Queen's University Belfast

Cross-curricular Group Project Work

Promoting Independent, Active Learning

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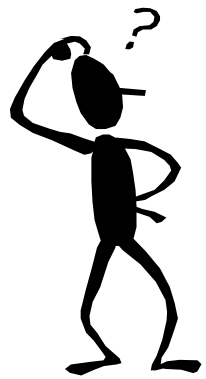
Aims

- Provide alternative to traditional ‘recipe’ style practical classes
- Encourage students to become active, independent learners – through problem-based learning
- Facilitate development of a variety of skills
  - subject-specific
  - personal & inter-personal
- Emphasise multi-disciplinary nature of research
  - counter perceived tendency to compartmentalise areas of knowledge - promoted by modularisation
- Provide a link between students & employers

Where to Start?

- Level 1 class of 1992/93
- Large class
  - ~130 x 1st-year undergraduate students
- 8 first degree programmes
  - Biochemistry to Zoology
- Limited amount of core curriculum common to all degree pathways
- Modularisation



Concept

- Introduce 1st-year students to group project work
- Expose 1st-year students to practical, open-ended projects, based on realistic bioscience scenarios or problems
- Design projects to be cross-curricular
- Students responsible for managing project & themselves
- Initial funding under Enterprise in HE Initiative

Organization

- All students enrolled on ‘Genetic Systems’ & ‘Biochemistry’
- Semi-random assignment of students to groups of 4
- Induction session
- Fictitious budget (£1000), project booklet & catalogue of resources available for ‘purchase’
- Staff acted as ‘paid’ consultants
- Groups allocated 8 x 3h practical slots over 2 weeks (wks 7 & 8, 1st semester) + 2 weeks for preparation of poster presentation (wk 10)

The Projects

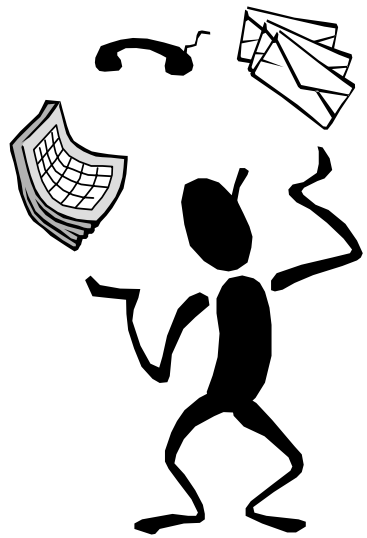
- Plant-microbial interactions
  - fungal metabolites v. seedling development
- Citric acid production
  - extraction from citrus fruits v. production by *Aspergillus niger*
- Whey treatment
  - converting waste whey into a high-value, protein-rich, sweet syrup product using immobilised enzymes
- Biological monitoring of water quality
  - assessments of bacteria, algae & macroinvertebrates

The Projects

- Introduced using mock correspondence & fictitious newspaper headings/articles - containing clues but no experimental strategy
- Students to design & conduct appropriate experiments within time & budgetary constraints
  - under supervision of staff & postgraduate demonstrators
- Each group to present its work in the form of a scientific poster

Skills

- Key skills
  - Communication (written & oral)
  - Numeracy
  - ICT
  - Team
  - Problem-solving
  - Improving own learning & performance
- Practical laboratory skills
- Economic awareness

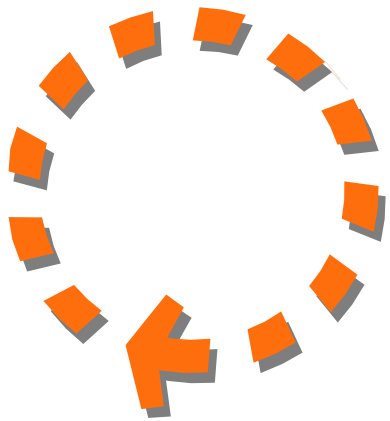


Assessment Strategy

- Process & product (scientific poster presentations)
- Assessors
  - Students
    - self & peer assessment of contribution towards (i) practical team work & (ii) preparation of poster
    - peer assessment of posters
  - Staff assessment of posters
- Staff & student assessments carried equal weighting
- Marks contributed 10% towards final marks in one module
- External consultants from industrial/commercial companies judged best group for each of the 3 projects - donated £100 prize for each group

Evaluation

- Questionnaire to assess students' perceptions of:
  - Project work
  - Team work
  - Skills attained
- "Enjoyable" and "good learning experience"
- Liked *best*
  - Getting to know one another
  - Thinking for themselves
  - Greater challenge of project work
- Liked l*east*
  - Limitation on time
  - Technical problems
- Focus on results obtained rather than skills developed



Conclusions

- Students responded very positively: motivated, challenged & developed high levels of understanding & skills competency

- Students:
  - Worked hard
  - Showed initiative
  - Co-operated with one another
  - Engaged in peer tutoring
  - Produced high quality posters & defended them well

- Initiative won the British Partnership Award 1993 Glaxo Prize

References

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