

Approaches to doctoral supervision in relation to student expectations

Project report in the Docent Course at LTH, Lund, Sweden, October 2010

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Introduction

Doctoral students are large contributors to the research output of modern universities. However, they do not start as fully-fledged researchers and need supervision in order to develop and prosper. Doctoral supervision is in other words important for universities. So important that it was ranked third most important issue for academics in a large international study (Green and Powell, 2005: 151-152).

The ideas behind and practice of doctoral supervision has developed in recent years. Until recently, much of the literature on doctoral supervision was not about how supervisors could adapt to the need of their students, but about how the doctoral students need to adjust to the style of their supervisor (Willis et al., 2010: 116). However, there are an increasing number of voices in the field of teaching and learning that emphasize the need to reshape this relationship between student and supervisor to further highlight its mutuality (e.g. Handal and Lauvås, 2006; Reynolds and Vince, 2007; Deuchar, 2008; Mainhard et al., 2009).

Contemporary doctoral supervision has multiple roles, as it guides students to grasp research philosophy, methodology, the research topic and university bureaucracy, as well as it constitutes the interpersonal relationships between students and supervisors (Handal and Lauvås, 2006: 25-26). This complexity makes doctoral supervision into an art and craft to be learned and developed. To assist academics in rising to the challenge of supervising doctoral students, a seemingly increasing number of universities are offering courses for their staff in doctoral supervision.

Several studies have been carried out on the topics on what constitutes a good supervisor, and what doctoral students in general expect from their supervisors. Philips and Pugh (2000) studied the expectations on the supervision among doctoral students in Australia. The expectations were found to be general across all research disciplines; we have here summarized them into three categories:

Tutoring: The supervisor should have a good knowledge of the field and an ability to convey the knowledge to the student.

Supervision: The supervisor should provide timely feedback, constructive criticism, and also be available to the student

Coaching: The supervisor should be friendly and supportive, and have an actual interest in the research of the student as well as in his/her future career.

Sinclair (2004) investigated two supervisions styles; the “hands on approach” and the “hands off approach”, and found that the former, intervening approach, generally leads to more effective supervision, and that the latter only works in the few cases where the student already has attained some of the qualities of being a researcher.

Based on the level of structure and support in the supervision, Gatfield (2005) classifies four different types of supervision styles as shown in the table below, ranging from the “Laissez faire” where the ‘supervisor is non-directive and not committed to high levels of personal interaction’ to the contractual, where the supervisor is ‘able to administer direction and exercises good management skills...’.

	<u>Low structure</u>	<u>High structure</u>
<u>Low Support</u>	“Laissez faire”	“Directorial”
<u>High Support</u>	“Pastoral”	“Contractual”

From interviews with supervisors it was found that a very clear majority had adopted a “contractual” supervision approach. However, it was also noted that transitions often occurred between the supervision styles as the student progresses to different stages of becoming a doctorate, or is facing severe difficulties.

Lee [2008] finds that literature on the topic has mostly emphasized functional aspects of PhD supervision, such as methods of project management. Based on interviews with supervisors in the UK she argues that there are four additional aspects to supervision, namely *critical thinking* (questioning and analyzing own work), *enculturation* (becoming member of the community) *emancipation*, (questioning and developing self) and *relationship development* (inspiring and caring). However, when afterwards shown these categories, most of the interviewees claimed that they adopted only two of the categories, one of which was the functional. With the practice of having assistant supervisors, we argue that it therefore would be optimal if the supervisory team is complementary in the sense that all five aspects of supervision are represented.

Doctoral students, as any students, are different, have different learning styles (Felder, 1988; Felder, 1993), ways of knowing (McVicker Clinchy, 1990), personalities, needs and expectations. This demands flexibility of supervisors to assess and adapt their supervision of doctoral students. The five main approaches to doctoral supervision identified by Lee (2008), i.e., functional, enculturation, critical thinking, emancipation and relationship development, can potentially through different focus and in different ways contribute to meeting various supervision needs of doctoral students. However, the challenge is to balance these five approaches and to adjust focus to continuously meet the changing needs of each doctoral student.

