

PROFESIONALIZACIJA DOKTORSKE IZOBRAZBE

Vodič za mentore i doktorande

ISBN 978-953-243-082-0

http://www.fpz.unizg.hr/PD_Studij.asp?izbID=40

<http://bib.irb.hr/lista-radova?autor=282301>

Autorov prikaz priručnika

Fakultetski priručnik *Profesionalizacija doktorske izobrazbe – vodič za doktorande i mentore* nastao je na temelju ostvarene intenzivne suradnje s dr. Hansom Sonneveldom sa Sveučilišta u Utrechtu. Suradnja je započela 2011. godine tijekom provedbe i pripreme radionica *Profesionalization of PhD Research* na Sveučilištu u Zagrebu. Izobrazba mentora na tu temu je bila formalan uvjet za kvalificiranje za vođenja doktoranda osobama izabranim u znanstveno-nastavna zvanja, a koje nisu ranije bile mentori. Ta praksa je nažalost danas ukinuta jer osposobljavanje mentora na doktorskim studijima na Sveučilištu u Zagrebu više nije obaveza već puka preporuka. Stavovi i ideje te opći principi koji se u tekstu navode nisu originalna mišljenja, već definirane i poznate činjenice unutar znanstvene zajednice koja se bavi tom problematikom. Pored dr. Sonnevelda, s kojim sam kao autor imao priliku intenzivno surađivati i izmjenjivati mišljenja, a to činim i dalje upravo prema principima dobrog odnosa između mentora i doktoranda, uvelike sam se služio literaturom koju smatram relevantnom u području. To se primarno odnosi na autoricu Barbaru E. Lovitts koja je u svojim knjigama iznijela niz rezultata originalnih znanstvenih istraživanja i zaključaka. Ipak, kao okosnicu rada korišteno je djelo *Supervisors at Work! Guidance of PhD candidates at EEMCS* autora dr. Sonnevelda.

Materijal nije skup gotovih preporuka za postupanje mentora ili doktoranada. Ako se promatra iz perspektive mentora, materijal treba shvatiti istovremeno kao izazov ali i upozorenje. Mentor bi trebao biti svjestan vlastitog stila rada i prilagođavati ga kako bi na najbolji mogući način dopro do doktoranda. Pritom bi trebao jasno definirati standarde i ciljeve. Koliko god prethodne dvije rečenice bile u proturječju, potrebno je naglasiti da vođenje doktoranada nije nimalo jednostavno i lako. Ono što stvarno jest vođenje doktoranada to je privilegija!

U tekstu je dan pregled ključnih elemenata koji tvore učinkovito mentoriranje. Početna razmatranja u poglavlju 1 odnose se na važnu činjenicu a to je da je konačni cilj doktorske izobrazbe samostalan istraživač. Samostalnost ne treba uzeti zdravo za gotovo od samog početka.

U poglavlju 2 razmatra se priroda samostalnosti koja otvara pitanje postoji li jedinstveni model rada

PROFESSIONALIZATION OF DOCTORAL EDUCATION

Guide for Supervisors and Doctoral Students

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Author's review of the textbook

The textbook *Professionalization of Doctoral Education – a Guide for Supervisors and Doctoral Students* emerged out of intensive collaboration with Dr. Hans Sonneveld of the University of Utrecht. This collaboration began in 2011 during preparations for the workshop «Professionalization of Ph.D. Research» at the University of Zagreb. This supervisors' training was required of all individuals selected for the «scientific-teaching track» who wanted to become Ph.D. students' supervisors. Unfortunately this requirement no longer exists because training for Ph.D. supervisors at the University of Zagreb is no longer required, only recommended. The attitudes, ideas and general principles presented in this text are not the author's original ideas, but rather well-established concepts familiar to the relevant communities of researchers.

Apart from Dr. Sonneveld, with whom as an author of this textbook I collaborated intensively and exchanged ideas – and with whom I still collaborate reflecting on the principles of maintaining a good relationship between the supervisor and the doctoral student that stand in the focus of this Guide – I have made use of literature that I consider essential reading in the respective field. In particular, I have drawn from Barbara E. Lovitts' books *Leaving the Ivory Tower* and *Developing Quality Dissertations in the Sciences*, in which she discusses the results of relevant original research. Other work forming the backbone of this Guide is Dr. Sonneveld's *Supervisors at Work! Guidance of Ph.D. candidates at EEMCS*, written for Ph.D. students at the Graduate School of Electrical Engineering, Mathematics and Computer Science at Delft University.

The textbook is not a collection of ready-made recommendations for supervisors and students. Instead, it represents both a warning and a challenge to supervisors. Supervisors should be aware of their own working style and should adapt it to reach each student as effectively as possible. In the process, supervisors should clearly define their standards and goals. The preceding two sentences contradict each other, reflecting the fact that guiding doctoral students is not at all simple or easy. However, it most certainly is a privilege!

