

# Inquiry Oriented Learning in Science

## Where is the University of Adelaide AFFA Activity at in June 2012? Project Summary and a Reflection on the AFFA Initiative

### Development of POGIL-style classroom activities for an introductory Chemistry course *University of Adelaide*

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### Project Summary June, 2012

Development of three organic chemistry POGIL-style activities began in late 2011, and a small-scale trial with first year students who had just completed Foundations of Chemistry studies was conducted in November of that year. Students were introduced to the activities and the rationale behind their introduction and implementation, and were then asked to complete the activities in the same way as a student in class would. At the end of the session, students were asked to complete a survey, featuring both Likert-style and open-ended questions, in order to give their feedback on the activities. The response to the activities even in this early iteration was extremely positive, with 100% broad agreement for all Likert questions asked, including "The activities stimulated my interest in organic chemistry", "The activities helped me to develop my thinking skills (e.g., problem solving)" and "Completing these activities has given me more confidence in approaching assessment tasks in organic chemistry". Responses to the open-ended question "Overall, what was the best aspect of the activities and why?" included "You can share ideas and learn from each other", "Student involvement and participation and engagement. Problem-solving skills" and "A student can read anything, but when it comes down to doing questions and testing that knowledge, as done in these worksheets, that's where the real learning happens."

Students in the November workshop also provided some constructive ideas on how to improve the activities. Based on this feedback, the activities were updated in early 2012 and then trialled again in April 2012 in a workshop session featuring a mixture of second year and postgraduate chemistry students. The structure of this workshop was the same as the one held in November, but in addition, a focus group was run following the workshop session to enable more time for conversation and general feedback. A paper survey similar to the one used in the November workshop was provided to participants, who were asked to complete it to give their feedback on the activities. Once again, the responses were extremely positive, with 100% broad agreement for all Likert questions asked, including "The activities stimulated my interest in organic chemistry", "There was a strong inquiry focus to the activities" and "The activities helped me better understand chemistry". Responses to the open-ended question "Overall, what was the best aspect of the activities and why?" included "Interactive. Keeps students focussed. Independent learning", "They weren't too long so I didn't feel overwhelmed. There was a logical progression between parts", "Learning by example/problem solving. Keeps you awake in lectures! Allows you to get a better grasp of the concepts by actually applying them."

Further feedback on the structure and content of the activities was provided by participants in the April workshop, which has been used to further refine the activities in preparation for their implementation into the semester 2 Foundations of Chemistry course in July/August.

Colleagues within the Discipline of Chemistry have been kept informed of progress through regular staff meetings and have been supportive. Dissemination plans include possible presentations at conferences (ERGA 2012 in Adelaide; ACSME 2012), as well as a planned journal article that will be prepared with the assistance of the SaMnet action-learning project group.

### The AFFA Initiative – A Reflection

Being part of the AFFA initiative has been extremely helpful. It has been good to feel part of a team, with the other inquiry-learning projects also on board, and to be able to interact with like-minded colleagues at other institutions. Meeting with Les in person to discuss the project and what we were hoping to achieve was also very beneficial, as it helped to have someone from outside of the Discipline of Chemistry to bounce ideas off.

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While we had already begun work on the project area that was eventually funded through AFFA, the extra support was very valuable. The financial support allowed us to run a workshop in November 2011 to gauge students' reaction to the content and structure of the activities being developed, which provided some really useful feedback. A second workshop was run about six months later, followed by a focus group. The focus group was instigated by AFFA, and has provided some terrific feedback that we would not have had otherwise. The assistance of the AFFA project in driving the running of the focus group, sourcing appropriate questions to ask and providing staff to run the session was invaluable.

It was through the AFFA project that we were encouraged to submit an application for support from the SaMnet action-learning project initiative. We were fortunate enough to receive SaMnet support as well, which will help us develop a journal article based on the work we have been doing.