The aim of this study is to attempt to address this challenge by potentially supplying doctoral supervisors with hints regarding the changing supervisory needs of their students. The purpose of this study is to investigate potential patterns in what doctoral students at Lund University express concerning their supervision over the past six months.

Methods

In the present study, PhD students filled out a web-based questionnaire about their supervision needs. Participants were asked to state the extent of a selection of different supervision activities they had received in the past six months. In the following section the method of the study is described in more detail.

Participants

A total of 41 participants, namely 24 men and 17 women, took part in the study. All participants were PhD students at the Faculty of Engineering at Lund University, Sweden. The year of acceptance to the PhD programme varied from before 2005 to 2010, and the expected graduation year spanned from 2010 to 2015, see table 1. Five of the participants had spent a longer time period away from their studies, e.g., parental leave or illness, and the time away

varied between zero and two years. The majority, namely 29 participants, had a previous degree, i.e., MSc, BSc, or similar, from a University in Sweden.

Table 1. Year of acceptance to the PhD programme and the expected graduation year

Year of acceptance to the PhD programme		Expected graduation year	
Year	Number of participants	Year	Number of participants
before 2005	3	2010	1
2005	1	2011	8
2006	2	2012	8
2007	5	2013	12
2008	12	2014	7
2009	10	2015	5
2010	8	later than 2015	0

Procedure

The first step of the study involved the construction of a questionnaire about PhD supervision. The starting point for the questionnaire design was the previously mentioned paper by Lee (2008) in which five approaches to doctoral supervision are identified, i.e., *functional*, *enculturation*, *critical thinking*, *emancipation* and *relationship development*. Supervision activities for each of these five approaches was identified during a two hour long brainstorming session 22nd of September 2010 in which the authors took part. In the brainstorming session only two supervision activities were selected for each of the five approaches, i.e., a total of 10 activities, see table 2. The selection was based on estimated importance, i.e., the two most important activities were selected for each of the five supervision approaches.

Table 2. The supervision activities selected in the brainstorming session together with the corresponding supervision approach

No	Supervision activity	Supervision approach
1	Check research progress	functional
2	Help in selecting courses	
3	Provide contacts in the research society	enculturation
4	Introduce to the unspoken rules of the research field	
5	Challenge arguments	critical thinking
6	Encourage to think critically	
7	Support independence	emancipation
8	Coach in career	
9	Build work relationships	relationship development
10	Involve in unplanned work related discussions	

Once the ten supervision activities in table 2 had been identified they were used to formulate questions about PhD supervision. In these questions the participants were asked to state the extent of the ten different supervision activities that they had received in the past six months of studies. This could be done on a five-step scale from *much less than needed* to *much more than needed*. The exact formulation of the question can be found in figure 1 below.

Six additional questions were then created, namely one open question about the type of additional supervision activity that the PhD student needed and five background questions. The background questions were all closed questions, and probed into the areas gender, year of acceptance to the PhD programme, estimated graduation year, years away from PhD studies and country of previous university degrees (MSc, BSc, etc).

All together, 16 questions were created. These 16 questions were finally put in a web-based questionnaire, namely a free questionnaire service provided by Google, and published on the Internet. The entire questionnaire was hence possible to reach via a hyperlink (Becker, Bengtsson, Nilsson, Nordquist, Thelander & Toth-Szabo, 2010).

Please state the extent of the following supervision activities that you have received from your supervisors in the past 6 months.

	Much less than needed	Less than needed	Balanced	More than needed	Much more than needed
Checking research progress	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helping in selecting courses	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Providing contacts in your research society	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Introducing you to the unspoken rules of the research field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Challenging your arguments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Encouraging you to think critically	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Supporting your independence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coaching you in your career	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Building work relationships	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Involving you in unplanned work related discussions	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Figure 1. The questions about supervision activities in the questionnaire

An invitation to take part in the study, i.e., to fill out the questionnaire, was sent by e-mail on 24th of September 2010 to a total of 84 PhD students at the Department of Technology and Society, the Department of Building & Environmental Technology, the Department of Measurement Technology and Industrial Electrical Engineering, and the Division of Solid State Physics. In the invitation a brief introduction to the study was provided together with a hyperlink to the web-based questionnaire. The PhD students were also provided with a deadline when they were supposed to have filled out the questionnaire, namely 29th of September 2010. On 27th of September the students were reminded orally or by e-mail to fill out the questionnaire.

