

Experiences of introducing research methods to Honours students

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Outline and introduction

- history
- motivation
- skills needed to do research
- teaching the necessary skills
- evaluation
 - experience
 - impact
 - pragmatic issues
- conclusion

History and motivation

- previously replaced practical projects with research reports
- why research?
 - appreciation and understanding
 - important for academia and industry
- problems experienced with research process
 - lack of understanding of research
 - time-consuming trial and error
 - statement of system to be built
 - scope too large
 - lack of methodology
 - deadline slippage
 - frustration for both staff and students
- Introduction to Research Methods course

Skills need for research

- skills
 - critical thinking
 - literature searching
 - critical reading, evaluation of relevance and value
 - summarising
 - recognising similarities and differences
 - presenting logical and coherent argument
 - identification of research question and hypotheses
 - presentation skills—verbal and written

- knowledge
 - different types of literature
 - choice of experimental and statistical techniques
 - scientific method
 - different research methods, particularly in computer science
- tools
 - tools for literature search
 - research-oriented document production software

Teaching the necessary skills

- small guided exercises
 - lectures with class participation on research methods
 - small group work on data collection and analysis
 - survey paper and test
 - compare and contrast papers
 - presentation of paper from literature
 - annotated bibliography from assigned list of papers
 - literature review and presentation
 - formulation and testing of hypotheses
 - review of research report
 - prototype research report

- issues
 - cover at least each skill once, some twice
 - exposure to range of research
 - feedback important, individual and group
 - involvement of other staff members

Evaluation

- mostly anecdotal, survey later in the year
- teaching the course
 - challenging, choice of materials
 - lots of assessment and feedback
 - not seen as important as other courses
 - enjoyable
 - opportunity to encourage students to consider further research qualifications

- impact on research report
 - process smoother
 - better proposals, greater focus and understanding of research question
 - better use of literature
 - understanding of need for method to answer research question
 - more time with supervisors on research as opposed to process of research
 - better documents
- pragmatic issues
 - workload—higher than previous, some shift
 - time for research report—too short first year, modification for second year

Further work and conclusions

- further work
 - feedback from students
 - ongoing evaluation
- success
- advantages
 - insight into research
 - better research reports
 - not by trial-and-error
 - broader background into computer science research