

Bleak House or Great Expectations, a matter of perspective

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Maths support, who need's it!?

Our aim was to study the expectations and attitudes of poorly prepared mathematics students in first-year university.

- We know that students who utilise support services achieve significantly higher results.
- We know that many students arrive at university under-prepared mathematically.
- “It is noticeable also that the majority of the at-risk students did not [use support].” (Mac an Bhaird et al.)
- “most students are not using [support] because they believe they do not need help” (Mac an Bhaird et al.)
- How is it that we know they are under-prepared but they don't?

Attitudes and expectations: students' perspectives

Do **staff** perspectives align with those of **students'**?

- **At the start of semester we see many poorly prepared students in our first year units;**
- **We have high failure rates;**
- **What are students' attitudes and expectations?**
- **How do students' perceptions change over a semester?**
- **Do students' expectations align with reality?**

We conducted two surveys, one in the first week of semester and one at semester's end.

We have final grades for the three units surveyed.

We report on some differences between the first and second surveys and final results.

Three first year mathematics units

Surveys conducted in three introductory first-year first-semester units.

- Fundamentals of Mathematics: 60 students
passing grades 56.7%, fail 33.3%, AF 10%
- Mathematics for Engineers Preliminary: 232 students
passing grades 44.3%, fail 42.6%, AF 13.0%
- Quantitative Thinking: 229 students
passing grades 76.9%, fail 17.5%, AF 5.7%

Many students are first-year first-semester students.

Many students have a poor maths background.

Three first year mathematics subjects

Students were surveyed on their

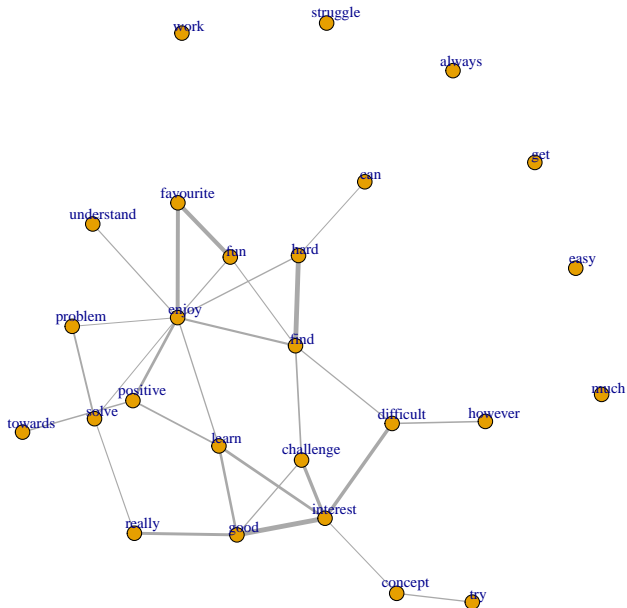
- mathematical background;
- attitude to mathematics;
- expected outcomes from the unit/perceived gains from the unit;
- expected grade for the unit;
- self assessment of skills in algebra, statistics, trig and calculus.

The surveys took place in the first week of semester, and the last week of semester.

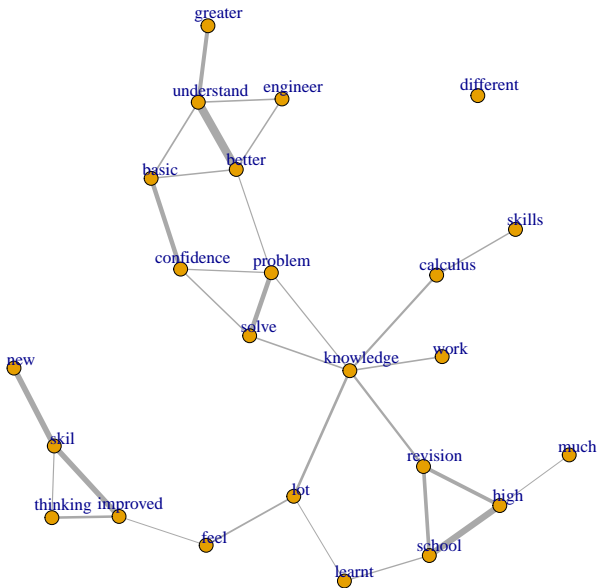
Unit	Responses	Wk1 enrolment
Fundamentals of Mathematics	53	73
Mathematics for Engineers Preliminary	137	292
Quantitative Thinking	130	245
Total	320	610

(We learnt that about half the students did not attend their first lecture.)

