Engineering Project Management
Doing not teaching

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Engineering project management

Engineering is a technical field but...

- We all feel the need for more non-technical skills in our eng curricula
  - Communication, written, project management, social responsibility

- Project management is essential to good engineering
  - Professional groups say so too
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Nature of project management

- Difficult to teach
- Difficult to learn
- Some say the only way to learn PM is by doing

'I hear and I forget...

I see and I believe...

I do and I understand’
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Story of a learn-by-doing project management course
– School of ITEE at UQ, Brisbane, Australia

- History and course conception
- Evolution of course
- Assessment methods and insights
- Words of wisdom
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Background

1994: school review at ITEE at UQ, Australia

‘we believe that the teaching of unmotivated math and science followed by incrementally updated technical courses is fundamentally flawed...We believe the real impact in engineering education will be made only by looking at the curriculum as a whole, in the context of present technological and societal needs, and not just by constant repolishing of aging courses...’

Resulted in a new learn-by-doing PM course in 4th (final) year of engineering degree
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Course structure

True learn-by-doing

Gave students a project group to manage

- 4th year Project Manager student
- 2nd or 3rd Year student
- 2nd or 3rd Year student
- 2nd or 3rd Year student

+ Lectures, tutorials

Project group
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Course evolution 1996-2000

Students given a project to manage

- Lectures
  - Mostly given by guest practicing project managers
  - Limited PM theory (focus on practical skills)
  - Assessment based on essays about lectures

- Results
  - Good essays but no evidence of application
  - Students looked at assessment criteria not applying new skills
New course coordinator started in 2000

- Assessment aligned with PM performance
- Lectures were formalised and addressed
  - Project life cycle
  - Work breakdown structures
  - Scheduling (Pert, Gantt etc)
  - PM-related skills such as communication, presentation skills, entrepreneurship
  - Assessment based on PM journal and PM documentation

Results

- PM documentation was found to be a ‘creative interpretation’ of true project progress
- Assessable items manufactured to address the assessment criteria
Assessment methods were changed to address the ‘manufacturing of evidence’ problem

Areas assessed included
1. Scope Statement
2. Project Management Systems / Policies
3. Plan / Schedule
4. Project Review
5. Project Closure
6. Project Grade.

Results
- Point 6 was successful but administratively problematic (2004 diff)
- Assessment was still a paper-generating exercise
- Still manufactured
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Course evolution

Other issues with the learn-by-doing PM course

- Too many project managers for the teams available
  - 3 or 4 students per group supervised
- Some project managers took no effort
  - Affecting their project group
- Students wanted more PM earlier in the curriculum (before final year)
- Despite issues, feedback was generally very positive
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2005 – another restructure

- Embed PM training throughout 4 year degree

- Maintain learn-by-doing pedagogy

- Maintain senior student supervision of more junior teams
  - Not in stand-alone PM course
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Lessons Learned

Word of warning

Be prepared to have a PM course criticised if the project solutions are poor

- Poor project solutions reflect on student’s technical skills (and therefore other curricula)
- But this is not how it is often seen

Rubbish in = rubbish out
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Lessons Learned

Assessment

- Informal PM skills very important in developing PM skills
  - Personality types, communication, team building etc

- Team structure very important for successful teams
  - Mixing various academic achievers in teams is dangerous
  - A high average academic record in a team rarely generates a top project
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Lessons Learned

Students

- Students lie very well
- Students are clever with assessment
- You can’t beat them

So join them:
Don’t get caught up in the assessment
Generate the PM experience – most important!