

Enhancing employment outcomes of Mathematics graduates

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Introduction

- This presentation describes how students' employment outcomes are enhanced using initiatives that involve greater engagement with employers and professional bodies.
- This is done in number of ways, focusing on different employability skills of students, using
 1. Employment related learning activities
 2. Extra curricular activities
 3. Professional society meetings
 4. Employer interaction events

Methods used within teaching & learning

- Mostly through courses that cover PDP element of the programme.
 - Group work, Presentation, Q & A sessions, Seminars

In addition

- Open-ended tasks
- Mathematical Modelling Skill
- UAS (Teaching placement)
- Mathematics Work Placement (MWP)

Methods used in teaching

Open-ended Tasks

- More open-ended problems in tutorials and homework.
- This is designed to help students develop independent thinking & also their interpersonal skills.
- Incorporation of more open-ended tasks will promote discussion and interaction among students when they explore different approaches/solutions.
- Expectation is that they contribute and impact positively on the development of students' graduate skills.

Methods used in teaching

Mathematical Modelling

- Problem solving and mathematical modelling skills are key elements of the skill set Maths students are expected to have.
- We run a week long Mathematical modelling skills course at both first and second year of the UG programmes.
- During Skills week students are divided into small groups and assigned a task.
 1. Each group will work on a mathematical modelling problem.
 2. Discuss and debate about it with their group members.
 3. Come up with a solution and write a report on their findings.
 4. Each group will do a presentation to the rest of the class.
 5. Presentation involves Question & Answer session.

Mathematical Modelling

This approach, involving group activity, creates plenty of opportunities to

1. promote team work
2. develop independent thinking
3. enhance presentation skills
4. generate interaction and competition among students.

Undergraduate Ambassador Scheme (UAS)

- We have two 30-credit courses for our final year students, in addition to the project.
- Undergraduate Ambassador Scheme (UAS) is one of them.
- UAS involves a teaching placement in one of the local schools during the term.
- Students can take this course instead of project.
- They are required to write a report about their teaching experience and present their work to peers and tutors.

Mathematics Work Placement (MWP)

- Mathematics Work Placement (MWP) is the other 30-credit course for our final year students.
- MWP involves work placement, one day a week during term.
- Students can take this course instead of final year project.
- Students following MWP are required to write a report about their work placement experience and present their work to peers and tutors.

Employability events outside the curricula

- These include events and activities by an active Mathematics Society (Math Soc).
 - Count down games, University Challenge Quiz, Seminars
- In addition, we organise a number of learning related extracurricular activities/events to help students identify and develop general graduate skills during their programme.
- They aim to facilitate graduate skills development so that students have a smooth transition from education to employment, at the time of their graduation.
- These take place alongside the methods used in teaching and learning, to enhance students' employability skills.

Employability Skills outside the curricula

We have used four different strands for this but we will describe two of them here.

They are

- Professional Society engagement
- Employer engagement

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Professional Society engagement

- Learned societies and professional bodies play a major role in the development and advancement of most subject disciplines.
- Most of them have vast amount of employment related information and guidelines as well as events and resources for continued professional development in the respective field.
- These professional bodies are also part of the support available to graduates in making their careers.
- In view of this, it makes every sense to make use of these facilities, events and resources to enhance student employability.

Professional Society engagement

- As part of an employability initiative, we have been working on increasing student awareness of the professional bodies and their services, with the view to facilitate greater engagement.

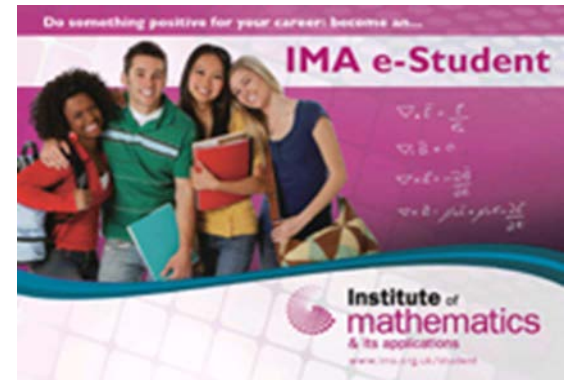
- In this process, students are encouraged to
 1. take up membership of these societies and make use of the information and resources on employment and careers.
 2. attend seminars or careers events, and other events related to their personal and career management.

- The short-term purpose of this is to help our students gain greater understanding of their developing employability skills.

- Long-term benefits include continued professional development and networking opportunities.

Professional Society engagement

- Recently we have organised a series of events to enhance students' employability skills through greater engagement with professional bodies (IMA, RSS, ORS).
- Careers talk by Professional Societies.
- Membership awareness meetings.
- Events with IMA attracted good deal of attention among UGs & more than 150 students signed up for e-student membership.
- Some students have attended branch talks and Early Career Mathematician conferences.



Professional Society engagement

- Meeting/workshop with RSS & ORS.
- Events have encouraged students to
 1. sign up for student membership of the RSS and/or ORS
 2. attend other local events and talks
 3. utilise employment related resources
 4. Several students attended the OR careers event in Nottingham
- As a result of the activities, students have engaged more with professional bodies than before.



