

We are IntechOpen, the world's leading publisher of Open Access books Built by scientists, for scientists

5,200

Open access books available

128,000

International authors and editors

150M

Downloads

Our authors are among the

154

Countries delivered to

TOP 1%

most cited scientists

12.2%

Contributors from top 500 universities



WEB OF SCIENCE™

Selection of our books indexed in the Book Citation Index
in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com



Providing Quality Research Supervision in Contemporary Graduate Schools: Empowering Research Graduates to Perform in the Knowledge Economy

Dr. Janet Carton, Dr. Steve Jerrams and Dr. Anthony Betts
Directorate of Research and Enterprise
Dublin Institute of Technology
 143-149 Lower Rathmines Road, Dublin 6.
 Ireland

Background

In the current uncertain climate that exists in graduate research education, how does the university sector meet employer's demands for effective new starters holding research degrees? Increasingly, the focus is placed on the development of rounded education providing more than knowledge in a single discipline. This development is becoming embedded in the structural frameworks of Higher Education Institution's (HEI's) and requires delivery from a centrally co-ordinated platform. Models of graduate education platforms are prolific across Europe, allowing a 'buffet' selection approach to be made by new institutes who can select from existing functional programmes. However, when considering the demands for quantity and quality of research outputs, it is equally important to identify and address the needs of those supporting, creating and developing the research activity leading to a quality graduate education system. A serious deficit in the understanding of revised roles and responsibilities within research supervision currently exists. A central issue confronting supervisors is how to achieve quality, effectiveness and productivity of their work in this changed and challenging environment {1}.

This study focuses on the Dublin Institute of Technology (DIT), the largest third level institute in Ireland. DIT has recently created an umbrella style, virtual graduate school to deliver an industry relevant graduate education platform. This school encompasses numerous interdisciplinary research areas, as diverse as creative arts and media, nanotechnology, materials science, biomedical and elastomer engineering, radiation and environmental science and optometry. The school must be equipped to manage the delivery of all graduate support programmes including supervisor specific programmes.

DIT committed to support and develop a scheme to professionalise supervisory practice as supervisors frequently base their approach to supervision on their own, sometimes

unexamined experiences as a research student {2}. As providers of the first *Research Supervisor Training Programme* in Ireland, the authors have now launched an industry and professions focussed *Development Programme* and a collaborative supervisory initiative with a number of Irish HEIs. This *Development Programme* supports adaptable, flexible supervisory practice which is seen as key in maintaining awareness of broader issues {2}. It is intended that this commitment to research supervisory standards will strengthen the institute's mission in delivering research graduates of calibre in their field, who possess an enviable skills base, leading to broader employment opportunities.

Analysis of DIT's supervisory support programmes which have been offered for seven years, has shown that supervisory capacity and development is key to providing quality research graduates to industry and the professions. This work examines the model adopted by DIT in realising this objective and discusses the complicated issues associated with advising and developing the capabilities of both inexperienced and experienced research supervisors.

Keywords

Research supervisor development programme, graduate research school, graduate education.

1. Introduction

Based on National HEI consensus {3} and on the outcomes of the Bologna Process seminar on *"Doctoral Programmes for the European Society"* {4} a number of guiding principles have been identified as key to the development and structuring of 4th level European education. Ireland as a knowledge economy has identified the need to double the number of its doctoral graduates by 2013 in line with the Strategy for Science Technology and Innovation (SSTI, {5}). In order to sustain a competitive position and contribute to economic and social development, graduates must now exhibit skills that demonstrate greater employability outside academia.

Accompanying the pressure for increased research outputs and more graduates with wider skills, is the requirement to identify and address the needs of those supporting, creating and developing the research activity that underpins a quality graduate education system. Research supervisors face an ever growing challenge in meeting academic quality assurance standards and supporting skills acquisition for their students. Each component of the equation must be in place to achieve this balance and establishing effective research supervisory practice which underpins a contemporary graduate programme framework is a key to success.

A pivotal aim of Graduate, 4th Level Ireland, is to equip graduates with the appropriate skills required to help secure Ireland's economic success in the 21st Century {6}. The SSTI proposed the development of graduate schools to lead the creation of *'structured, relevant generic and transferable professional skills training enabling PhD graduates to develop careers in diverse sectors of the economy'* {5}. The Irish Universities Quality Board agreed that, as well as provision of resources, development of these skills requires collaboration {7}.

