



Supervising Doctoral Students

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1 Introduction

The assistance relationship between the doctoral supervisor and their doctoral students is the main focus of this section. This segment will help the supervisors to identify and efficiently solve common problems. In this section younger and less experienced professors, who are not well acquainted with the assistance process, can obtain suggestions for assisting doctoral students. Not all questions and decisions which may arise during the advising process are predictable or solvable by mere life-experience.

The process of advising has dramatically changed. In the past, the advising process was a very private and one-on-one based procedure with little influence of others on the process and the results. There were less doctoral students, who thusly had as much time for their graduation as they needed. These times have changed. The introduction of the doctoral degree as the third phase of the academic educational reorganization at European universities (Bologna Process) resulted in a structured educational path for doctoral students in all fields of academia.

If there is one piece of advice to give for the advising process, it is that you should always open a line of communication between yourself and doctoral students and maintain the will to successfully end the projects even when falling on hard times.

We hope that the following suggestions will illustrate successful advising from the beginning of the process through the perspective and development of future careers of your doctoral students.

2 Beginning

The supervision process is exhausting and time consuming. Because of this, there is an ongoing debate in the European Union if the amount of doctoral students assigned to each supervisor

should not exceed seven individuals. According to this argument, the supervising of more than ten doctoral students cannot safeguard a qualitative advising process to ensure the finalisation of a dissertation of the students.

The selection of doctoral students poses a difficult element for the entire duration of this process. There is a rising sense of pressure as more and more applicants for the doctoral programme want to earn their doctorate degree. A starting premise for the entire process is a motivated and skilful personality in the applicant. In order to avoid complications during the doctoral studies it is advisable to cohere strictly to the standards of the faculty guidelines and the Doctorate Regulations in regards to selecting future doctoral students. It is important to evaluate all doctoral student candidates in regards to the right mix of motivation and skills which are useful in a team setting. If you sense that you don't know the candidates well enough, you can ask one of your colleagues with whom the applicant had written their master thesis with. Foreign candidates should be taken into consideration, even if the intensity of advising process may be higher.

When considering foreign doctoral candidates you should pay close attention to the programme requirements. The motivation and the skills of the applicant should be evaluated in detail. It should be made sure that the candidate possesses basic knowledge of the German language in order to cope with daily life. If it is possible, try facilitate peer relationships between foreign doctoral students and German doctoral students in the same academic area. During the selection-interview, potentially controversial subjects in regards to e.g. animal testing, political and religious nature should be discussed to prevent future problems during the doctoral programme.

Choosing applicants differs depending on the area of academic. In the Natural Science there are frequently already on going research projects which professors

usually seek qualified future doctoral student for. In the Humanities potential doctoral students contact a professor, who, due to his or her field of expertise, best fits the student's future dissertation subject. A collaborated approach to the thesis and advisory meetings between the doctoral student and the supervisor follows. The project specification can function as a great selection tool. Therefore it is important not to agree to advise the doctoral student after only the first meeting with him or her. It should always be possible for the doctoral student to identify their own ideas and creativity within the subject search of their work.

The necessary time for a graduation within the doctoral programme should be scheduled for three years. This time span is based on quality standards, "academic field tradition" or rather the advising activities, and the financing of the project. Variable time schedules to a programme graduation generally depend on the time required for task completion of the research and the desired results of the research.

It can be very crucial for the doctoral student as well as the project to choose a second supervisor for the project. It is not necessarily urgent to choose a secondary examiner right at the beginning of the programme. Frequently these second supervisors will be chosen in the evaluation procedure of the dissertation. These proceedings vary greatly in different fields of academic. In order to achieve quality advising, it is desirable to include the second examiner in the early stages of the doctoral programme and research project. For the sake of the doctoral student both supervisors should maintain a good relationship while working with each other. They should also complement each others work regarding to the students subject. The primary supervisor carries the responsibilities. The secondary supervisor should be consulted by both the primary supervisor and the doctoral student in case specific questions should arise.

