Faculty of Science, Engineering and Computing

Engineering Postgraduate Courses

Exploring expectations and attitudes towards postgraduate study

Michelle Morgan and Andrew Ordys
Aims and objectives

• Introduction to Engineering PG courses at Kingston

• Rationale for the research undertaken in the Faculty of Engineering (and later across Science, Engineering and Computing) at Kingston University that explored some of the nationally neglected issues facing the sector, and which led to PEP

• Introduction to PEP, the Kingston Led Collaborative Project looking at the importance of understanding the expectations and attitudes of the student body, university staff and business and industry in improving the STEM Postgraduate Taught Student Experience
Background

- The very first MSc course was in 1987. The course was titled ‘Advanced Manufacturing Systems’
- Currently, we offer 10 (12) Engineering postgraduate courses
- We have pioneered work based learning MSc courses (2007) – Professional Engineering - accredited to CEng status (first graduate in the country in 2010). KU involved in Engineering Gateways from start - lead university in pilot stage.
Background

• Many of the modules in our MSc courses were designed with employment in mind, with equal emphasis on both theoretical and practical contents.

• They have been offered to industrial students as part of the PCD programme.

• The modules are delivered in week blocks, which is advantageous for part-time students (especially from industry) but also challenging for students in terms of planning the workload.

• PG courses are important part of our provision (approx. 30%). We want to understand the changes in market demand and expectations, and prepare.
Issues facing the PGT sector

• Extensive growth up to 2011
  • PG Sector enrolments grew by 45% between 03/04 and 10/11
  • Growth per PG qual - Other Higher Degrees (e.g. Taught Masters) 13.1%, Doctorates 1%, Other PG 12.4%
  • ‘Higher degree’ qual account for approx 67% of all PG enrolments
  • All Engineering and Technology PG 10.3% between 06/7-10/11 (HESA, 2013)
  • FT mode became most popular mode in 2010/11 for first time

• Reasons for growth
  • Government commitment to increasing PGT market
    • Knowledge economy (DfES, 2003)
    • Educational market
  • For career advancement rather than self-fulfilment (Anderson et. al.,1998; Stuart et.al., 2008; Morgan, 2013)
  • Creeping notion that PGT required for a career (Wakeling, 2005)
  • Employers raising the qualification bar due to pool of well qualified graduates/ employer demand?
  • When downturn in economy, increase in uptake in HE

• Past 2 years rapid decline especially in part-time mode and amongst ‘UK’ domiciled
  • All PG enrolments by 5.6% between 11/12 and 12/13 with 7.3% in part-time mode
  • All Engineering and Technology PG FT enrolments by 6.8% and PT by 8.9% between 11/12 and 12/13
  • UK Domiciled enrolments by 5.9%, EU Domiciled by 7.3% and Non-EU by 4.5% between 11/12 and 12/13 (HESA, 2013)

• Lack of knowledge/evidence for PGT behaviour although growing body of research
Engineering findings

English as first language
FoE-40.3%, 59.7% reported 18 first languages
SEC - 40.8%, 37 first languages
UK domiciled English not first language (FoE 29%, SEC-37%)

Top 3 reasons for undertaking a PG degree
FoE- 44.3% - *improve their knowledge of the subject area*, 30.4% - *provide more career options*, 11.4% - *improve their chances of getting a graduate job*
FoSEC -48.6% *wanting to improve their knowledge of their subject area*, 28.2%* - provide more career options*, 7.7% - *requirement for their chosen career*

Primary means of funding
FoE-*parents* (46.2%) and *self funding* (34.6%), FoSEC -*parents* (38.6%) and *self funding* (32.4%)

Expectations
FoE and FoSEC - expected a higher level of service than UG, treated in a manner reflecting a higher level of study, study in a more independent way, less likely to tolerate a poor quality experience, expected value for money and expected to receive more individualised study.

Academic strengths and weaknesses perception
FoE- 26.6% *weak literacy skills* (52.4% straight from University)
FoSEC -21.1% *weak numerical skills* (30% straight from University)

Anxiety levels on starting study
FoE-43% anxious/very anxious (33.3% coming from University), FoSEC - 55.3% (60% coming from university)
Key findings of an HEA STEM ITG Report

• Conducted over a year, 8 schools, 233 completed questionnaires (90% of attendance at Sept Orientation, focus group

• Sample = 48% UK dom and 35% Non-EU dom, 42.7% =F and 57.3%=M, 47%= 1st and 53%= 2nd generation,36.5%= work and 39.5% =work

• Major funding issues
  • Primary funding method for 2/5s of sample= parents
  • Entry route, generational and domiciled differences

• Study anxiety
  • 2/3s of sample anxious but domiciled and entry route differences
  • Women and those coming from work less likely to believe had very strong study skills

• Expectation of quality increased with age and generational status (first expected higher)

• Belief employers value a PGT qualification more than UG but evidence suggests not the case (e.g. Connor et.al., 2010).

Key issues from the report

• Entry route (work or uni)
  • Cultural capital
  • Different skill base
  • Outcome expectations

• Reasons and value
  • Student belief gives advantage in workplace
  • Employers state no indicator of leadership or work wisdom (Connor et al, 2010: Leitch, 2006)
  • Do employers want PGT graduates?