This Guide provides an overview of the key elements that make mentorship effective. Chapter 1 opens with considerations of an important fact: the final goal of doctoral education is to create an independent researcher. Independence should not be taken for granted from scratch.

mentora. Izrada doktorske disertacije jest mnogo više od samog istraživanja i pisanja. Ono što se želi ostvariti jest doprinos ukupnom temeljnom i uporabnom znanju. Važno je da doktorandi razviju akademski način razmišljanja (stav) i da ga kontinuirano nastave nadograđivati. Opće kompetencije uključuju tehničke vještine, prezentacijske vještine, vještinu pisanja i sposobnost formuliranja problema istraživanja. Od presudnog je značaja kontinuirana rasprava o očekivanjima između mentora i doktoranda te na koji način se predviđa raspodjela odgovornosti.

Poglavlje 3 navodi da se mentor treba prilagođavati doktorandu s kojim surađuje, odnosno da treba biti u mogućnosti formirati vlastite stavove prema potrebama doktoranda. Nije moguće definirati jedinstven stil i način vođenja (mentoriranja) doktoranda. Mentor je dužan prilagoditi vlastiti pristup individualnim potrebama i posebnostima svakog pojedinog doktoranda. Zato je potrebno uložiti mnogo vremena kako bi se kandidat što bolje upoznao te kako bi se pronašao stil vođenja koji mu najbolje odgovara. Iz perspektive mentora, potrebno je neprestano mijenjati stilove – kako horizontalno (između različitih kandidata), tako i vertikalno (prema stupnju razvoja, odnosno godinama studiranja kandidata).

U poglavlju 4 naveden je značaj planiranja na temelju jasno definiranih stavova koji trebaju biti međusobno usuglašeni i prihvaćeni. Planiranje u osnovi podrazumijeva dva glavna principa. Prvo, planiranje nije linearan proces. Ponekad se može dogoditi da doktorand objavi vrlo malo radova u prvoj godini (ili ne objavi ništa), a onda iznenada objavi tri vrijedna rada. Drugo, bitna je fleksibilnost. Uvijek su moguća odstupanja od planiranih aktivnosti iz razloga koji se ranije nisu mogli predvidjeti.

U poglavlju 5 obrađena je osjetljiva problematika u smislu koliku autonomiju dopustiti doktorandu i kada je vrijeme za intervenciju. Treba li mentor odraditi veći dio posla u pisanju znanstvenog rada u početnoj fazi doktorske izobrazbe i što se zapravo očekuje od doktoranda? Potrebno je što ranije identificirati sve nedostatke doktoranda u smislu teorijskog poznavanja područja istraživanja, znanstvenih metoda, korištenja određenih alata i drugo. Bilo bi poželjno da doktorand nakon prvih šest mjeseci bude u stanju definirati osnovni problem vlastitog istraživanja te da utemeljeno izloži argumente koji tome idu u prilog. To je presudno za mnoge procese koji će se kasnije odvijati.

U poglavlju 6 raspravlja se o kriterijima mentoriranja i osnovnoj suradnji s drugim kolegama. Vođenje doktoranda (ili kako se to voli nazivati – mentoriranje) jest intenzivna aktivnost. U početku je potrebno osigurati dovoljno interakcije kako bi se doktorand pravilno usmjerio u područje istraživanja. U toj fazi se preporučuje da doktorand dostavlja mentoru tjedno izvješće o radu, a mentor treba vrednovati svaki vidljivi napredak i uloženi trud. Mentor također treba

Chapter 2 examines the nature of independence and deals with the question of whether unique supervision styles do exist. Writing a doctoral dissertation is much more than just research itself and writing. The goal is to contribute to general fundamental and applicable knowledge. Doctoral students should continually work on cultivating an academic way of thinking (attitude) and improving continuously. General competencies include technical skills, presentation skills, writing skills and the ability to formulate research issues. Continuous discussion between supervisor and doctoral student about the expectations and the planned distribution of responsibilities is of critical importance.

Chapter 3 demonstrates that supervisors should adapt to their doctoral students, shaping their own attitudes to the needs of their students. It is impossible to define a single style and method for leading (mentoring) doctoral students. The supervisor is responsible for adapting their own approach to the specific needs and profiles of each student. For this reason, the supervisors should invest substantial time in getting to know their students and in identifying the most appropriate leadership style for each one of them. The supervisors should constantly change their styles, both horizontally (among different students) and vertically (according to the level of development, i.e. years of study of the student).

Chapter 4 explains the importance of planning the doctoral work on the basis of clearly defined attitudes that should be mutually agreed upon and accepted. Basically, planning a doctoral project involves two main principles. First, that the project is unlikely to develop in a linear way. Sometimes a doctoral student will publish very few papers (or even none) during the first year, and then suddenly publish three solid papers. The second principle is that the project will require flexibility: deviations from planned activities are always possible because it is impossible to predict exactly how a project will unfold.