Professional Society engagement

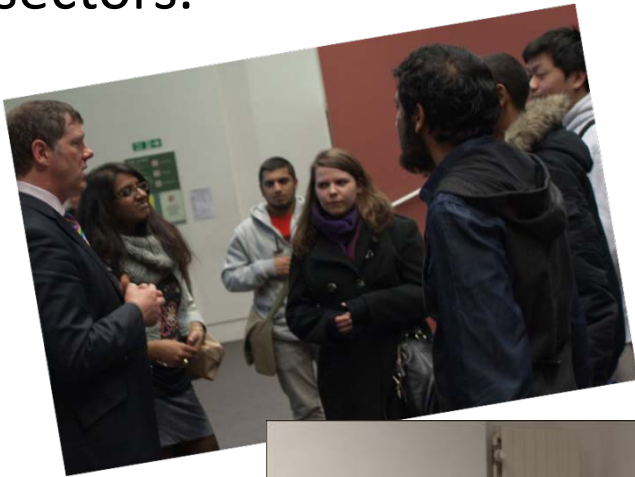
- Some of the events were held during the scheduled PDP sessions and others outside the normal timetabled lessons.
- The main objectives of these events have focused on preparing students well for employment using two different approaches.
- The first one emphasized the role of the societies in professional development in the field to increase students' awareness of the membership and its benefits in their career development.
- The second one combined this with employer engagement to provide up-to-date information about careers, employment opportunities and the necessary graduate skills development.

Employer Engagement

- To complement the work described above, we have been working towards greater engagement with employers and companies.
- It is very important that students recognize the purpose of the extracurricular activities to help them develop the necessary graduate attributes and competencies expected of them.
- In this regard, there is no better substitute than the employers to inform students of the current demands placed on graduates and what is expected of them.
- In view of this, it is useful to have greater engagement and interaction with employers as it will certainly make it easier to increase student awareness of the need to develop their employability skills.

Employer Engagement

- We have arranged for leading companies & employers to give students first-hand advice about careers.
- Representatives from Hiscox, GSK, Bank of England and HMRC have all come to talk to students about their careers in their sectors.



Employer Engagement

- Subsequently there has been greater interest from second year students in placements and internships.
- Some of them have taken short-term placements & others have become student helpers at University events.
- Several final years have already secured graduate level jobs.
- Many students have since gone on to take up placements & postgraduate studies in the field to become actuaries, analysts, and medical statisticians... to name a few.

Employer Engagement

- These events have had a positive impact and successfully raised students' aspirations.
- There is an increased interest among students to develop their graduate skills at an early stage and seek employment.
- Excellent Student feedback
 - “It encouraged me to take my career options more seriously”
 - “Very interesting talk about the professional body & opportunities”
- As these employer interaction events have been very successful in raising student awareness of graduate skills, our department is planning on organizing these events regularly in coming years.

Other Events: Annual Degree Showcase

- Annual Degree Show to showcase students' work to public & prospective employers.

- This degree showcase events (GMT2012, GMT2013) enabled final year students to show off their reports and posters from their
 1. Modelling Skills work,
 2. Final year project,
 3. MWP Placement work,
 4. Undergraduate Ambassador Scheme work.

- Invited audience included potential employers, professional body representatives, local school teachers and other visitors.

Annual Degree Showcase event

- This encouraged students to take pride in their work and think about presentation in the context of progressing in their careers.
- This also provided good networking opportunities for students with prospective employers and local school teachers.



Annual Degree Showcase event

Guest Feedback:

- “I really enjoyed the event and I particularly liked the projects display. These really showed how Maths relates to real life problems”.
- “I thought the event was excellent and the posters looked really professional!”
- “I thoroughly enjoyed meeting the students and seeing their work”

Employability events

- ❖ All of these activities are designed to complement those used in teaching and learning.
- ❖ Their aim is to facilitate the development of graduate skills & provide an excellent learning experience.
- ❖ They increase students' awareness of the mathematics used in the workplace and promote self-confidence raising students' aspirations.
- ❖ We believe this will contribute greatly in preparing students for employment when they graduate.

Impact of Activities

- ❖ These activities have impacted positively on our students' motivation and aspiration.
- ❖ They have:
 - ✓ Motivated students to reflect and develop graduate skills for the area where they hope to find employment.
 - ✓ Raised awareness of professional bodies and their value to graduates and professionals.
 - ✓ Shown the importance of interaction with employers and the value of professional networking.

Impact of Activities

- ❖ These activities have increased our students membership and engagement with professional bodies & their resources.
- ❖ The number of students taking up final year modules involving work placement has risen from 25 in 2011/12 to 63 in 2012/13, demonstrating increased awareness of the value of placements.
- ❖ They have enhanced our students' employment outcomes, as per
 1. Our recent DLHE Survey results
 2. Industrial Placement statistics

Summary/Conclusions

- This presentation described how the students' employability skills are enhanced at Greenwich.
- We employed a number of methods to include professional body interaction, employer engagement and other learning-related extra-curricular activities at our Institution.
- These activities take place alongside those used in teaching and learning to help students develop their graduate skills.
- We described some of the current activities at Greenwich and recognize that they can be adopted to meet the needs at other Institutions.

Conclusions

- ❖ Our experience shows that these methods and activities
 1. make students pay more attention towards developing their employability skills during their programme of study.
 2. promote greater engagement as well as interaction with professional bodies, employers and employment related resources.

- ❖ The results of that contribute greatly to stimulate skills development and impact positively on their employment outcomes.

Thank you!