The SSTI has indicated that the quality of research can be improved by increasing the number of research teams led by internationally renowned principal investigators and that up-grading of existing infrastructures and development of new and innovative facilities is required to support research. Under the recommendation of the HEA and Bologna, a key guiding principle for the development of doctoral research is defining and establishing '*the crucial role of supervision and assessment*' {3,4}.

2. Aims and Objectives

The Dublin Institute of Technology (DIT) is addressing a central element of a successful graduate education platform leading to improved retention, completion rates, throughput and research output resulting from the development of a *Research Supervisor Support and Development Programme*. This initiative is in line with the additional principles {3,4} of effective development in doctoral research which require graduate education to be '*responsive to changing economic and societal needs*', '*ensuring value for money*' and '*embedding graduate education in institutional strategies and policies*' and will enhance institutional supervisory capacity. The DIT proposes a management structure to implement a *Research Supervisor Support and Development Programme* which will meet these recommendations.

In the development of this programme, the Institute clearly identifies 1) Key issues surrounding traditional supervisory practice, including the development of supervision which supports the production of graduates fit for purpose in the modern employment arena. 2) The needs of industry and the professions to be met by today's graduates. 3) An effective graduate school model, to facilitate the management of supervisor programmes and graduate training.

3. Issues Surrounding Supervisory Practice

The EUA report on '*Doctoral Programmes in Europe's Universities: Achievements and Challenges*' {8} promotes the notion that stakeholders (universities and public authorities) must do more to widen participation, to improve mechanisms for supervision and assessment and to promote the international mobility of doctoral students. They must also take steps to ensure that professional skills development is an integral part of all doctoral training {8}. The report also shows that national funding policies for doctoral education are often too fragmented, with a lack of co-ordination between government ministries, research councils and other funding bodies. This leads to a lack of consistency, equitability and standardisation amongst the key objective deliverers.

In the UK, HEFCE's policy on '*improving standards in postgraduate research degree programmes*' has for a number of years required that all new supervisors undertake mandatory specified training {9}. The University of Caledonia Glasgow, for example, have approached the need for supervisor training in the context of i) improving PhD Students' experience, ii) improving completion rates and iii) satisfying external quality expectations, while University College London, University of Newcastle and Monash University amongst others, view the programme as an important career development mechanism for supervisory staff.

There are complicated issues for any institution in relation to managing, advising, supporting and developing inexperienced as well as more seasoned research supervisors. The *Research Supervisor Support and Development Programme* developed at DIT aims to advise, support and guide both new and inexperienced research supervisors in best practice and institutional regulations pertaining to supervision of research masters and PhD students. This programme was developed in the light of two clearly identified needs; (i) to address the lack of quality assurance and standardisation of practices in research supervision and (ii) a requirement to encourage staff to engage in research activity. Following each programme, a review leading to recommendations for overcoming these issues was carried out. In summary, the following areas were consistently raised as areas of concern in research supervisory practice;

- i) How to positively influence completion rates and throughput
- ii) Roles and responsibilities of students, supervisors and the host institute
- iii) Duration of research and maintaining relevance
- iv) Dealing with problematic students
- v) Supervising part-time students
- vi) Supervising international students (for whom English was not their primary language)
- vii) Consistency in application of regulations for research
- viii) Supervisory support on an institute basis
- ix) Funding opportunities (seed funding, student scholarships)
- x) Research student employment...a changing landscape
- xi) Institute acknowledgement of supervisory practice – professional development and career progression.

It was clear from participant feedback that the traditional model of supervision, which was personality dependent and consistently followed the same process that supervisors themselves had been exposed to, was not ideal in managing the above areas. The context of supervisor training in modern higher education requires a focus that enables supervisors to become adaptable and an awareness that different understandings about what research actually is has consequences for supervisory practice {2}.

4. Graduate Employment Needs of Industry and the Professions

The challenges facing higher education in this domain are immense. The SSTI (2006-2013) has highlighted the need to strengthen measures increasing interaction between companies and higher education institutions nationally and regionally. Researchers trained in Europe should be confident that their qualifications will be pertinent to their careers {10,11}. In an effort to identify the needs of the Irish Industrial employment market, the Research Support Unit in DIT interviewed a number of key industrial stakeholders in Ireland (Iona Technologies, Lucent Technologies, Intel) with a view to identifying their needs from Irish graduates. An additional event, hosted by the Higher Education Authority of Ireland {3} gathered perspectives from academic, industrial and professional stakeholders nationwide. In essence, the core requirements of graduate employees were identified as follows;

- Depth in specific discipline
- Breadth in other areas of the graduate's own discipline and a broad knowledge of related disciplines
- Soft skills (eg. Team working)
- Context and vision (a viable understanding of the values and goals of the organisation and what is being undertaken)

Most agreed that understanding the context and having vision are the most difficult qualities to identify in potential postgraduate employees.

