Supervising a three year PhD

Reflections on the DTU implementation of the Bologna EU PhD

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Introduction

It is possible to complete PhDs in 3 years?

Quality of a 3 year PhD?

How is it possible?

DTU: An introduction

• 1355 PhD students, 62% International
• 706 faculty, 2,184 researchers, 6,053 staff, 11,500 students.
• 6,008 publications in 2018, 19% in Top 10%.
• 69% of publications with an international co-author.
The DTU PhD

DTU has a (strict) 3 year PhD

We employ the EU Bologna 3 + 2 + 3 university degree structure
Can it be done in 3 years?

3 year PhD
- Structure (most DTU PhDs financed on well defined projects)
- Supervisor role is critical
- Monitoring/follow up
- Secure financing

Longer PhD
- Open projects
- Less formal structure/monitoring
- More risk & freedom to explore ideas
- Financing often decided on annual basis

What are we educating our PhDs for?
2/3 of DTU PhDs go into non-university employment straight after completion of PhD

The Danish PhD programme

3- year post-graduate programme
- Admission requirement: 2 year Masters degree
- Enrolled at PhD schools which were established in 2007
- 2003-2010 – doubled number of PhD students

Highly regulated programme
- Danish PhD Order and the Danish University Act
- Compliant with the Salzburg II Recommendations of the European University Association (2010)

Funding of PhD studies
- Majority of PhD students are employed with 3 years of funding:
  €43,000/yr plus benefits
- Departments must ensure that all PhDs have salary of minimum DKK €19,000/yr
Content of the Danish PhD programme

Research and PhD thesis

- Dissemination: 3 months
- External stay International University or Company: 3-12 months
- Teaching or Department service: 3 months *
- PhD courses: 30 ECTS points
- 6 months

* Note that 70% of PhDs are DTU employees and only these PhDs are required to do teaching/Dept service

SDG PhD

- All PhDs must be put in sustainability context
- Course in sustainability and popular communication (2.5 ECTS)
- All PhDs expected to communicate PhDs to high schools
3 Years: Quality of graduates?

- Employment
- Completion
- Productivity
- Job Satisfaction

Where are they employed?

- Private sector: 57%
- Public sector: 10%
- DTU Postdoc or Assistant Prof.: 20%
- Other University: 10%
- Other: 2%

67% have a job before completion
< 2% unemployment
Completion

Completion time 3.1 years
Full time study (without maternity leave, sick leave, other leave)
Students can take up to 1 year leave while enrolled as PhD

Drop out rate 10 %

PhD publications

69% papers published with an international co-author
Lieden: 16th in world in publications with industry

20 randomly selected theses submitted in June 2019 from 10 Departments
What do PhD examiners say?

"How would you characterise the DTU PhD dissertations that you have evaluated compared to the standard at internationally leading universities in the research area?"

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>1999</th>
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<tbody>
<tr>
<td>Very good</td>
<td>31%</td>
<td>19%</td>
</tr>
<tr>
<td>Good</td>
<td>48%</td>
<td>51%</td>
</tr>
<tr>
<td>Average</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>Below average</td>
<td>4%</td>
<td>5%</td>
</tr>
<tr>
<td>Poor</td>
<td>1%</td>
<td>0</td>
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</table>

PhD job satisfaction

Key findings on work satisfaction of PhD students at DTU

- PhDs proud of work at DTU
- Stress
- Large variations in supervision, contact with and support from the supervisor
  - The PhD experience depends largely on the individual supervisor
  - Communication challenges and a lack of match of expectations with their supervisors
  - A need for more focus on supervision and the role of the supervisor – development of a ‘best practice’ concerning PhD supervision
- Career planning is a big issue for PhD students
How is it possible?

- Well paid, but funding stops at 3 years
- Good supervision and clear match of expectations
- Structure, planning and monitoring
- Well defined projects with clear milestones
- Thesis is usually not a monograph
Clear division of responsibilities

Dean
Central and decentral PhD administration
5 PhD committees
19 PhD schools
Supervisor

Structure, planning and monitoring

PhD plan
- Research plan
  - Must be approved latest 3 months from enrolment date

Half year reports
- Evaluation of the previous 6 months
- Planning of the next 6 months

Interviews
- Monitors progression and plans
- All PhD students must have an interview after one year of studies

Extension rules
- All employed PhDs have Employee Development Interviews
- Students must apply for an extension if they are unable to finish by the expected end date
- All extensions more than 6 months must be approved by the Dean
PhD project plan

