

From Sailor to Scientist – Reaching Out to Researching Professionals on Doctorate Level

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ABSTRACT

Doctoral programmes are usually offered in full-time and part-time form, with latter mainly chosen by working professionals whose drop-out rate is significant. In order to keep these part-time doctoral students at doctoral programmes, universities must reach out to them and help them overcome the obstacles in their path to postgraduate diploma. This paper discusses two possible approaches in handling this problem, which can quite easily be incorporated together. One possible solution, rarely used in maritime sector, is offering a professional doctorate (EngD) over classical research doctorate (PhD). Another possible solution would be addressing the needs of working professionals in maritime sector by composing adequate online curriculum of postgraduate programme. Principles to be considered in order to successfully produce professional and online doctorate are given in the paper and applicability of the concept in the maritime sector is discussed.

1. INTRODUCTION

Doctoral degree represents the highest academic qualification awarded to student upon successful completion of a course of study in higher education that is usually preceded by bachelor's and master's degree. It takes a giant leap to advance from master's to doctoral degree, a leap that only a few are ready to take. According to 2018 survey [1] in the USA, the number of people age 25 and over whose highest degree was a master's is 21 million, while the number of doctoral degree holders is just 4.5 million. There are no precise data for students educating in the maritime sector, but given the nature of the mentioned sector, it can roughly be assumed that only a small portion of the finished master's students is ready to advance to doctoral level and most of them coming after some years of service at the sea.

To cater for different needs, doctoral programmes are usually offered in full-time and part-time form. Part-time doctoral programmes are mainly chosen by working professionals – those who opt for pursuing doctoral degree along with their regular full-time job. These part-time doctoral students often carry substantial practical experience in industry and business, experience that can significantly contribute in detecting actual challenges that need to be confronted by new scientific methods. However, practical-solving approach of these working professionals often collides with somewhat rigid academic mindset so, quite often, their full potential is not recognized and universities miss on prospering from this unique academic and professional blend [2]. The problem is even more specific in maritime sector where professionals working

at seas are separated from universities for prolonged periods. In Fig. 1 numbers of full-time and part-time PhD students at Croatian PhD maritime programmes for the last nine enrolment cycles is given. It is obvious that, at maritime sector, students in majority opt for part-time doctorate.

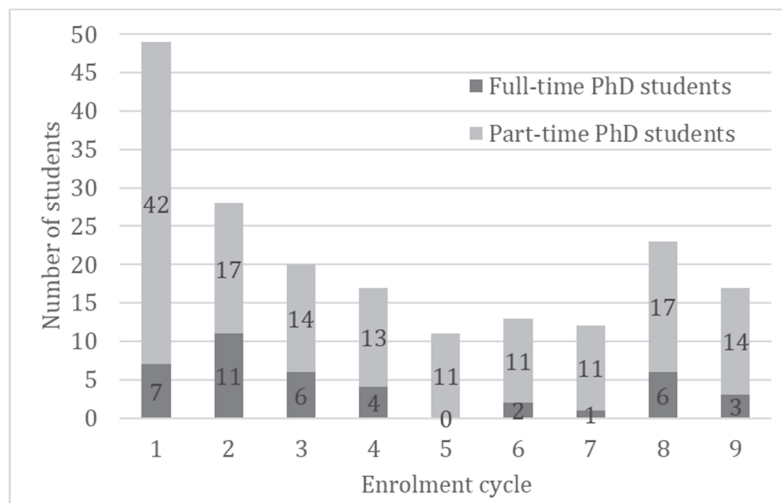


Fig. 1. Full-time and part-time PhD students at Croatian PhD maritime programmes for the last nine enrolment cycles (2006. – 2018.).