The main element of the supervision- and advising process is to maintain a

high level of enthusiasm and energy in the doctoral student until the successful submission of the dissertation. An initial meeting should be held immediately after acceptance to the doctoral programme, which primarily serves the planning and structuring of the research work. Differences in the approach of the planning of the research work present themselves in Natural Science and the Humanities. Fields of Natural Science often involve working in laboratories with teams. Here one must be sure that he or she integrates themselves well into the team dynamic, lab equipment and already existing research work. In the Humanities lengthy literary studies are required until empiric analysis follows. In this case, doctoral students write in addition to the separate stages of their research simultaneously on their dissertation script. Keeping this in mind, a creation of partial goals needs to be set for the doctoral student.

There are median values for humanity studies, indicating that in the first three months of the programme an abstract containing 5000 words should be written. This abstract summarizes what current literature (concerning the subject) contains in regards to the subject matter of the dissertation and which describes the focus of the research project. This is roughly the length of the exposé with which a doctoral student can apply to foundations or the doctorate state promotion (e.g. Elsa-Neumann Scholarship) for funding support. These requirements also apply to the field of Natural Science when writing an exposé and can thusly be seen as a guideline.

Considering the work division between experiments and theoretical approaches in Natural Science doctoral students should start writing on their dissertation as early as they can, but no later than two years after the beginning of programme studies.

The advising and consultation for doctoral students should be made transparent, which translates into: fixed office hours for consultation meetings, regularly scheduled doctoral colloquies, fixed access to subject specific resources for doctoral students (offering rooms,

possibilities of attending seminars, and providing information to conferences for the student) and regular and fixed dates for reporting presentations. To this end doctoral students and supervisors should establish a common understanding of supervision which by being documented, creates a commitment between both parties.

3 Supervision Agreement

"In order to avoid misunderstandings it is advisable to establish a written agreement of the mutual responsibility of doctoral students and supervisors.

Doctoral students and their supervisors should additionally agree on an interdisciplinary qualification programme for receiving key qualifications or skills for project management. Normally the qualification programme also entails the preparation for tasks outside the specific scientific field." (Winde/Schreiber 2006)

Closing a supervision agreement as a documented relationship between the doctoral student and the supervisor (or with multiple supervisors) and to the department in the field of study functions as a fundamental understanding of responsibility and, thus is a means to prevent potential conflicts.

We want to stress that the supervision contract is in no way a rigid contract designed to fill quotas for all subject areas. The contract rather functions as solidification of the relationship between the doctoral student and supervisor, which displays the responsibilities of the concerning parties. (<http://www.hu-berlin.de/promovierende-en/betreuung-en/2008Sample.doc>)

4 Planning

The work plan functions as a roster for the orientation and accomplishment of the contextual and methodological goals and the assigning of milestones (e.g. participation at a congress, field research). The German Research Foundation (DFG) advises that for the application about 50% of the application's volume should consist of the plan. For example, if an exposé of a dissertation of about 10 pages is drafted within the first three months, the plan should thusly include 5 pages. The structure of the exposé depends greatly on the academic area it is pertaining to and orients itself on the academic subject standard. (Literature: Promovieren mit Perspektive 2006). Creating a plan in table format may follow a basic structure such as shown below:

Time	Work Step	Resources/ Notes
1. year	<ul style="list-style-type: none"> - Acceptance to be advised by supervisor - Sign up for doctoral studies/ Degree graduation 	<ul style="list-style-type: none"> - Administration of the university, advisor - Library, internet, consultations
3 months	<ul style="list-style-type: none"> - Composing of the exposé - Meeting with supervisor - Application for scholarships - Extended literature studies/ planning of experiments - Determining and planning for qualification needs and possibilities 	<ul style="list-style-type: none"> - Organising and planning of possibilities for financial resources - Library, contacts to other research facilities with similar concentrations - Planning (chronologically and financially) of courses outside the field of study methodological (faculty, career oriented continuing education, congresses, research stays) - Determination of resources

