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Report on an **Update on outcomes of generic PhD projects**

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Introduction

During the last 10 years, in view of the efforts to structure the European Higher Research Area and the European Higher Education Area, generic and more domain specific projects have been ongoing in relation to organization of the PhD level. The outcome of these projects has been summarized by the Aqua-tnet I project (see also <http://www.archive.aquatnet.com/index.php/12/wp2-phd/>). Probably the easiest way to quickly refer to the outcome of these projects is to reiterate the Salzburg recommendations, which comprised 10 recommendations on the organization of the PhD studies.

Salzburg Recommendations: “Doctoral Programmes for the European Knowledge Society”

1. The core component of doctoral training is the advancement of knowledge through original research. At the same time it is recognised that doctoral training must increasingly meet the needs of an employment market that is wider than academia.
2. Embedding in institutional strategies and policies: universities as institutions need to assume responsibility for ensuring that the doctoral programmes and research training they offer are designed to meet new challenges and include appropriate professional career development opportunities.
3. The importance of diversity: the rich diversity of doctoral programmes in Europe – including joint doctorates – is a strength which has to be underpinned by quality and sound practice.
4. Doctoral candidates as early stage researchers: should be recognized as professionals – with commensurate rights – who make a key contribution to the creation of new knowledge.
5. The crucial role of supervision and assessment: in respect of individual doctoral candidates, arrangements for supervision and assessment should be based on a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution (and where appropriate including other partners).
6. Achieving critical mass: Doctoral programmes should seek to achieve critical mass and should draw on different types of innovative practice being introduced in universities across Europe, bearing in mind that different solutions may be appropriate to different contexts and in particular across larger and smaller European countries. These range from graduate schools in major universities to international, national and regional collaboration between universities.
7. Duration: doctoral programmes should operate within an appropriate time duration (three to four years fulltime as a rule).
8. The promotion of innovative structures: to meet the challenge of interdisciplinary training and the development of transferable skills.
9. Increasing mobility: Doctoral programmes should seek to offer geographical as well as interdisciplinary and intersectoral mobility and international collaboration within an integrated framework of cooperation between universities and other partners.
10. Ensuring appropriate funding: the development of quality doctoral programmes and the successful completion by doctoral candidates requires appropriate and sustainable funding

Reviewing the meaning of structure in the PhD education programme

The recommendations outlined above have been the basis of discussion. In a document, the EUA summarizes some of the clarifications that came out of the discussion related to the Salzburg recommendations. The text standing below is mainly taken from that document that can be found on the EUA website.

There has been a tendency to move away from the apprentice model in PhD training towards a more structured programme, composed of a taught phase and a research phase. This might have created the idea that rigid structures are required. Hence in a new document the EUA formulates that

“structuring doctoral education is to create a supportive environment”. Setting up structures means: “taking institutional responsibility for training through research, as defined in the second Salzburg Principle”. Doctoral education is an individual journey, and structures must give support to individual development, and not produce uniformity or predictability. The goals of structuring doctoral education must be to assure diverse and inclusive research environments of a high quality as the basis of doctoral education. This includes critical mass, transparent admission procedures and high quality of supervision. Structuring doctoral education also means achieving flexible structures to expose early stage researchers to a wide range of opportunities, ensuring personal and professional development and to provide institutional support for career development and mobility. Taught courses are to be seen as a support to the individual professional development of doctoral candidates; they are not central to the meaning of structure.”

This statement very much recognizes the specificity of an individual PhD training and basically argues for the setting up of structures that would enable and reinforce person-tailored PhD training programs.

Clues for success

The EUA document continues to define clues for the organization of successful PhD training programmes. They are given below, followed each time with some comments in relation to their relevance to the Aqua-tnet domain. These comments are the outcome of the May core group meeting in Ghent (May 2011)

Critical mass and critical diversity

“Doctoral education is dependent on the research environment. Institutions must develop a critical mass and diversity of research in order to offer high quality doctoral education. Critical mass does not necessarily mean a large number of researchers, but rather the quality of the research. In line with the sixth Salzburg Principle, Europe’s universities have developed diverse strategies to assure critical mass and diversity, building their areas of strength through focused research strategies and engaging in larger research networks, collaborations or regional clusters.”

Especially for aquaculture research, not every institute interested in aquaculture research has all disciplines covered. In that respect it is anticipated that research at the PhD level could profit from more collaboration between European universities and research institutes, both with respect to the taught as well as the research part.

Recruitment, admission and status

“Structured programmes should develop recruitment strategies that correspond to their particular mission and profile. Recruitment strategies should be connected to explicit outcomes, identifying clear profiles of the candidates wanted. Such profiles should build on the parity of esteem of a range of different qualities and ensure equality of opportunity. In this manner, recruitment policies could take into account criteria such as international recruitment, gender equality, social background or different age groups. Recruitment should value the research potential of the candidates over past performance and above all the candidates’ potential to succeed in the programme to which they are being admitted. Admission to a doctoral programme is an institutional responsibility, which must include the strong involvement of research staff. Admissions policies must be transparent and accountable and should reflect the research, supervisory and financial capacity of the institution. Admissions policies should also provide the appropriate flexibility in the choice of supervisor. Transparency and accountability will be strengthened by having a single, identifiable place to apply, at least at programme level. Admissions should be based on a well-defined, public set of criteria. Institutions should accept risk in admitting doctoral candidates and allow them to demonstrate their potential through a monitoring system. Doctoral candidates should be recognised as early stage researchers with commensurate

rights and duties. Regardless of legal status, they are to be seen and treated as professionals as stated in the fourth Salzburg Principle.”