In playing a major role in an improved knowledge society, it is believed that structured graduate education will enhance personal development for graduate students, instead of perpetuating an outmoded academic research ethos. DIT developed a structured graduate programme which incorporated the key skills areas identified by the Irish Universities Association (IUA) Skills Statement {12}. This involved the incorporation of defined learning outcomes and skills set acquisition for graduate students.

An important benefit from the structuring of supervisory supports is increasing expertise and experience which will enhance co-supervisory practice and assist in the production of relevant, viable and timely research outputs.

5. Management of Graduate Education in the Dublin Institute of Technology

How do institutions with dynamic and evolving graduate education profiles manage this development? What operational and structural support mechanisms will optimise the graduate output and most importantly the student experience? With a view to addressing the supervisory issues highlighted in section 3 and with the aim of supporting and developing research activity among inexperienced research staff, DIT examined the graduate school model as an effective management structure.

Two main models of graduate school have emerged in Finland, which is regarded as an innovator in the graduate school education system. These are the inter-university, subject-focussed and the intra-university / interdisciplinary models {10,13}. The former, serves to bring students and academic staff together, working in a single discipline or field across the country and works at its best when focussing on established areas of research excellence. The latter model serves to bring together students and academics from different disciplines within a single institution. Intermediate models with common features also exist.

DIT, encompasses education programmes in trade apprenticeships, undergraduate degrees, postgraduate degrees, postdoctoral research, consultancy and numerous R & D activities with industry. From this perspective, models adopted by other HEIs in Ireland were also studied. In the seven Irish universities, a wide variety of structures are used to manage postgraduate provision. These range from Graduate Studies Offices, Research Offices, Graduate Schools, Faculty Research Committees, Research Institute's, Research Support Units, Centres and Groups {7}. Some institutions have adopted discipline specific Graduate Schools (eg. University College Dublin (UCD) and Trinity College Dublin (TCD)) where

PhD programmes are firmly embedded in a Graduate School infrastructure which is concurrently part of institution-wide management structures {14}. In UCD, the governance of its five graduate schools accommodates common structures for student entry and assessment. It is commonly recognised that Graduate Schools based within faculties or disciplines will normally only flourish in institutions with large postgraduate student numbers (UCD has the highest postgraduate cohort in Ireland {14}). In the UK, discipline based models are less popular than the institute-wide umbrella model {9}. In practice these institute-wide systems, facilitate standardisation of training, mentoring and assessment and avoid duplication of procedures. They also provide branding and an identity for the Institute's Graduate Programme externally. The management of finances is also standardised and centralised and thus more efficiently managed than when operational across multiple schools.

DIT set up a Graduate School Working Group which examined the implementation of an appropriate graduate programme model and associated management structures. In line with institute and national strategies, existing institute infrastructure and mindful of the advantages and disadvantages of existing models, DIT established its graduate programme based on the following framework:

- An umbrella Institute with overarching responsibility for provision of all postgraduate research (excluding taught programmes) irrespective of discipline.
- The Graduate Research School (GRS) will manage the monitoring, assessment and training of postgraduate research students under its Graduate Research Education Programme (GREP). All postgraduate students are registered with the GRS.
- The GRS will initially take a virtual structure and accommodate a Dean of the Graduate School and associated core staff. Upon relocation to the DIT's new single Campus (Grangegorman), the GRS structure will be revised to incorporate key facilities for research students and supervisors (eg. meeting rooms, writing facilities, IT support etc.).
- The GRS will operate the GREP through inter-disciplinary and inter-institutional collaboration. Promotion of student mobility and cross-disciplinary knowledge transfer are considered paramount.
- It is imperative that the GRS will have its own policy making and implementation powers, with properly articulated aims {9, 15}.
- The success of the GRS will also be dependent on 'buy in' from all sectors of the institute and the school being part of DIT's operational plan, so maintaining and managing its own budget.
- Promotion of interdisciplinary and inter-institutional supervisory teams.
- Regulations for postgraduate study by research will be clearly identified and modified as appropriate within the Graduate School structure.
- There will be GRS support and development for all research supervisory associated activity.