3 months	<ul style="list-style-type: none"> - Supervisor report/meeting - Pre-test, additional literary research, documentation of research findings, composing of first pages of dissertation - First qualification course(s) 	<ul style="list-style-type: none"> - Contemplation concerning publication of the dissertation, decision on electronic or hard copy publication
3 months	<ul style="list-style-type: none"> - Supervisor meeting - Additional literary research, documentation of research findings, composing of first pages of dissertation - Qualification course(s) - Presentation of the detailed structure of the dissertation including the first versions of the methods illustration and literary research 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list)
3 months	<ul style="list-style-type: none"> - Supervisor report/ meeting 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list) - Final decision of the supervisor if promotion/ graduation process of the doctoral students will be continued - Concrete decision on seminars and congress attendance of the doctoral student for three semesters - Identification of reserves - Definition of points of focus
2. year	<ul style="list-style-type: none"> - Concretion of the planning - Concretion of the subject - Further experiments/ field research - Publication and lectures - Preparation and execution of a seminar - Qualification course(s) 	<ul style="list-style-type: none"> - Comparative research/ research at other facilities - First publications oral reports/ seminars - Localization of progress and problems through new tasks (e.g. teachings/ presentations/ writings) possible determination of further qualification needs
3 months	<ul style="list-style-type: none"> - Meeting with supervisor - Further experiments/ field research - Publication and seminars - Preparation and execution of a seminar - Qualification course(s) 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list)
3 months	<ul style="list-style-type: none"> - Supervisor report/ meeting - Further experiments/ field research - Publication and seminars - Preparation and execution of a seminar - Qualification course(s) 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list)

3 months	<ul style="list-style-type: none"> - Meeting with supervisor - Further experiments/ field research - Publication and seminars - Preparation and execution of a seminar - Qualification course(s) 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list)
3 months	<ul style="list-style-type: none"> - Supervisor report/ meeting - Presentation of chapters compiled for the dissertation including illustration of methodology and state of the art in the field researched 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list) - At this time at the very latest possible inclusion and election of secondary advisor
3. year	<ul style="list-style-type: none"> - Final experiments / field research - Publication and seminars - Preparation and execution of a seminar - Qualification course(s) - Editing and determination of the dissertation structuring, written composition of the chapters of the dissertation including illustration of methodology and state of the art in the field researched 	<ul style="list-style-type: none"> - Specialized, personal and communicative estimation (according to check list) - Course of action of the completion And submission of the dissertation (micro-planning)
3 months	<ul style="list-style-type: none"> - Meeting with supervisor - Further written composition of the dissertation - Presentation of the dissertation 	
3 months	<ul style="list-style-type: none"> - Supervisor report/ meeting - Final editing of own chapters of the dissertation 	<ul style="list-style-type: none"> - Field specific assessment with possible involvement of the secondary advisor
3 months	<ul style="list-style-type: none"> - Meeting with supervisor - Submission of dissertation 	
3 months	<ul style="list-style-type: none"> - Perpetration for the disputation - Meeting with supervisor - Disputation 	<ul style="list-style-type: none"> - Field specific assessment with possible involvement of the secondary advisor

5 Process Facilitation

The work schedule should be adjusted for doctoral students who, for whatever reason, finish their doctoral studies part time. One can assume that doctoral students having work contracts with the university (e.g. a TVÖD 13 E-1/2 employment) that the duration of studies and graduation process is five years. If the student has a part-time contract off-campus, the duration of studies and graduation can be presumed for six years. The duration of the doctoral programme should not exceed this time frame.

As mentioned in the planning of the doctoral studies section, regular meetings with the doctoral student are important and need to pin point long-term agreements and consideration of the work process of a supervisor.

The traditional concept of one-on-one consultation requested by doctoral students is just one possibility to handle advising needs. As dictated by the pre-

dissertation agreement (supervision agreement <http://www.hu-berlin.de/promovierende-en/betreuung-en/2008Sample.doc>) both parties should coordinate and be in contact with each other on the established dates and office hours.