Data categorisation

In order to be able to analyse the collected data in terms of the PhD students' study progress, i.e., where they are in their studies, the participants were divided into four groups. The first group consisted of students who were in the initial phase (1st phase) of their studies, namely who had been active from zero and up to 25 percent of the total estimated time. The total estimated time was taken as the difference between estimated year of graduation and year of acceptance to the PhD program taking longer periods away from PhD studies, e.g., parental leave or illness, into account. Similarly, participants who had been active more than 25 and up to 50 percent

were categorized as 2nd phase, more than 50 percent and up to 75 percent as 3rd phase and more than 75 percent as 4th phase.

Results

The answers of the respondents on the questions concerning the ten identified supervision activities are presented in the following section. Their answers are divided in four time-groups in able to separate the PhD students for different stages in their PhD education. The lengths of the bar graphs represent 100 percent and the figures in the different segments of the bars represent the percentage for each segment. The offsets from the central axis represents the skewness of the distribution in relation to the expressed need of supervision.

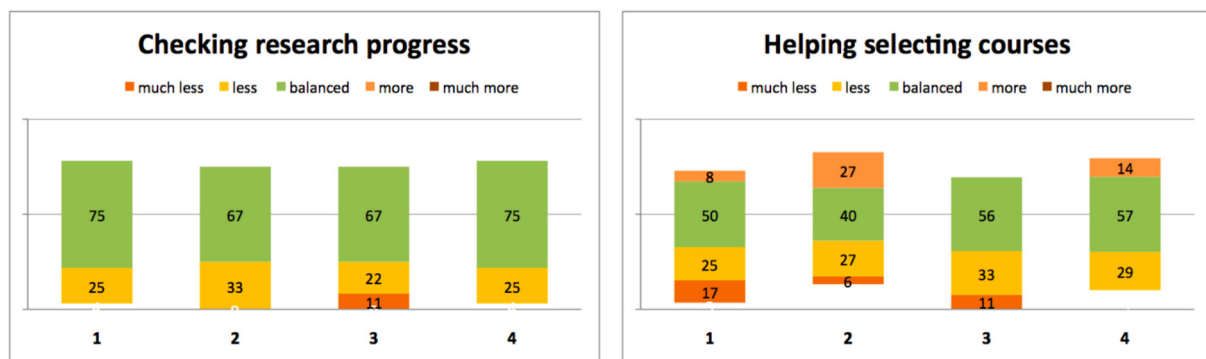


Figure 2. Participants' estimation of their need for the two supervision activities belonging to the functional approach

Two thirds or more of the PhD students experience their supervisors activities in *checking research progress* as balanced. 75 percentage of the PhD students in their first and last phase have chosen the balanced alternative.

50% of the PhD students or more perceive that the supervision in *helping selecting courses* are balanced for all phases but the second where 40% answers balanced. 29% or more experience that they have received much less and less than needed. In their first and third phase more than 40% have answered that they get less or much less than needed.

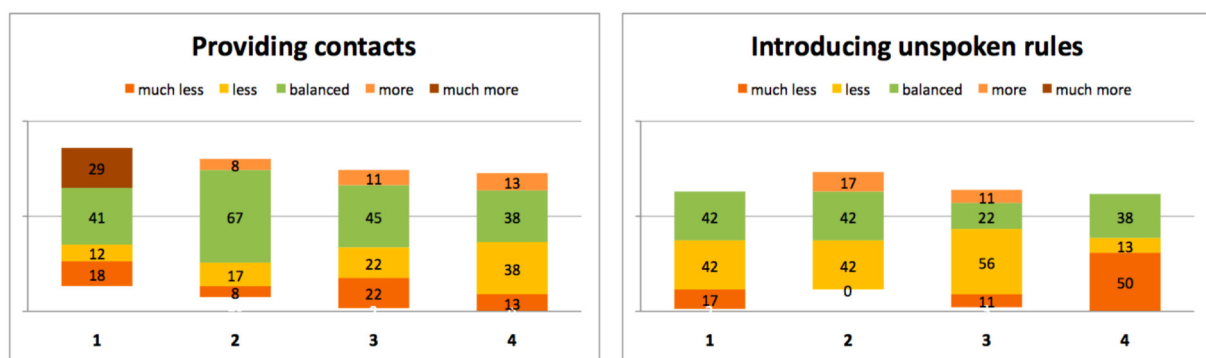


Figure 3. Participants' estimation of their need for the two supervision activities belonging to the enculturation approach