Within this operational framework, research supervisors require institutional assurance of the following;

- i. Support from senior management level

- ii. Exposure to best practice
- iii. Central support and guidance facilities (that prevail throughout the research process)
- iv. Encouragement for and acknowledgement of, supervisory practice

The establishment of regulations regarding the supervision of research students vary widely between HEIs. However, issues regarding the effective supervision of students leading to the timely production of quality research theses, publications and enhancing the research activity of any discipline are ubiquitous.

6. Research Supervisor Support and Development Programmes

The trend in the UK towards supervisor support has been in the form of structured, often compulsory training, targeting new staff to the university. The authors developed and launched the first *Research Supervisor Training Programme* in Ireland in 2001. The programme had a specific aim, to support, guide and advise new and inexperienced research supervisors in the formal and informal processes surrounding the supervision of graduate research students.

Key Components of a Research Supervisor Training Programme

One of the key marketing points for these programmes is to remove any references to 'training' from the title. DIT re-launched their programme as the *Research Supervisor Support and Development Programme* which was met more positively by staff. The ethos of such a programme must encourage participation and therefore it was agreed that initially, the programme must be delivered on a non compulsory basis. Based on International best practice and on an experimental basis, the programme developers identified that the following were key elements in the structure and content of a successful research supervisor support programme. Programmes should ideally;

- Contain small participant groups (10-15 max)
- Have mixed discipline representation
- Cover Institutional Regulations
- Include research student input
- Incorporate case study analysis
- Demonstrate roles & responsibilities (Supervisors, Students and Institute)
- Identify milestones in research process
- Demonstrate advantages of supervisory teams
- Vary delivery of programme through presentations, working groups, case studies, experience sharing
- Facilitate follow up sessions & ongoing support

The next stage in developing such a support programme is accreditation. For supervisory staff who have acquired substantially more years of experience, a refresher course was developed in order to engage staff in ongoing best practice acquisition. Supervisory programmes structured in such a manner can be managed effectively within an institute-wide umbrella graduate school structure.

Collaborative Approach

As with the success of graduate skills programmes, collaboration on supervisor development is optimal. A collaborative initiative with a number of other Irish HEI has been established with a view to developing supervisor support nationally covering the core areas of research supervisory practice as highlighted above. Initiatives being driven include the following;

- i) Development of a *Research Supervisor Network*, supporting the interaction of staff from across institutions to discuss supervisory issues.
- ii) Creation of a *Research Supervisor Database* (demonstrating expertise and experience in research) thus facilitating development of *collaborative supervisory teams*.
- iii) *Development of A Doctoral Supervision Handbook* with a standard code of best practice with National relevance (having implications for policy in the Irish HE context).
- iv) *Programme Accreditation*. Development of a recognised qualification in *Postgraduate Research Supervision*

Each of these initiatives will provide access to expertise in supervisory practice, supporting mentoring and experience sharing.

7. Conclusion

Embedding of a dedicated management structure in line with any HE institution's strategic plan will facilitate the following:

- i) Equity in research supervisor support and development across HEIs
- ii) Supervisor support on issues related to roles, responsibilities, institute regulations, case studies, drawing from the experience of the consortium and international codes of best practice
- iii) Enhanced collaboration and skills sharing of cross-institutional supervisory teams leading to effective use of public funds with broad access to expertises across institutes
- iv) Enhancement of supervision quality
- v) Increased institutional supervisory capacity
- vi) Improved student experience and programme quality
- vii) Enhancement of student skills base
- viii) Improved throughput and completion rates
- ix) Development of Institutional Research Profile

Structured *Research Supervisor Support and Development Programmes* will have national relevance, create a framework for equity in standards and assessment and deliver value for money in the management and development of graduate research education. A quality programme provides a framework in which all interested HEIs will benefit. It is anticipated that through the implementation of the management model and support programmes, research supervisors will be empowered to meet the demanding challenges that higher education faces in academic and professional employment arenas for postgraduate research students.