Another effective form of collaboration on the research subject of the doctoral student is group discussions in colloquia with other doctoral students in a specific field of study. Organized presentations of partial research results in the format of a subject specific council meeting or panel may also prove useful. There is no need to organize an entire symposium, but it is encouraged to facilitate an internal exchange between doctoral students and peer-learning. Besides illustrating research findings, the presentations can function as an "experimental area" which fosters a scientific discussion during the conferences.

On a particular occasion, the doctoral student could present his or her research findings by participating in a national or international symposium or congress. In the beginning of their doctoral studies students should be accompanied by a supervisor. On these congresses doctoral students can engage with the scientific community and establish contacts to other facilities, persons and adjacent research fields.

By analyzing these collaborate experiences, the possibility to internally discuss the content and state of research of other colleagues arises.

It is important to continually assess the state of the doctoral work through bi-annual preliminary reports, in order to reassure the success of the work progress to the doctoral student. It is important to reflect and draw conclusions in case this progress was not achieved.

6 Doctoral Studies as a Means for Continued Education

The supervisors play a special role for the doctoral students by providing guidelines and articulating individual needs by embedding these attributes into a mindfully structured dissertation schedule. You should encourage your doctoral student to develop a faceted range of abilities, which are relevant to their research and foster leadership- and communication skills. The Humboldt Universität offers different possibilities to participate in such opportunities.

In the beginning it should be reflected and focused on the course offerings for master programme students within the faculty department. These courses should pertain to the field specification and further the methodological advancement of the doctoral student's competence.

Structured doctoral programmes such as the Graduiertenkollegs and the PhD programmes also host events created by guest lecturers, offer events specifically geared toward doctoral students. It is possible to participate individually at such an event if an agreement with the coordinating office is reached. Doctoral students should be encouraged to independently organize seminars and invite guest lecturers.

Seminars, tutorials, labs and other facilities, which may be abroad, should be taken into consideration. Important for planning ahead are the research trips. In order to secure financial support to cover their costs it requires a request for financial support along with the submission of the exposé for financial assistance of the doctoral study endeavour.

The continuing education programmes at the Humboldt-Universität offer doctorate students of all subject areas courses and lectures focusing on developing their "soft-skills," such as learning to teach, overcoming writing blocks or leading work groups.

As a supervisor you should make sure that the offered courses and lectures chosen,

fit your doctoral student's work profile. The time used for these courses should not exceed 4-6 SWS in four semesters (in the 2nd-5th Semester of the doctorate degree studies).

It is not uncommon after the first year of studies that if a series of research experiments have failed to redirect the focus of studies with a modified thesis of the doctoral work. However this is a point in the advising process in which the supervisor's delicacy in communicating and motivating the doctoral student plays an important role: Both parties need to re-orientate themselves and be prepared to set a new course of action in their collaborate work. Under any circumstances is it to be avoided that in regards to their work content and graduation timeline the doctoral student should find him- or herself stuck in their studies and has passed a point of no return. If this occurs in the second year and the doctoral student loses focus on their thesis or losses him- or herself in a sea of details, by the third year the student may experience a "panic" feeling. This could result in a work or writing blockade. In hindsight, it is difficult to deal with experiments, interviews, data collection and analysis which did not lead to the expected or desired results.

After the first year both the doctoral students and the supervisor should have the mutual possibility to terminate the doctoral studies. This possibility can be designated explicitly in the supervision agreement or should (with the consent of supervision) be individually discussed. There are many reasons it may lead to this termination of agreement. The criteria to continue the dissertation should be: Progress in the dissertation, existing motivation, good communication and goal-oriented communication.

It should be discussed what has and has not been done in the progress reports and what positive experiences or problems pertaining to this work have arisen. Through this discussion a bottom line for the coming months' work should be drawn and the work schedule should be updated accordingly. Through this process, preliminary goals which are transparent for both parties can be assessed and newly assigned. It will always be advantages for

both parties if the workload (or at least a part of the work load) is broken down into smaller and attainable tasks, which are then documented. Difficulties for the supervisor may arise as he or she has a limited time budget to read and comment on the submitted drafts of his doctoral student. Doctoral students and supervisors need to come to an agreement as to when each chapter is to be submitted and when they are to be returned with comments.

