sciences problem into a relevant research question, suitable for research development or product design;
- designing a suitable research plan to test the formulated research questions, according to methodological and scientific standards;
- independently performing research, with the required accuracy. Graduates are able to handle, analyse, interpret and evaluate the empirically derived data in a correct manner;
- discussing the outcomes of empirical research and linking them with scientific theories;
- indicating the importance of research activities for solving a biomedical question or problem, if applicable from a social perspective;
- critically reflecting on their own research work in Life Sciences, from a social perspective;
- comprehensibly reporting research results verbally and in writing, to specialised and non-specialised audiences in an international context.

Assessment criteria

In order to assess whether the student has achieved these learning outcomes, the following list of items for research projects can be used.

The list of items will be published on the website of the Utrecht University Graduate School of Life Sciences and will be included in the Study Guide of the School.

List of items for research projects

- I. Research component/practical work:
 - i. Lab skills:
 - Organization in lab/tidiness
 - Organization in lab journal
 - Technical skills
 - Use of protocol/instructions
 - Conscience/reliability
 - ii. Research skills:
 - Participation in discussion
 - Creativity (thinks of new/next experiments/new ideas)
 - Application of safety regulations
 - Initiative
 - Interest in his/her work
 - Critical attitude
 - Data interpretation
 - iii. Other:
 - Professional attitude
 - Compliance to appointments
 - Communication/sociability/time management/teamwork
- II. Written report
 - i. Process of writing
 - Response to suggestions
 - Report defence during evaluation
 - Initiative/independence
 - Compliance to appointments
 - ii. Final report
 - Theoretical background
 - Presentation of results: clarity of tables, figures
 - Depth and critical analysis
 - Structure and line of reasoning
 - Foundation of conclusions
 - Use of references
 - Language: spelling, grammar, not unnecessarily lengthy
 - Time management/lay out/completeness
- III. Oral presentation
 - i. Composition and design
 - The content of the presentation should meet the requirements of the written report
 - Clarity of slides
 - Order of components
 - ii. Professional attitude
 - Response to questions and remarks
 - iii. Presentation technique
 - Use of language
 - Use of slides
 - Use of voice

How to use the list of items?

This list is meant to be a guideline for those, involved in assessing and grading Master students, and for the students who are entitled to know at the start of the research project or thesis, which criteria and which weights will be used for the final grade. It is conceivable that not all items are scored always. One is free to give weight to the items that are scored, but averaging (per category as indicated by i, ii and iii) is recommended.