8. References

1. Research Training and Supervision Development. Margot Pearson and Angela Brew. *Studies in Higher Education Volume 27*, No. 2, 2002
2. Postgraduate Research Supervision: A Process of Knowledge Management. Fang Zhao. *ultiBASE Articles*, May 2001.
3. HEA Graduate Education Forum <http://www.hea.ie/index.cfm/page/sub/id/1041>. Dublin, Ireland, 28/2/06-1/3/06
4. Doctoral Programmes for the European Society. Bologna Seminar Salzburg, 2005.
5. Strategy for Science, Technology and Innovation (STI) 2006-2013. Department of Enterprise Trade and Employment, 2006. <http://www.entemp.ie/science/technology/sciencestrategy.htm>
6. Irish Universities Association, Reform of 3rd level and creation of 4th Level Ireland: Securing Competitive Advantage in the 21st Century, October 2005.
7. Good Practice in the Organisation of PhD Programmes in Irish Universities. National Guidelines. Irish Universities Quality Board, 2005.
8. Doctoral Programmes in Europe's Universities: Achievements and Challenges. European Universities Association, 2007.
9. A Review of Graduate Schools in the UK. Woodward D., Denicolo P., Hayward S., Long E.. UK, Council for Graduate Education (UKCGE), 2004.
10. Inventing Our Future Together. European Commission. The European Research Area: New Perspectives. Green Paper 4/4/2007
11. Transforming Ireland, A Better Quality of Life for All. National Development Plan 2007-2013. Executive Summary, 2007. http://www.ndp.ie/docs/NDP_Homepage/=1131.htm
12. Irish Universities' PhD Graduates' Skills Statement. Irish Universities Association, 2008. www.4thlevelireland.ie/publications/Graduate_Skills_Statement.pdf
13. PhD Training and the Knowledge-Based Society. An Evaluation of Doctoral Education in Finland. Dill D., Mitra S., Siggard Jensen H., Lehtinen E., Makela T., Parpala A., Pohjola H., Ritter M., Saari S. Publications of the Finnish Higher Education Council, 2006.
14. UCD Strategy for Graduate Education: UCD 4th Level. http://www.ucd.ie/registrar/educationstrategy/documents/Strategy_For_Graduate_Education.pdf
15. Providing for the Postgraduate Market, an Investigation into Exclusive Facilities for Postgraduates. Brown T. National Postgraduate Committee, Troon, Ayrshire, UK, 2003.

IntechOpen

IntechOpen



Advances in Technology, Education and Development

Edited by Wim Kouwenhoven

ISBN 978-953-307-011-7

Hard cover, 474 pages

Publisher InTech

Published online 01, October, 2009

Published in print edition October, 2009

From 3rd to 5th March 2008 the International Association of Technology, Education and Development organised its International Technology, Education and Development Conference in Valencia, Spain. Over a hundred papers were presented by participants from a great variety of countries. Summarising, this book provides a kaleidoscopic view of work that is done, all over the world in (higher) education, characterised by the key words 'Education' and 'Development'. I wish the reader an enlightening experience.

How to reference

In order to correctly reference this scholarly work, feel free to copy and paste the following:

Janet Carton, Steve Jerrams and Anthony Betts (2009). Providing Quality Research Supervision in Contemporary Graduate Schools: Empowering Research Graduates to Perform in the Knowledge Economy, *Advances in Technology, Education and Development*, Wim Kouwenhoven (Ed.), ISBN: 978-953-307-011-7, InTech, Available from: <http://www.intechopen.com/books/advances-in-technology-education-and-development/providing-quality-research-supervision-in-contemporary-graduate-schools-empowering-research-graduate>

INTECH
open science | open minds

InTech Europe

University Campus STeP Ri
Slavka Krautzeka 83/A
51000 Rijeka, Croatia
Phone: +385 (51) 770 447
Fax: +385 (51) 686 166
www.intechopen.com

InTech China

Unit 405, Office Block, Hotel Equatorial Shanghai
No.65, Yan An Road (West), Shanghai, 200040, China
中国上海市延安西路65号上海国际贵都大饭店办公楼405单元
Phone: +86-21-62489820
Fax: +86-21-62489821

© 2009 The Author(s). Licensee IntechOpen. This chapter is distributed under the terms of the [Creative Commons Attribution-NonCommercial-ShareAlike-3.0 License](https://creativecommons.org/licenses/by-nc-sa/3.0/), which permits use, distribution and reproduction for non-commercial purposes, provided the original is properly cited and derivative works building on this content are distributed under the same license.

IntechOpen

IntechOpen