During doctoral studies there needs to be room for innovation and for conducting research. The supervisor should be proactive in the process; maybe more strongly in the beginning of the research process than in the end. This is also dependant on individual factors.

It should be avoided that a doctoral student separates themselves from their doctoral proposal. The supervisor could still be under the impression that the research process has continued unchanged and thusly he or she fails to sense or prevent the dissatisfaction of his or her student regarding their work. This happens more often in the Humanities than in the fields of Natural sciences. Therefore it is imperative that doctoral students are completely embedded in the intellectual life of the academic area and participate or execute seminars pertaining to their subject. This can be difficult, however, if doctoral students have to finance their own tuition. Therefore a supervisor should advocate for his or her student, so that the student is able to acquire scholarships or jobs in his or her field of study. Only a "free spirit" can be creative one.

To simplify the advising process of doctoral students, a check list designed to help with quarterly meeting between the student and the supervisor is provided below. These and other hints and tips aid in the transparency of the process of preparation for the doctoral student (according to Seger 2003).

Field specific assessment of the supervisor and the doctoral student

- Subject specific progression/ preliminary results
- Amount of work completed in relation to time allocated and goals set
- Focus on theoretical or practical work?
- State of the art research literature/ journal articles pertaining to the dissertation subject
- Assessment/Commentary to the scholarly articles
- New subject specific ideas and perspectives

Personal assessment of the supervisor and of the doctoral student

- Assessment of initiatives
- Assessment of self-discipline
- Contentment of the progress of the dissertation
- Visible progress within a quarter of a year
- Talent/interest in theoretical or practical work
- Subjects/ research areas (Methodology) for future scientific career options

Communicative assessment of the supervisor and the doctoral student

- Is there a possibility for an academic specific exchange?
- How are the scientific- and social surroundings of the work place?
- In what context are presentations and preliminary results illustrated?
- Suggestions from other Professors or doctoral students?
- Subject specific symposia/ participation? To what extend? Financial planning?
- Interesting scientific contact persons nationally and internationally, what are the possibilities to establish contact?

7 Submission of the Dissertation

An important task for the supervisor is to make sure, that the dissertation work does not become unfocused and enters uncharted areas of scientific research. The supervisor should make the doctoral student aware of constraints (time and depth of work) and guide his or her work towards a satisfactory goal for all parties involved. The up-to-date characteristics of the dissertation as well as the new discoveries and single facets of research for a rounded illustration of the subject should be highlight.

One of the more enjoyable, but time-consuming tasks of a supervisor is the assessment of the dissertation. The assessment should be honest and grade the real strengths and weaknesses of the work. The successful involvement of the secondary advisor adds further expertise and enabling an open and fair dialogue with the doctoral student. The secondary

advisor is able to give a rounded picture of the possibilities and accomplished goals in the working progress of the student's subject.

The doctoral committee is usually elected through the faculty. For the sake of the doctoral student the amount of time needed to finish the assessment of the dissertation should not take more than two to three months. The supervisor should communicate with the secondary advisor in a way that the deadline is not exceeded and that the graduation process is not unnecessarily lengthened. You should consider the fact that the doctorate student cannot further apply for positions if he or she has not officially graduated.

8 Preparation for the Disputation

Many doctoral students see defending their doctoral dissertation as a climax of their doctoral studies, in which they are able to

present their research findings. Some other students experience the last stretch of their doctoral studies as stressful. This is why joint preparations for the disputation can be important. In some cases the doctoral student can be made aware of presumed questions or weaknesses in the dissertation. The doctoral student should, however, raise questions pertaining weaknesses in his or her dissertation and strategies to defend their dissertation on their own.

It could be the case that doctoral students take criticism of their dissertation personally. In this case you should advise your student that the critique on their work is not a criticism of their character or their personality.

