IMPLEMENTING A MATHS SUPPORT SYSTEM FOR FIRST-YEAR ENGINEERING STUDENTS

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Background

- first year
- introductory mathematics – mainly revision of A-level topics
- aerospace and mechanical engineering undergraduate students
- about 150 students
A-level background of the students

- A*: 8%
- A: 47%
- B: 34%
- C: 7%
- No A-level maths: 4%

A-level background of the students
Students’ results in introductory maths module in 2010/11

Eng Maths 1 module mark (%)
Learning Development Service at QUB

- opened in September 2007
- aims to make academic support available to all QUB students
- three full-time staff, seven PhD student assistants
Learning Development Service
– maths support services

- drop-in service
- one-to-one appointment
  - 1 hour
  - evenings / Skype available
- workshop
  - 90 minutes
  - afternoon / evening class
  - specific topic
Use of LDS for maths support in 2011/12, first semester

Number of student visits

- Electrical Engineering & Computer Science
- Management
- Maths and Physics
- Mechanical and Aerospace Engineering
- Nursing & Midwifery
- Planning, Architecture and Civil Engineering

- one-to-one
- drop-in
- workshop
Implementation of maths support in Mechanical & Aerospace Engineering

- eight students with non-traditional background
- students contacted in week 1, offered support
- weekly, one-hour class in weeks 3 – 12
- two groups
  - four aerospace students
  - four mechanical students
- boardroom – one table, informal atmosphere
- work through practice questions associated with module lectures
Knew each other well. Mutually supportive.

Class time - Monday, 10 - 11 am.

Resit students.
Exam performance

Withdrew before first-semester exams.

Top grade at secondary level.

Resit students.

Student performance chart:
- A1: Attendance 90%, Result 80%
- A2: Attendance 80%, Result 70%
- A3: Attendance 70%, Result 60%
- A4: Attendance 60%, Result 50%
- M1: Attendance 95%, Result 45%
- M2: Attendance 85%, Result 35%
- M3: Attendance 75%, Result 25%
- M4: Attendance 65%, Result 15%
Pace of lectures much greater than experienced at college.

One-to-one support, asking questions in small group setting less intimidating.

Teaching effective and relevant.

Basic structure - set of questions - important to set work pattern.

Homework for following week?

\[ xz - 4xz^2 = xz(1 - 4^2) \]
Conclusions and recommendations

✓ weekly support classes should continue, with more time allocated each week
✓ LDS resources heavily promoted
✓ follow up poor attenders
✓ arrange class at more suitable time for students
✓ informal, non-intimidating atmosphere
✓ structure, emphasis on student practice, much one-to-one support
✓ students with common backgrounds / similar interests grouped together
✓ admissions policy should be reviewed