

THE DEVELOPMENT OF A PRE-SERVICE PROGRAMME FOR JUNIOR SECONDARY MATHEMATICS TEACHERS IN FIJI

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Introduction

The newly opened Fiji College of Advanced Education (FCAE) was introduced in Pacific Curriculum Network Volume 1, Number 1. The proposal for the FCAE was made following the Government's commitment to alleviating the strain caused by the large percentage of untrained teachers within the secondary system. This proposal led to a joint Fiji-Australia project, resulting in this modern centre which will initially focus on teacher education. Through its courses the College caters for a wide range of training needs. Among these are pre-service and in-service courses, as well as short, subject intense seminars and workshops.

This article was written to inform readers about the development of a program leading to a Diploma in Education. In particular the discussion will revolve around the mathematics stream. However, readers will gain an appreciation of the general philosophy behind the approaches made in structuring the individual courses.

Directions

An increasingly technological orientation in modern life demands that mathematics be part of a sound education. Secondary school teachers have frequently stopped their studies in mathematics at a level below that required for "real-life" problem-solving. A wide range of mathematics has been built into the course to foster an awareness of its applicability. This is reinforced by the discussion of the possible "real-life" uses of each of the theories studied. Staff are building up a list of potential guest speakers to further develop the image of mathematics being a useful tool, rather than a series of disjointed facts whose interpretation lies in the hands of the few who are willing enough to wade through its massive and apparently complicated language structure.

Teaching methods courses were designed to address the criticism that the teaching of mathematics is often too routine, boring and lacking innovation. Graduating students will have a sound knowledge of teaching/learning theories and have an extensive range of teaching skills, along with a rigorous mathematical background. Their classrooms will hopefully be more lively than those experienced as the norm. Activity will be more student-centred.

Successful students will be confident of beginning a career armed with the tools necessary to becoming flexible, innovative teachers who are competent and confident with the mathematics met in the secondary classroom.

Continuous reflection on their own teaching methods is particularly important to lecturers in their position as role models for the trainee teachers. This reflection creates a dynamic, vibrant approach to course development. Variety of presentation and emphasis on the use of mathematics as a tool is a consistent theme throughout. Extensive use is made of many media in lectures, workshops and tutorials.

Structural Framework for Courses

The framework for course designs evolved from a number of sources. Some inputs were institutional, some social and others came from personal experiences and expertise. Design parameters included the following:

The basic framework evolved around the requirements of a mathematics teacher in the Fiji junior secondary classroom. In the secondary curriculum there is a wide range of secondary topics a teacher needs to be familiar with. There may be areas where there are few qualified teachers and where there is a need for someone to act as a local resource in mathematics.

The Ministry of Education provides a Mathematics Prescription that clearly defines the content and many desired outcomes for all levels. The Prescription gives a clear indication of what must be taught, but not how it should be taught. Teaching Methods studies thus address the problem of how subjects could be presented in the junior secondary school.

Secondary students will soon be studying computing as a core subject in their high school mathematics. The Ministry of Education's Computer Education Centre was enthusiastic about having target people who could act as a focus about whom it could structure local in-school in-service programs. Graduates from the Diploma would be ideal for this role.

The program requires that strong emphasis be placed on both content and methods courses. It was launched as a joint Fiji-Australia project and reflected the needs of secondary education in Fiji.

Research has shown the need to move away from teacher-centered learning and to have students participating in a wider range of activities. Opportunities should be provided for more interaction between students and with the teacher.

An analysis of Fiji Junior Certificate examiners' reports guided lecturers at the College to areas of weakness. This reporting system was especially useful in aiding the design of some of the earlier topics which students would study to strengthen the subject matter frequently seen by the examiners as being particularly poorly done.

Students entering the college with Form 7 passes need to be extended beyond the secondary curriculum and given the opportunity to study tertiary mathematics. Beyond this program students would have the foundation for enrolment in further tertiary mathematics courses.

A further constraint to the program design was the external examination system whereby all secondary students sit for the final external exam. This was important when developing evaluation strategies and when explaining new teaching techniques that are sometimes seen as wasting too much time with consequent inadequate coverage of the prescription.

The graduation of well-rounded professionals means that students should study courses outside their chosen specialisation.

Those included were Communication and Study Skills, Pacific Studies, Classroom Learning, Computer Literacy, School and Community, Children with Special Needs and specialist topics of Physical Education, Music and Art and Craft.

Students studying mathematics were to be concurrently enrolled in a similarly intensive course of study in science.

Design of Courses

Working within the above framework FCAE lecturers designed the courses for the Diploma program. Local staff came with extensive experience in teaching, supervision and administration in the secondary education sector. They have been associated with rural/urban, mixed/single sex and mixed/single ethnic group schools. Australian staff added to this expertise and complemented it with their knowledge of tertiary education.

The commitment and determination of this team meant an independently produced program, sensitive to the needs of the Fiji teacher working in the junior secondary classroom.

The courses have been designed to accommodate on-going evaluation and modification, not only of the content, but also of the approaches to presentation of course materials. The continual promotion of collegial feedback by all staff enhances the transformation process. Feedback is used to assess "what happened" and compare it to "what we thought would happen" at all stages of the course.

Conclusion

Graduates will form a body of teaching staff fully prepared to deal with the rigours of front-line teaching in the first year and in subsequent years as each follows a professional career in education. An acceptance of the changing nature of education will show in their first-up lesson preparation and in the production of course work materials such as schemes of work as teachers are promoted. The breadth and depth of their knowledge will make them comfortable with alternative explanations to mathematical concepts in the classroom.

Awareness of the importance of personal professional growth by affiliation with professional bodies is strongly encouraged throughout the course. The College views its graduates as being strong contributors to the overall development of the secondary teaching profession in Fiji.

The activity and variety occurring within classrooms have the potential to create a curiosity amongst others in the same educational setting. This curiosity may inject some enthusiasm for innovative teaching methods across the school community and we hope that graduates will thus have a real and positive effect on Fiji junior secondary students and teachers.

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