If the supervisor is not sure that the disputation will conclude positively, he or she should not share their concerns with the doctoral student, in order to avoid demotivating the student concerning their disputation. In this case support with the preparation for the disputation is especially needed and a meeting with the doctoral graduation committee is desirable.

Once the disputation was successfully (or with the condition of editing of the dissertation) completed, a list with rectifications is ordered and should be given from the doctoral graduation committee to the doctoral student swiftly in order to ensure ample time to implement the changes.

9 Potential Problems

Discontinuing of Supervision

The discontinuing of supervision is not uncommon. By declaring subject-specific, personal or communicative reasons, the termination of the advising agreement after one year is not a big problem if the option of termination has been established in the supervision agreement. Several cases may be conceivable for the termination of a supervision agreement:

If it appears that the doctoral candidate is intellectually overwhelmed with the

entailing studies of a doctoral programme. This issue needs to be part of a discussion which should take place in the first year of doctoral studies and result in the conclusion that the advising be terminated. Therefore continued advising is no longer required.

If the work of the student has developed too much outside of your field of expertise, you as the supervisor should help find a colleague more knowledgeable with the field and possibly establish contact to that colleague. This switch with supervisors should happen no later than the third semester.

Despite having conducted thorough interviews and preliminary meetings with potential doctoral candidates, some unsolvable communication problems may still occur. These communication problems are best approached in a group setting with other doctoral candidates present. If, however, it is predictable that because of the communication problems no positive outcome of the doctoral studies can be achieved and that further discussions will not be fruitful, a termination of supervision is advisable. If the supervisor assumes that working together with a different colleague could have positive results, one can advocate for the doctoral student. The doctoral student should make conclusion concerning further efforts for the continuation of his or her doctoral studies.

A change in supervisors is necessary if supervision is no longer feasible due to health issues, emigration or work recruitment of the supervisor by another university. By being admitted to the doctoral studies the student has the formal right to a different supervisor. Here, the former supervisor should provide counsel.

Working Quietly

It is one of the greatest misconceptions of supervisors that if their doctoral student has not communicated with them, the student is making progress. It is possible that the doctoral student has not come to terms with him or herself and therefore avoids a discussion with the supervisor. Just a few lost months of idle work can make the difference between success and failure. There are often a few indicators

that lead one to this conclusion. Closely tracking the adherence to the work schedule will safeguard further problems from occurring.

Financial Problems

Financial problems can be as equally difficult as personal or health problems, since these are usually factors not influenced by the supervisor. It is therefore important to ask about these issues before beginning the doctoral studies in order to avoid problems in the future. After considering these potential problems the supervisor is to advise either for or against the doctoral studies of the student.

Students shouldn't be encouraged to pursue a doctoral programme if there is, e.g. no means of adequate financing for their studies in the future. Adequate financing entails a minimum of a two year scholarship endowment until the student graduates. The applications for these scholarships are typically completed and submitted by the student and prerequisite excellent degree grades and an excellent exposé. Because of this, you should closely consider whether or not the doctoral candidate is capable of acquiring a scholarship. In the multitude of scholarship applications one or two recommendations are required. These recommendations value highly in the selection process of the applications. The supervisor should attentively and with great detail to content submit these recommendations. It is possible that the doctoral student will have to go through this process multiple times and thusly will have to provide up-to-date recommendations. This process is unavoidable, yet it guarantees that you selected a financially well secured and operational young researcher.

Since statistically speaking doctoral studies take four years to complete and scholarships usually only last for two to three years, a severe financial void occurs. The supervisor should check if any other financial assistance or project funds are available to bridge this void. Financing the studies through a non-related field of discipline, full-time work does not pertain to a career oriented and fast doctoral

graduation track. Part-time employment up to 30-40 % of a full-time employment position can be a solution.

Goal Oriented Doctoral Students, who do not Follow the Advice of their Supervisor

If this is the case a clarifying talk needs to be conducted. Here the expectations need to be clearly stated. These goals should be written down and be acknowledged by both parties.

It should, however, be made possible for the doctoral student to conduct scientific and independent research. If mutual trust exists between the two parties, the doctorate student (after voicing his or her reasoning) should be allowed to not follow a well-intended advice by the supervisor, in order to promote the student independent research and not to guide him or her.