Only during the second year the majority experienced that their supervision on *providing contacts in your research society* are balanced. 25 percentage or more, the percentage is increased during the

years of education, answers much less or less supervision on this item. In the last phase 50% of the students perceive too less supervision on this item. About 30% answers that they get much more than need during their first phase.

42 percentage or less have answered the balanced alternative for the item *introducing you to the unspoken rules of the research field*. 42% or more experience that they receive much less or less supervision than needed. During the first and third phase the corresponding percentage is 59 respectively 67. A majority of the students receive less supervision than needed except for the second phase.

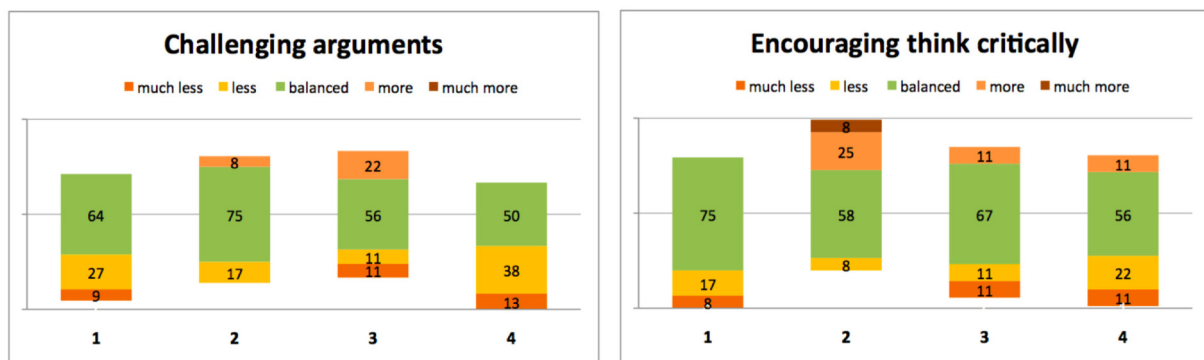


Figure 4. Participants' estimation of their need for the two supervision activities belonging to the critical thinking approach

50 percentage or more of the students perceive that they get balanced supervision in *challenging your arguments*. In the first phase 36 percent and in the last phase 50 percent experience that they get much less or less supervision than they need.

A majority of the students experience that they get balanced supervision on *encouraging you to think critically*. One third perceives less supervision during the last phase and one third perceives too much supervision during their second phase.



Figure 5. Participants' estimation of their need for the two supervision activities belonging to the emancipation approach

50 percent or more experience balanced supervision on *supporting your independence*. The percentage of students which answers that they get more and much more than needed is 25, 41, 22 and 38 respectively for the different phases.

45 percentage of the students during their first phase report that they receive less or much less *coaching you in your career* from their supervisors. The corresponding numbers for the following phases are 42, 66 and 25.

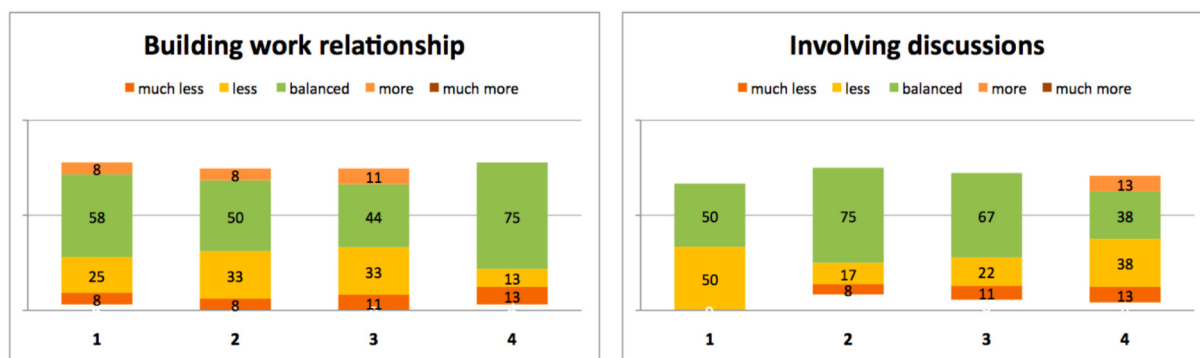


Figure 6. Participants' estimation of their need for the two supervision activities belonging to the relationship development

