

The Australian Chemistry Enhanced Laboratory Learning (ACELL) Project

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Outline

- History – APCELL
- Aims of ACELL
- Workshop Process
- Achievements to Date



History – APCELL

- Project began 1999
 - Physical Chemistry focus
- Potential benefits from lab work
 - Develop technical skills
 - Make theory more concrete
 - Engage students in the practices of science
- Challenge: Providing a lab program that
 - Lives up to its potential
 - Doing so within existing constraints



APCELL

- Bring departments together
- Build on established effective experiments
- Provide resources needed to implement new experiments easily
 - Technical Notes
 - Demonstrator Notes
 - Student Notes
 - Results Proforma



All of Chemistry – ACELL

- Three principal aims
 - Database of **educationally** and **chemically** sound experiments, that have been **tested** by both academic staff and students
 - Provide for professional development of chemistry academic staff
 - Facilitate the development of a chemistry education community of practice



Methods – Educational Template

- Section 1 – Summary of the Experiment
- Section 2 – Educational Analysis
 - Learning outcomes in areas
 - Theoretical and Conceptual Knowledge
 - Scientific and Practical Skills
 - Thinking Skills and Generic Attributes
- Section 3 – Student Learning Experience
- Section 4 – Documentation



Educational Analysis

- For each learning outcome:
 - What should students learn?
 - How will students learn it?
 - How will staff **and students** know that students have achieved the learning outcome?



February 2006 ACELL Workshop

- 33 academic staff
- 31 undergraduate students
- 27 universities from across Australia and New Zealand
- 33 experiments
- **3 very full days**



Laboratory Testing



Collaborative Work



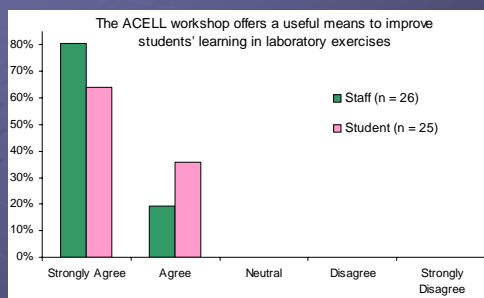
Group Discussion



Evening Debrief Sessions

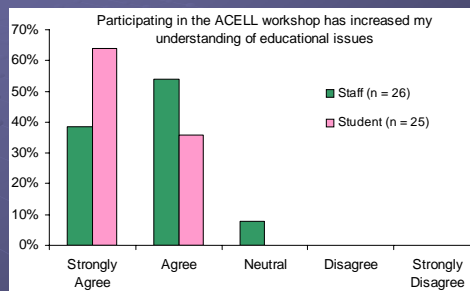


Improving Student Learning



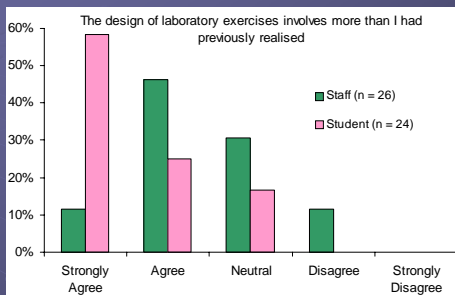
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Professional Development



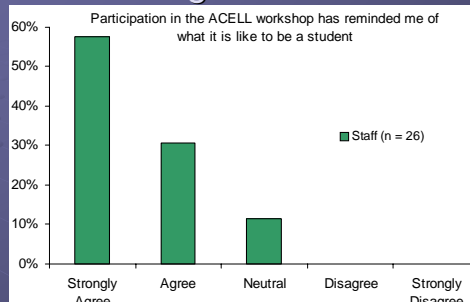
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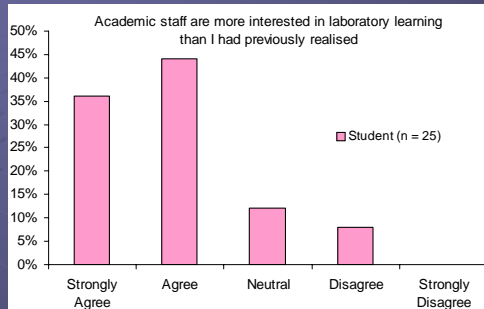
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Being a Student



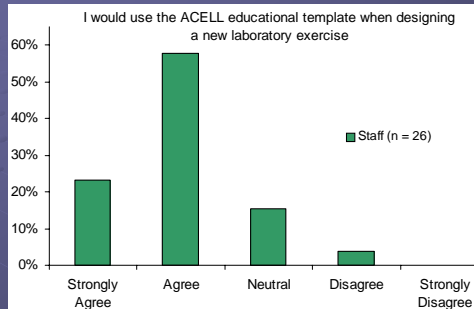
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Changing Perceptions



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Providing Lab Development Tools



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Delegate Feedback

- “It made me sit down and think carefully about what I wanted my students to get out of my experiment, and how I could judge if they had been successful”
- “I learnt that also there are teachers / lecturers that actually do care about their students and want to improve their learning experience”



Feedback on Debrief Sessions

- “The debrief sessions seem to be the most valuable, since we were all able to critique the experiments and really get our opinion heard, and especially to get changes made to better the experiments”
- “How engaged staff and students were, even over the beer sessions”



Potential of ACELL

- “Workshop was excellent and meetings of this type need to be a basis of communication between practitioners at Australian institutions”
- “The workshop was fantastic. I have a deeper appreciation and outlook on practicals and my application to them. If every student could see what happened over these three days, I think all attitudes would change”



The ACELL Website

- Experiments and their documentation
- Publications, including published papers
 - 15 published experiments from APCELL
- Information on ACELL events
- Education resources for ongoing professional development
 - Process information – content analysis
 - Theory information – constructivism



Summary

- Database of student-tested, educationally sound undergraduate experiments
- Professional development of delegates
- Provision of educational resources
- Building a community of practice
- A model for other countries and domains



Acknowledgements

- Staff and student delegates
- HREC at the University of Sydney



ACELL Website

<http://acell.chem.usyd.edu.au>