The advising relationship between supervisor and student should be discontinued if advices are rejected because the lines of communication between the parties are amiss.

Perfectionism

The feeling of "never quiet finished" can be a problem. Of course, there will always be some minor detail, on which the doctoral student would like to work on in order to perfect his or her dissertation. The supervisor needs to have a feeling for when the work is roughly completed and adheres to the textual requirements of a successful dissertation. At this point the supervisor should consultatively engage in the process of further building the thematic of the dissertation. Naturally the submission of the dissertation is up to the doctoral student, but in the interest of his or her future career the supervisor should advise on the adequacy of the project "dissertation."

10 Advising Competence of the Supervisor

The advising of doctorate students requires abilities other than leading a

seminar or presenting a lecture. A well prepared meeting and the ability to lead guided discussions are required. It is important to engage in networking with doctorate students within the scientific community (as well as within the field of expertise and symposia). Ability for conflict detection and conflict solutions as well as empathy are important for this process.

With the development of one's own set of abilities you will help young researchers in acquiring skill sets that will form them into respected colleagues, who will carry their standards and knowledge to other places.

11 Advising for Post Academics

It is of utmost importance to keep perspectives of further career options of your doctoral students in mind and bring them into discussion. This includes the supervisor's knowledge and guided application of outside advice for their doctoral students.

Following is a list of aspects which should be considered:

Going Abroad and Returning Home

It is often criticized that young researchers in Germany are considered in regards to academic content and geographical mobility to be inflexible. Doctoral studies and the concluding post-doctoral phase (with or without post-doctoral lecture qualification) are often completed with the same work team. It is realised only too late that an international reputation is crucial for an academic career.

During the post-doctoral phase at the very latest young researchers should take advantage of their "Studying and travel years" in which they get to know new research focuses, methodologies and facilities. The primary aim of a study abroad is the exchange of ideas and research work of young scientists and their cooperation partners. On the one hand the post-doctorates should broaden their research methods and their subject expertise at their guest institutes. On the other hand post-docs should share their

own methods and experiences, which are useful to the guest institute, in order to examine and analyze new scientific inquiries (Zukunftsdialog 2002). Statistically speaking, most German researchers go to the United States for their exchange experience followed by Great Britain and Switzerland. The U.S. places first due to its attractive job opportunities, which points to a financed temporary academic exchange or training exchange as well as the more or less permanent work and living place. The supervisor can play an important role to prepare for this phase.

Non University Research Facilities

There are a number of non university research institutes in Germany. E.g. The Leibnitz Gemeinschaft functions as an umbrella administrator for many of those institutes. Together these institutes strive for leading-edge research and assigns limited positions in research and development to post-doctorates. A return to the academic field is possible after completing such a position.

The largest research facilities in Germany which also operate internationally are:

- Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V. (MPG)
- Fraunhofer-Gesellschaft (FhG)
- Helmholtz-Gemeinschaft Deutscher Forschungszentren (HGF)
- Wissenschaftsgemeinschaft Gottfried Wilhelm Leibnitz (WGL - Blaue Liste)
- Deutsche Forschungsanstalt für Luft- und Raumfahrt (DLR)
- Hahn-Meitner-Institut (HMI)

The close connection and the well established personal contacts of the professors to non- university research institutes are a crucial prerequisite for a fruitful collaboration in the field of scientific research. This ensures quick and successful of future appointment to professorships and a large number of post-doctoral lecture qualification candidates and dissertations.

Cooperation with Companies and Public Institutions

The collaboration of research and teaching with companies and public institutions is important for both partners. An important connection can be created between the

companies were alumni work and were the practical expertise is given. Interns and diplomats are often the first bridge to this. Post-Docs are due to this connection once again coupled to the reputation and the

quality of the collaboration of the supervisor. A further intensive collaboration can be fostered if a post-doc follows the recommendation and is mindful of the networks of his or her supervisor.

12 Literature

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