50 percentage or more experience balanced supervision on *building work relationships* except for the third phase. 25-44 percentage perceives too less supervision. 50 percentage or more experience balanced supervision on *involving you in informal discussions* except for the fourth phase. 25-50 percentage perceives too less supervision.

The data were also analysed with respect to gender and if the doctoral students had their master's degree from a Swedish or a non-Swedish university. However, it is not possible to discern any significant differences between these categories.

Open question on additional supervision activities

The open question: "Please specify what additional supervision activities that you think you need now?" was chosen to complement the statements in the survey, to give the students a possibility to write whatever they thought was the most important. 13 students answered the open question, most of these (6) were students in the first time phase of the PhD studies.

Almost all the answers (12 out of 13) have in common that the students wants more attention from their supervisor. A very representative answer is:

"Their "time", or more of their time, and to be able to have support which should be possible thinking of my supervisors long experience" (Female 4th phase)

Since only one third of the students did fill out this question we can't conclude that these answer is representative for the survey. It is most likely that the only students who feel neglected are the ones who will answer this question. However, if one third of the PhD students feel that they get too little attention from their supervisor, this is a quite alarming result.

The first phase students all ask for what must be classified as more functional supervision, especially supervision in the lab, and specific directions and discussions of what is publishable.

"Maybe giving me less independence and more of directions and mutually decided specified goals"(Male 1st phase).

"I would like more supervision of my actual lab work, all the small things that are obvious to people in the field but not to beginners (i.e. me)"(Male 1st phase).

The students that are in the 3rd and 4th phase typically want more aid with writing grant proposals and preparing for a career as a postdoc, which can be interpreted as supervision activities connected to the emancipation approach. However, they also requested more direct aid in how to write their papers and thesis, which is a supervision activity connected to the enculturation and functional approaches.

"Planning to write the thesis. Planning for a postdoc. How to write grant proposals" (Male 3rd phase)

“Feedback on the methodology and scientific content of my papers. My supervisor only corrects my language. Comments on methodology and content is given by other co-authors. I would have liked my supervisor's help in planning my studies and in selecting what approach to take and what data to include in my papers. But my supervisor asked me to write papers first, and then he would comment.” (Female student 4th phase).

This would correspond to the results of the general statements where “coaching of my career” and “introducing me to the unspoken rules of the research field” turned up with most “less than needed” answers, especially from students in the third phase.

Discussion and conclusions

In general the PhD students are satisfied with their supervision, in particular the supervision activities related to the functional approach to doctoral supervision is expressed as the most satisfactory. The activities connected to enculturation are expressed as less satisfactory, especially concerning introducing unspoken rules where the majority of doctoral students are unsatisfied with their supervision. The supervision activities focused on spurring critical thinking is deemed the second most satisfactory by the doctoral students. Although a majority of the student express that the supervision activities focusing on emancipation and relationship development are satisfying, substantial groups of the students are not at all satisfied. Especially not with the supervision activities concerning supporting independence and coaching in their career.

The general trend for the expressed need of activities for enculturation is that the students tend to want more such supervision towards the end of their studies. Especially concerning being introduced to unspoken rules, where half the students express that they get much too little such supervision in their final phase of their PhD. However, it is interesting to note that more than a quarter of the students express that they are provided with much too much contacts in the initial phase.

Although the majority of the students are satisfied with the activities concerning critical thinking, it seems like the students experience that they are not challenged to an equally sufficient degree in their final phase of their PhD. Another interesting trend is that the students that voice dissatisfaction with their supervision concerning supporting their independence voice increasingly more extreme dissatisfaction over time, i.e. a quarter of the students express that they get much too much independence in their last phase of their PhD. For activities related to career coaching the trend is somewhat different. After an increasing dissatisfaction over the first three phases, it seems like they are more satisfied in their last phase. This may be explained by the students having a clearer picture of their future career.