Students' attitudes to mathematics in week 14

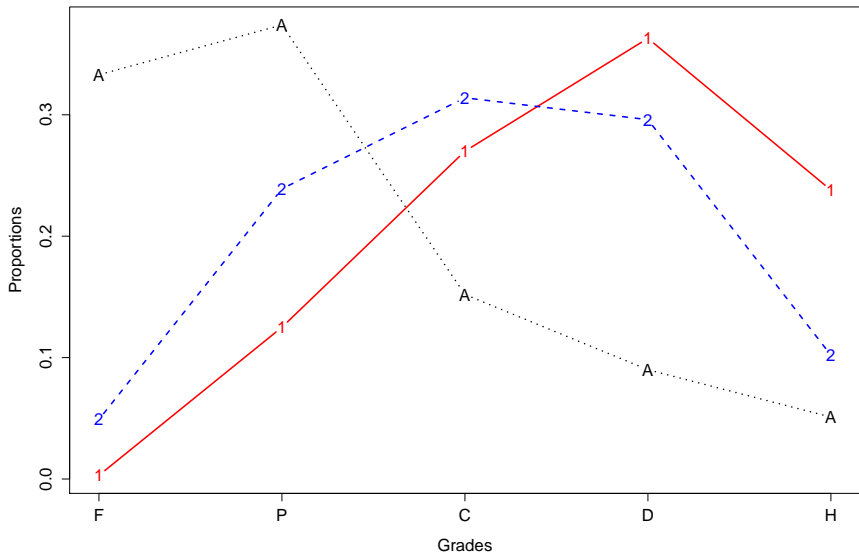


Students' perceived gains in mathematics



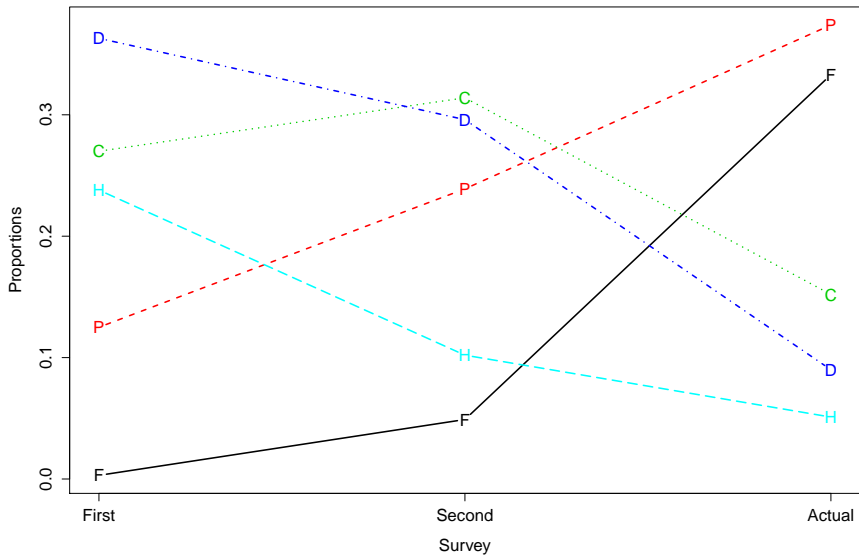
Grade Distributions

Grade Distributions – Surveys 1 and 2 vs Actual



Grade Proportions

Grade Proportions – Surveys 1 and 2 vs Actual



Conclusions

- Students' attitudes towards mathematics on commencing university are overwhelmingly positive.
- Despite many students having failed in class assessments during semester, attitudes are still generally positive at the end of semester.
- There is an expectation of gains in knowledge and understanding. On the whole students believe that these gains have happened by the end of semester.
- Most students think that they will do much better than they will.
- That 50% of students expect H or D suggests they don't understand the system they've just entered.
- Reality checks in the form of class tests during semester do not greatly change students' expectations for their final grades.

Questions

- Do students' high self aspirations mean that they believe that they will pass regardless?
- How can we correct this misapprehension before they become disillusioned?
- How can we maintain the positive maths attitudes?