**Development and Production of Videos for Microscale Laboratory Courses**

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In 1985 Professor Mayo from Bowdoin College in the US suggested that organic chemistry practical work for students could be reduced from macroscale to microscale by altering the quantity of chemicals used from the order of 10-50 gram to 10-150 milligram. This had the advantage of reducing the cost of the chemicals, the amount of waste material produced and the cost of disposal of the waste (this latter cost is becoming significant). It also lowered the potential student and staff contact with toxic materials, essentially eliminated the risk of explosion and fire hazards and allowed experiments which were otherwise too costly and/or dangerous to be performed. Reaction times were faster allowing students to do more work more economically, and so improve their laboratory skills. Experiments which had been poorly done could even be repeated in the same practical session, thus improving the students' technique and increasing their confidence. Working on such a small scale however required special small-scale equipment to carry out the experiments.

This microscale technology was trialled at Swinburne University of Technology from 1991 and introduced into the regular course in 1993.

However, because of the small size of the microscale equipment, it was not possible to adequately demonstrate methods of assembly and manipulation of the equipment to normal sized class groups. Nor was it possible to coordinate the demonstrations at a time consistent with individual students' rate of progress and repeated demonstration to individual students was time-consuming and detracted from demonstrator time for teaching higher order skills. A more effective, needs-based method of demonstration was considered necessary.

This project, carried out in conjunction with Dr Barry Shearer from Ballarat University where microscale work was being introduced to the chemistry course, involved the preparation of six short videos to show the various pieces of experimental apparatus and the appropriate techniques clearly. A short summary of the relevant theory for each technique was also included. The videos were made by Learning Services at Swinburne University of Technology.

The videos were made available in the laboratory for student use when and as often as required and individual students were able to view them and then execute the required techniques correctly and confidently. The students and the demonstrators reported favourably on the usefulness of the videos in the learning situation.

The main benefits in terms of student learning were the raised skill levels and improved confidence in the laboratory situation, while minimizing accidents, which resulted from repeated access to the videos when and as often as required. It also released demonstrator time for higher level work with the students in their practical classes. Thus the aims of the project were realised. This was confirmed by a more formal evaluation involving a student questionnaire and demonstrator observation.

FOOTER

[Return to Contents](http://science.uniserve.edu.au/newsletter/vol8/)

**UniServe Science News Volume 8 November 1997**

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