Concerning activities related to building work relationships, it seems like the students are equally satisfied or dissatisfied over the first three phases of their PhD, but with a significant increase in satisfaction in their last phase. A similar but opposite trend emerge regarding activities regarding involving the doctoral students in informal discussions. Here, dissatisfaction increases in the last phase. This may be explained by the students having their own networks of contacts in the end of their studies, while their growing independence may result in them feeling that they are increasingly left out.

Our ten suggested concrete supervision activities are formulated based on the five approaches identified by Lee (2008). She mentions that most supervision recommendations have been focused on the first approach; the functional approach. Our two items in this group; checking research progress and helping in selecting courses are experienced as satisfying, implying that the functional approach is expressed as the most satisfactory aspect of doctoral supervision.

However, it is important to note that substantial groups of students still voice that they want more functional supervision.

Lee, however, suggests that the supervisor also should give other approaches of supervision. Our study supports this and shows that the PhD students, except from the functional activities, also demand supervision in terms of the other four approaches such as enculturation items; introducing you to the unspoken rules of the research field and emancipation items; coaching you in your career.

Lee's model is supposed to be a tool when identifying different aspects of supervision and also make the supervisor aware of that there are other types of supervision than the one she refers to as functional. We find that the suggested five types of supervision also can be a helpful tool for the supervisor as a framework to show and discuss when having the discussion with the PhD student on needed supervision.

It is possible that when answering the questions, the students have focus on what they experience that they are lacking. This may imply that they have a tendency to report issues which they feel are too less supervised rather than issues that are too much supervised. In this context it's interesting that several report that they get too much supervision in supporting your independence. We have interpreted this as they are left on their own and get too little support and supervision by their supervisor. One student in his first phase even wrote: "I feel largely ignored by my supervisor."

This study focuses on the relation between the perceived need for different types of supervision and the supervision they experience that they get from the supervisors. The amount of supervision given and needed respectively can accordingly not be found, only the difference between these two. By this approach it is however still possible to identify areas in which the students perceive that they get too little supervision in relation to what they need and hereby making it possible to give valid recommendations to supervisors on which types of supervision where they should be attentive. Our concrete advice to supervisors based on the results from this are:

- PhD students require more attention and general support.
- PhD students require more supervision on *introducing you to the unspoken rules of the research field* and *coaching you in your career*
- PhD students require some more supervision in *helping selecting courses* and in *building work relationships*, especially in the beginning and in the middle of the education
- PhD students require some more supervision in *involving you in informal discussions* especially in the beginning and in the end of the education
- PhD students require some more supervision in *providing contacts in your research society*, especially in the end of their education
- Some PhD students require some more supervision in *challenging your arguments*, especially in the beginning and in the end of the education

What can be done? Lunds Doktorandkår (PhD Student Union in Lund) has a form "Diskussionsunderlag för introduktion av nyantagen doktorand" that can be used when a PhD student is starting his/her studies. The form highlights the mutual expectations of the PhD student and the supervisor in many areas, such as meeting structure/frequency, responsibilities,

goals etc. We find it to be a good base for discussions to surface expectations and views that otherwise may have resulted in misunderstanding and tension between the student and supervisor(s) if found out at a later stage in the PhD work. We also find it useful for the student to take another look at the form after maybe 6-12 months, when he/she has developed a better understanding of PhD studies in general.

Supervisor management? Some universities offer a course on “how to manage your supervisor” as part of the PhD program; in some cases the topic is included in a general course for newly accepted PhD students. We believe that such a general course has many interesting benefits and could in fact touch on most aspects discussed by Lee [2008]. First of all, it could help the student to develop a suitable professional relationship with the supervisor, which would improve the communication and thereby help with all aspects of the supervision. A general course could also go through practical formalities regarding PhD studies (functional), and through exercises help the student develop critical thinking. It could include some typical paths towards integration into a research community, such as how to apply for travel grants for research visits/conferences, and how to become a referee for a journal.

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