Due 3 months after project start
Approved by one of 5 DTU PhD Committees

- Project description
- External Research Stay
- PhD course plan
- Dissemination plan
- Time plan, including Gant diagram
- Deliverables
- Supervision plan
- Career plan
- Patents and innovations

Time line for a DTU PhD student

Year 1
- Financial and academic approval
- Study plan (at 2 months)
- First year interview

Year 2

Year 3
- PhD thesis
- Supervisor statement
- Assessment committee appointment
- Preliminary recommendation (at 38 months)
- Defense (at 39 months)
Monitoring - PhDigital

Ph.d. til
Institutter

Monitoring - PhDigital

Studieplaner 2017 - 2018

Halvårsrapporter 2017 - 2018
DTU Dialogue Tool

Examples of questions

• What different roles will the PhD student and the supervisors assume during the 3 years? Who is responsible for:
  – Providing an appropriate study design?
  – Managing the process?
  – Does the responsibility shift over time?

• Which skills needed in the project do the PhD student already have and which need to be developed?

• Who initiates meetings, how long are your meetings, who participates (also co-supervisors) and how often do you meet? Who writes down decisions?

• How long does the supervisor need to give feedback on manuscripts?
Supervisor training

Goals for supervisor training

**Supervisors must:**
- Knowledge of the PhD rules and how to navigate in the DTU system
- ‘Open up’ the supervision space – share & reflect
- Be flexible

**Flexibility:** The supervisors must adjust their supervision to the individual student, the phase and project!
Courses provided for PhD supervisors

**One-day course**
- All supervisors are expected to take this course

**Three-day course**
- Aimed at both new and experienced supervisors
- Aimed at both main- and co-supervisors
- Optional – but mandatory at some departments

**How often and how many?**

**One-day course**
- Has run since 2007
- Offered 3-4 times a year
- Between 25-30 participants

**Three-day course**
- Has run since 2010
- Offered 2 times a year
- Between 10-20 participants
Content of one-day course

Topics
- Rules and regulations
- Align expectations
- The PhD plan and how to use it
- Best practice - presentation

Preparation
- Watch a video
- Do a quiz on rules and regulations

Three-day Supervisor course

- Supervisory roles & relationship
- Communication tools
- Alignment of expectations
- Feedback and support for writing
- Intercultural issues
- Preparation work
**Preparation work prompts reflection**

- **Case stories** on challenges in supervision - handed in before the course
- Individual **practice of active** listening at supervisor meeting between course days
- **Peer supervision** in between course days

**Peer-supervision in groups of four**

- Supervisors meet in groups of 4 and observe each others’ supervision sessions
- They give feedback in the group after the session
- Insights are shared at the following course day
Example of supervisor dilemma:

I often find myself in a situation where I “see” the solution of a problem and have a clear opinion of how to perform a task and find myself communicating this to the students.

However, I sometimes feel that this comes in the way of the student being able to follow own ideas.

Which part of the course did you find the most worthwhile?

‘The peer-supervision exercise’
‘Sharing actual experience with other supervisors’
‘I really enjoy the peer-coaching and it is a very good idea’

For some supervisors it is clearly a challenge: ‘The peer supervision did not work out so well for me. Maybe best not to involve ‘real’ students’
Quantitative evaluation of the course (2015-2019)

<table>
<thead>
<tr>
<th>Questions that are answered on a scale from 1-6</th>
<th>6: Strongly agree 1: strongly disagree</th>
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</thead>
<tbody>
<tr>
<td>How worthwhile was the course in general for you?</td>
<td>5,3</td>
</tr>
<tr>
<td>Did you think the topics we dealt with on the course were relevant?</td>
<td>5,6</td>
</tr>
<tr>
<td>Do you think this course has provided knowledge and inspiration?</td>
<td>5,5</td>
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PhD training
PhD student workshops
Teach the PhD students how to plan and deal with their supervisors

These courses are typically organised by the PhD schools

The bigger picture
What are the big issues in DTU PhD leadership right now?

- We cannot meet demand for graduates
- Good scientific practice and plagiarism
- PhDs & the academic leaky pipeline
- Stress
- Double PhDs
- Externally financed students

Conclusion

DTU has a 3 year PhD

DTU's PhDs are of high quality and are in demand

Structure and supervision are essential

Are we doing the right thing?