

Parallel session 5: PCST Challenges and tools directed to young people

BRINGING BRIGHT MINDS BACK TO SCIENCE – THE ADVANCED STUDY PROGRAM

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Abstract

Students in Australia are turning away from science. In response to this problem, The University of Queensland has established the **Bright Minds™** Project. This initiative includes an integrated package of resources and programs designed to encourage students to study science through school and university, and build a society which values science and scientists. The project includes the Advanced Study Program in Science, which provides an enhanced learning environment for high-achieving undergraduates. The Program uses a number of innovative educational approaches to help sustain students' interest in science, and enhance their critical thinking skills.

Key words: innovation, science education

Text

The modern biotechnology revolution will be central to both our medical and economic health in the twenty-first century. Yet a worrying trend is emerging – students in the formal education system are turning away from science (Mattick 2002). Of great concern is that many of our brightest and highest achieving students are leading this move to abandon science as a career (Sadler 2002). In response to this problem The University of Queensland (UQ) established the **Bright Minds** project. This initiative includes an integrated package of resources and programs designed to re-awaken and sustain students' interest in science. Our multiple target audiences include school students from Year 6 to 12, tertiary students of science, parents, teachers and school guidance officers.

Our mission is to increase the retention rates of students studying science as they progress through secondary school and into tertiary education. There are many hurdles to be overcome, including the perceived lack of relevance and

job options, the paucity of visible role models, and the lack of opportunities for teachers to update their skills and practices. Traditional forms of science education can lead students to pursue shallow learning strategies and even develop an “undesirably naïve view” of science (Sandoval & Reiser 2004, p. 346). Many standard teaching practices fail to adequately develop the creative and critical thinking skills valued by employers (Wood & Gentile 2003).

One of our educational innovations to tackle these issues is the “Advanced Study Program in Science” (ASP). The ASP targets high achieving students who are entering their first year at university and are considering a research-based scientific career. We provide the ASP participants with an enriched program of undergraduate study, challenging them to broaden their horizons, improve their higher order thinking skills, and reach their full potential. The program thus aims to overcome the problem of these students becoming disenchanted with their studies as a result of boredom, or feeling that the materials they are studying are irrelevant to their career goals.

The ASP is innovative both in its emphasis on providing unparalleled access to the university’s best researchers, and its emphasis on collaborative learning. In their first semester at university, the ASP students attend a series of informal seminars that introduce them to prominent research scientists, their work and their career paths. The students find this early exposure to research culture highly motivating. Another key activity is a two day field trip which provides the students with the opportunity to get to know each other and do some field-based research. Every effort is made to provide a supportive and non-competitive environment, in which the students bond to form a cohesive learning community.

The first formal course in the Advanced Study Program (ASP) is BIOL1017 Perspectives in Science. This course investigates socioscientific issues from a variety of perspectives. Experts from both the sciences and humanities are brought in to discuss possible solutions to real-world problems. Students are encouraged to integrate their university learning into these new contexts, appreciate the interdisciplinary nature of research, discuss scientific issues from an ethical perspective, and enhance their communication skills. The course also aims to improve general levels of scientific literacy and help students gain insight into the nature of science.

Both student and staff satisfaction with this program is very high. Numerous UQ staff have contributed to the seminars and group discussions, opened their laboratories to the students and agreed to act as mentors. These participants are keen to continue their involvement, largely because they find the students’ enthusiasm and program format invigorating. Applications from students far exceed the number of positions available in the ASP (in 2002 and 2003 the quota was 40 students per year, this was increased to 50 in 2004). Student entry into the program is by written application and interview. There is a good level of awareness of the program, and vacant positions are readily filled.

We believe it is important to encourage and retain the interest of those who gravitate toward science and technology, so that they are positively predisposed to considering a career in the area. Of course, not all students will want to be scientists – but in our increasingly technologically complex world, all students will benefit from possessing a greater level of scientific literacy.

Our goal is to both encourage students to study science through school and university, and help build a society which values science and scientists.

References

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