Chapter 5 deals with the sensitive issue of how much autonomy to give the doctoral students and when to intervene. Should the supervisor perform most of the work of writing research papers during the early phase of doctoral education? What is expected of the doctoral student? It is necessary to identify, as soon as possible, all weaknesses of the doctoral student regarding knowledge of the research area, scientific methods, and use of certain analytical tools, among other things. It is desirable that doctoral students, after the first six months, be able to define the basic problem that their research addresses as well as provide well-founded arguments justifying that problem.

Chapter 6 discusses criteria for mentorship and the basics of collaborating with other colleagues. Supervising a Ph.D. student, or «mentoring» as many prefer to call it, is an intense activity. At the beginning, substantial interaction between supervisor and Ph.D. candidate (student) is necessary to ensure that the student embarks down an appropriate path within the chosen research field. During this phase, it is recommended that the students report weekly on their work and that

biti svjestan formiranja grupa između doktoranada – kolege mogu imati značajnu (pozitivnu) ulogu. U Poglavlju 7 se dodatno navode načini pomoću kojih doktorand može profitirati od rada s mentorom, ali i preko suradnje s trećim osobama.

U poglavlju 8 raspravlja se o problemima s kojima se doktorand može sresti i mogućim ishodima. Mentori mogu naići na mnogobrojne probleme. Prijelaz sa istraživačkog rada na obradu i opis rezultata može biti posebice zahtjevno za nekog doktoranda. S druge strane, neki doktorandi jednostavno nisu dorasli zadatku. Također, mogu se pojaviti nepredvidivi privatni problemi. Nedostatak osnovnih ljudskih kvaliteta ili motivacija da se ide naprijed mogu biti također iskazani od strane doktoranada u nekoj od faza rada.

Doktorat znanosti, kao najviša razina akademske izobrazbe, opterećen je vrijednostima i značenjem. Zahtjevi i standardi kvalitetne doktorske disertacije obrađeni su u poglavlju 9.

Mentori mogu naići na razne slučajeve ali i izazove. Prijelaz sa istraživačkog rada na analizu i opis rezultata mogu biti posebice zahtjevni za doktorande. S druge strane, neki doktorandi jednostavno nisu dorasli zadatku. Također, mogu se pojaviti nepredvidivi privatni problemi. Nedostatak osnovnih ljudskih osobina ili motivacija da se ide naprijed mogu biti također uočeni kod doktoranada u nekoj od faza rada. Što napraviti kada se pojavi ozbiljni problem? Potrebno je razgovarati, razgovarati i dodatno razgovarati.

Mentor treba biti svjestan vlastitog stila rada i treba biti u mogućnosti prilagoditi se doktorandu i njegovim potrebama. Kako bi se to ostvarilo potrebno je jasno iskazati doktorandu stav i očekivanja koje ima kao mentor. Mentorstvo omogućuje rad s ljudima koji su ponekad pametniji i sposobniji od njega samog, ali čiji je jedini "nedostatak" da su mlađi i neiskusniji. U sinergiji znanja i iskustva, uspjeh neće izostati.

Biti mentorom jest privilegija ali i izazov. Zato kao mentori uživajte u tom iskustvu.

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the supervisor rewards every visible advance and invested effort. The supervisor should also be aware of networks or teams into which students self-organize; colleagues can play a significant (positive) role in the student's development and progress. Chapter 7 additionally describes the fact that while doctoral students benefit from working with their supervisors, they can also benefit from collaborations with third parties

Chapter 8 discusses problems that the doctoral student may encounter and possible outcomes. Supervisors may run into numerous problems as students advance in their projects. For some students, making the transition from experimental work to data analysis and preparation of results is an enormous step. Some students are simply not up to the task of doctoral work. In addition, unforeseen personal problems may complicate the student's progress. At some point during the course of their doctoral work, students may show deficiencies in basic human qualities or lose the motivation to continue.

The PhD, as the highest level of academic training, is perceived even by doctoral leavers as loaded with values and significance. The requirements and standards of a high-quality doctoral dissertation are presented in Chapter 9.

Supervisors may run into numerous different cases as well as challenges as students advance in their projects. For some students, making the transition from experimental work to data analysis and preparation of results is an enormous step. On the other hand, some students are simply not up to the task of doctoral work. In addition, there may occur unforeseen personal problems which may complicate a student's progress. At some point during the course of their doctoral work, students may show deficiencies in basic human qualities or lose the motivation to continue. What should be done when such serious problems arise? Supervisor and student should discuss, discuss and discuss even more.

The supervisor should be aware of their own working style and be able to adapt to the students and their needs. This requires supervisors to clearly define their attitudes and expectations toward their doctoral students. Supervision allows one to work with people who are sometimes smarter and more capable and whose primary «defect» is that they are young and inexperienced. In the synergy of knowledge and experience, success is guaranteed.

Being a supervisor is indeed a privilege and a challenge. Thus, as supervisors, enjoy the experience.

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