Obviously, in order to attract and keep them at doctoral programmes, universities must reach out to them and help them overcome the obstacles in their path to postgraduate diploma. This paper discusses two possible approaches in handling this problem, which can quite easily be incorporated together. One possible solution, rarely used in maritime sector, is offering a professional doctorate (Doctor of Engineering, EngD) over classical research doctorate (Doctor of Philosophy, PhD). In brief, PhD is intended to develop “professional researchers” and EngD is designed to develop “researching professionals” [3]. EngD combines foundational and theoretical knowledge of a discipline (or, sometimes, more than one discipline) with knowledge of research in its context. EngD should be considered as it could suit the needs of working professionals more adequately than PhD. Another possible solution would be addressing the needs of working professionals in maritime sector by composing adequate online curriculum. These ideas are more thoroughly presented and discussed in the next section of the paper where they are emphasized in six points that should represent strongholds of every professional doctorate. These strongholds are put together by authors after extensive review of available literature and doctoral programmes in the engineering field of study, with whom maritime sector coincides.

2. SIX STRONGHOLDS OF A PROFESSIONAL DOCTORATE

A question commonly asked and, at the same time, difficult to answer is how does the professional doctorate differ from the classical research doctorate? Variations in professional doctorates exist not only across institutions and across subjects, but also within subjects. The same conclusion can, however, be drawn for classical research doctorate as there is no clear consensus on what is “the right path” to PhD title. Still, some features shared by the majority of professional doctorates programmes can be highlighted as strongholds on which an EngD programme can be built. They are identified by careful investigation of the leading doctorates

curricula available online and available literature. These strongholds are presented in the following subsections.

2.1. CAREER FOCUS

The traditional PhD is generally not adequately suited to the needs of professionals pursuing a career outside research in academia environment or an industrial laboratory [4]. PhD is open for apprentice researchers who generally may have no or little experience of the subject beyond the knowledge obtained at the BSc and MSc level in the proposed field of study. Moreover, PhD is intended to be available as a pre-service training in research, while EngD is intended to be a form of in-service professional development.

This career focus is what sets PhD and EngD apart. EngD is usually aimed at experienced professionals who wish to extend their professional expertise and undertake advanced research, while not intending to become career researchers. The professional doctorate is intended for experienced practitioners within a profession and prospective candidates for a professional doctorate programme are usually required to carry 3 years of professional experience and relevant employment.

“Professional researchers” vs. “researching professionals” is a term that maybe most adequately describes the difference in career focus of PhD vs. EngD.

2.2. RESEARCH TYPE AND FOCUS

“Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge - including knowledge of humankind, culture and society - and to devise new applications of available knowledge” [5]. The term R&D covers activity such as: basic research, applied research and experimental development. The latter is of interest here, because it defines work directed to producing new or improved products or processes, drawing on previously gained knowledge. Former is of interest because it defines the difference in type of research that is to be performed in PhD and EngD.

“Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view” [5]. This description can fit reasonably well for most PhDs. “Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective” [5]. Definition of applied research is what adequately describes professional doctorates.

As for the research focus, most PhD candidates aim to make a significant original contribution to knowledge by focusing their efforts on a perceived gap in the literature in a subject discipline. PhD candidate is normally expected to undertake a preliminary literature research and review to identify that existing gap and start their work from what is already known.

By contrast, EngD candidate starts from what is not known, a perceived problem in professional practice that needs investigation and resolution. Professional research deals with a topic that relates to a candidate’s own field of professional practice.

2.3. LEARNING OUTCOMES

At the end of their PhD course, students should become independent scientists capable of performing and critically evaluating research using current techniques and methodologies and

developing new ones. They should have a thorough knowledge of the literature and a comprehensive understanding of scientific methods and techniques applicable to their own research. They should be able to understand how well their research fits in their field in terms of novelty and scientific significance. The intended learning outcome of the PhD is to develop the capacity to make a significant original contribution to knowledge in a particular discipline through research.

Learning outcomes of professional doctorates include the capacity to make a significant original contribution to knowledge of professional practice through research. EngD students should demonstrate the knowledge to create and interpret new knowledge, through original research, of a quality to satisfy peer review, extend the forefront of the discipline, and merit publication. They should, in general, be able to systematically acquire and understand a substantial body of knowledge and applicable techniques for research that are at the forefront of their area of professional practice. EngD students should, in particular, be able to conceptualise, design and implement a project that is intended to generate new knowledge and its application to professional practice.