• Study and life demands
  • Balancing life demands with study modes available
  • Poor support for different modes of study
  • Different needs and expectations to UGs
  • Greater pressure at this level than UG Commuting impacts on retention

• Expectations and experience of study
  • Need to define PGT attributes as different from UG
  • Need toolkits for support (HEFCE developing)
  • Feedback needs to be fit for purpose
  • Less tolerance at this level of poor feedback
  • Face to face
  • One size fits all teaching problematic

• Finance
  • Fee levels important
  • Poor access to funding especially for UK dom and 1st generation
  • Reliance on ‘Bank of Mum and Dad’
  • Is the funding arrangement sustainable?
Postgraduate Experience Project

HEFCE funded PG Scheme
Grant pot of £25 million
Test options for finance and activity to support PGT study
Support transitions
Postgraduate Experience Project PEP – 11 UK institutions, STEM

Project title
Investigating the expectations and attitudes towards postgraduate taught (PGT) STEM study, and post study
Outcomes from the perspective of students’, universities and employers to support and sustain PGT growth in
the UK – A collaborative project

The broad project outcomes are to:
Obtain local and national baseline data on student perceptions, motivations, expectations and experiences of PGT
study as well as exploring the enablers and barriers to study through a range of data collection processes;
Obtain local and national baseline data on university and employers perceptions, attitudes, expectations and
experiences of PGT study;
Look at the big picture by drawing out broad themes through pragmatic research and by ‘sewing’ the different
strands of data together to create a collage of knowledge allowing further detailed research to be undertaken;
Achieve a practical understanding and deliver practical and pragmatic outcomes;
Recognise the research limitations for the project.
Aims and objectives for the different key stakeholders

**Applicants and students**
- Explore applicants and student perceptions, motivations, expectations of PGT study
- Explore the barriers of applicants and students to PGT study
- Explore the experiences of students undertaking PGT study
- Explore the outcomes of students as a result of undertaking PGT study
- Explore which variables impact on attitudes, expectations, the retention of PGT students (e.g. part-time, full-time, domiciled and generational status, age, gender, social class, ethnicity, discipline and route into study such as from work or University);

**Business and industry (B&I)**
- Understand the employers expectations of the skills PGT graduates should possess
- Identify the employer outcome expectations of recruiting a PGT graduate
- Look at their perception of the value of PGT study
- Explore experiences of employers on university industrial advisory groups in terms of influencing curriculum changes
- Identify employer needs locally and nationally
- Explore experiences of PGT graduate employers in general and of members and employment specialists on the SG

**Universities and community**
- Explore university attitudes, planning and development approaches to PGT study
- Look at university responses to PEP findings
- Explore approaches to PGT supporting the local economy
Will be answered during the Panel session

Professor Andrew Ordys
A.Ordys@kingston.ac.uk

Michelle Morgan
Michelle.morgan@kingston.ac.uk

London: DBIS.
Higher Education Statistics Agency (2013a) Table 1 - All students by HE institution, level of study, mode of study and domicile 2011/12. Online. Available at:
Professional Engineering, KU: Formal Learning Agreement

- Fixed Entry & Exit Gateways (15 & 60 credits)
- individually developed modules (105 credits: 180 total)
- LA: MSc Plan developed in entry gateway, by liaison between university, student and employer
- Built on their work activities – ‘springboard’
- each LA has formal independent review and acceptance under the university quality management process
KPM SME Postgraduate approach

Company

Pre objective training
BSc/Eng MSc/Eng PHd

HE

Thick Sandwich or OU

Student

HE

Company

Pre objective training
BSc/Eng MSc/Eng PHd

KPM employing Fast Adopters

Company

Global Internet Engineering Community

Train

GIEC

Vendor University
Students
• Hobbyists
• Kids in bedrooms
• Professionals.

GIEC

GRABCAD

High School vendor Graduates USA, Germany, France, India, Portugal, Brazil etc

9 year olds in Japan
All BEng, BSc and MEng Aeronautical, Mechanical, Civil and Construction enrolments 2007-13

- 2007/8: 1155
- 2008/9: 1277
- 2009/10: 1338
- 2010/11: 1392
- 2011/12: 1505
- 2012/13: 1400
All BEng (Hons), BSc and MEng Aeronautical, Mechanical, Civil and Construction enrolments 2007-13

<table>
<thead>
<tr>
<th>Year</th>
<th>BEng (Hons)</th>
<th>BEng (Hons) SW</th>
<th>BSc (Hons)</th>
<th>BSc(Hons) SW</th>
<th>MEng FT</th>
<th>MEng SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007/8</td>
<td>784</td>
<td>161</td>
<td>129</td>
<td>30</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>2008/9</td>
<td>800</td>
<td>166</td>
<td>189</td>
<td>75</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>2009/10</td>
<td>854</td>
<td>153</td>
<td>232</td>
<td>64</td>
<td>23</td>
<td>12</td>
</tr>
<tr>
<td>2010/11</td>
<td>802</td>
<td>149</td>
<td>303</td>
<td>90</td>
<td>36</td>
<td>12</td>
</tr>
<tr>
<td>2011/12</td>
<td>781</td>
<td>148</td>
<td>412</td>
<td>119</td>
<td>29</td>
<td>16</td>
</tr>
<tr>
<td>2012/13</td>
<td>580</td>
<td>138</td>
<td>525</td>
<td>96</td>
<td>43</td>
<td>18</td>
</tr>
</tbody>
</table>