In aquaculture there is a particular large inflow of non-European students into the ERA. This means that universities and institutes are facing the problem of validating the knowledge background of these non-EU students, which can be very diverse. In that respect the possibility to offer courses at the PhD level is of particular importance, enabling to upgrade knowledge where that is perceived to be required.

Supervision

“As stressed in the fifth Salzburg Principle, supervision plays a crucial role. Supervision must be a collective effort with clearly defined and written responsibilities of the main supervisor, supervisory team, doctoral candidate, doctoral school, research group and the institution, leaving room for the individual development of the doctoral candidate. Providing professional development to supervisors is an institutional responsibility, whether organised through formal training or informal sharing of experiences among staff. Developing a common supervision culture shared by supervisors, doctoral school leaders and doctoral candidates must be a priority for doctoral schools. Supervisors must be active researchers”

In institutes with doctoral schools this evolution is taking place at this moment.

Outcomes

“The main outcome of doctoral education are the early stage researchers and their contribution to society through knowledge, competences and skills learnt by undertaking research, as well as awareness and openness towards other disciplines. The outcome of their research must testify to the originality of the research and be suitable for dissemination within the scientific community.”

Scientific output is more and more considered essential. Hence it is perceived that this largely operational within the Aqua-tnet domain.

Career development

“Career support for doctoral candidates must take into account individual goals and motivations and acknowledge the wide range of careers for doctorate holders. While the doctoral candidate is responsible for their career choices given the situation on the labour market, it is the institution’s responsibility to provide support structures for professional development. Offering training in transferable skills, including understanding the ethics of research, is central, and should be a priority for doctoral schools and programmes. Professional development of doctoral candidates includes awareness about skills attained through doing research as well as of the wide range of career choices for doctorate holders. Building ties to the other sectors contributes to bridging the communication gap with potential employers and recruiters.”

As far as can be judged, the penetration of PhD degree holders into the aquaculture industry is limited to the supplying industry. In some countries there is the tendency of a structural integration of Universities and Research Institutes (e.g. The Netherlands, Great Britain) providing students with the opportunity to perform research in different research environments. The outcome of the Aqua-tnet I project has indicated that training programmes in generic skills are generally available at universities providing a PhD degree in the Aqua-tnet domain.

Credits

“Applying the credit system developed for cohorts of students in the first and second cycles is not a necessary precondition for establishing successful doctoral programmes. Some universities consider credits useful for the taught components of doctoral education, especially in cross-institutional (joint) doctoral programmes. Credits,

however, do not make sense when measuring the research component or its associated dissemination outputs. Applied wrongly, rigid credit requirements can be detrimental to the development of independent research professionals. High quality doctoral education needs a stimulating research environment driven by research enthusiasm, curiosity and creativity, not motivated by the collection of credits.”

In the Aqua-tnet domain there are countries (the Netherlands, Flanders-Belgium) where research components and dissemination outputs (posters or papers presented at conferences) are translated into credits, while that does not seem to be the case in other countries (e.g. UK, Italy). However the composition of the portfolio of the credits needed to be acquired tend to be defined in a flexible way, setting certain windows rather than concrete ECTS values that need to be attained for each activity.

Quality and accountability

“It is necessary to develop specific systems for quality assurance in doctoral education based on the diverse institutional missions and, crucially, linked to the institutional research strategy. For this reason, there is a strong link between the assessment of the research of the institution and the assessment of the research environments that form the basis of doctoral education. Assessment of the academic quality of doctoral education should be based on peer review and be sensitive to disciplinary differences. In order to be accountable for the quality of doctoral programmes, institutions should develop indicators based on institutional priorities such as individual progression, net research time, completion rate, transferable skills, career tracking and dissemination of research results for early stage researchers, taking into consideration the professional development of the researcher as well as the progress of the research project.”

At many institutions taking part in the Aqua-tnet project, doctoral school or graduate schools are operational (e.g. The Netherlands, Flanders-Belgium, UK). These institutes are able to produce these indicators. In the absence of doctoral schools the availability of these types of indicators are less likely.

Internationalisation

“Internationalisation strategies should be a tool in increasing the quality in doctoral education and in developing institutional research capacity. Internationalisation in doctoral education is understood and interpreted in different ways, ranging from internationalisation at home (using the international profile of the home institution such as international doctoral candidates, staff, events and guest researchers), collaborative doctoral programmes (with individual mobility – such as co-tutelle) to international joint doctoral programmes (joint, integrated curricula, joint committees and juries, and the joint degree). As stressed in the ninth Salzburg Principle, doctoral education should include the possibility for mobility experiences. The choice among these different models of internationalisation must be coherent with the research strategy of the institution and the individual needs of the doctoral candidate. The mobility of doctoral candidates must be driven by the research project”

In the Aqua-tnet domain some upcoming projects such as the “European Marine Biology Research Center” and “Aquaexcell” project will provide financial support in the future for mobility. Hence it is anticipated that international mobility will increase in the future. Yet the outcome of the Aqua-tnet I project indicated that there is a considerable amount of (non-structured) mobility ongoing in the Aqua-tnet domain at the moment. Co-tutelle and joint degree programs are less common.