2.4. MODE OF STUDY

Professional doctorate students are expected to spend their working time in industry and therefore most of the professional doctorate programmes are designed to be studied only by part-time attendance. However, some programmes state that the candidates are registered as full-time students with the understanding that most of their time will be spent working in an industrial or professional organisation. If the blend between professional work and academic duties is performed seamlessly, it is hard to distinguish between part-time and full-time mode of study.

2.5. BLENDING OF WORK AND STUDY, PRACTICE AND THEORY

As previously stated, most professional doctorates try to integrate the professional work of candidates into their doctoral studies as much as possible. Harmonizing the extent to which the scientific research will penetrate everyday professional practice of an EngD student seems crucial in attracting prospective candidate to EngD programmes and helping them to cope with two difficult tasks: delivering optimal performance at work place and, in the same time, fulfilling academic requirements. Hence, professional doctorates can, in a way, be viewed as a type of work-based learning and life-long learning. This implies acceptance of alternate means of teaching and mentoring at the PhD level of education; a significant step in breaking the rigid frames of academic environment.

Besides blending work and study, a proper combination of theory and practice seems just as much important. Once again, PhD is concerned with contributing to scientific theory while EngD should be concerned with making a research-based contribution to professional practice. It is inevitable to use theory in teaching and mentoring EngD student, but it must be made in a way that clearly opens the path to practical implementation of theory to practice.

Setting the professional work of candidates into their doctoral studies can be done directly or indirectly. Directly, when students deal with a problem that is an integral part of their professional practice and indirectly when students deal with a problem that is not an integral part of their professional practice. Indirect setting is primarily used for students that wish to

gain a broader knowledge about their professional sector. There is a possibility of not setting the dissertation in practice, of course, but this approach is most likely to discourage the students from professional doctorate.

2.6. DISTANT LEARNING

Students enrolled in the PhD programmes are expected to study on-site, at university campus, committing themselves to full-time programme attendance. As for the EngD students, it is expected for them to continue working while taking courses. Moreover, in some specific industries, it is almost impossible to account for students' regular visits to campus. Professionals that are tied to transport industry, military industry, civil engineering or large multinational companies can rarely expect that they will spend prolonged periods at a single place.

A possible solution for their problems would be addressing the needs of working professionals by composing adequate online curriculum of postgraduate programme. This programme should adhere to same academic rigour as ones taking place on campus ground. Academic rigour means that students are challenged to think, perform and grow to a level that they were not at previously [6]. Standards of the course must be set in a way that they challenge the students, not frustrate him. Academic rigour commonly consists of three different phases: setting the standard for students; equipping students through instructional and supportive methods; student demonstration of achievement [7]. At distant learning, it is often challenging to maintain academic rigour due to the nature of the study, but failing to do so can lead to deficient results of the research and dissertation itself.

3. CONCLUSION

Classical doctorate programmes dedicated to maritime affairs are rare, professional doctorate programmes almost non-existent. Out of 64 regular members of International Association of Maritime Universities (IAMU), only 25 offer some kind of PhD programme (data available by browsing web pages of institutions), Fig. 2.



Fig. 2. Number of IAMU members across continents and PhD programmes offered (as of June 2019).

Given the extreme applicability of the research in the maritime domain, it is obvious that there is a place for EngD programmes. Nevertheless, some problems exist. They are often underappreciated both by academia and industry with the PhD still seen as the “gold standard” of doctoral qualification [8]. This can be one of the reasons for the lack of professional doctorate programmes in maritime sector in spite the fact that that they are a tougher test than the PhD as research takes place in an environment with less support and findings must have an impact on a professional setting as well as making a contribution to knowledge [9]. However, if enough efforts are put in proper design of professional doctorate programmes and dissemination of the idea behind them to working professionals’ community, maritime sector has the most serious potential to implement this type of postgraduate advancement.

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