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AN ALTERNATIVE UNIVERSITY --
REPORT ON A VISIT TO GRIFFITH UNIVERSITY,
BRISBANE, AUSTRALIA.

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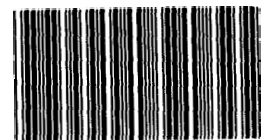
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SUMMARY

The report describes the basic structure and rationale of Griffith, which is an alternative university. It documents what was done during the author's visit, and discusses the advantages and difficulties of the Griffith model, with particular reference to developing countries.

OPSOMMING

Die verslag beskryf die basiese samestelling en rasionaal van Griffith wat 'n alternatiewe universiteit is. Dit dokumenteer wat gedoen is gedurende die skrywer se besoek, en bespreek die voordele sowel as die moeilikhede verbonde aan die Griffith model met spesiale verwysing na ontwikkelende lande.

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1.0 INTRODUCTION

I was invited by Griffith University in Brisbane, Australia, to be a Visiting Fellow in their Centre for the Advancement of Learning and Teaching (CALT). The invitation was for me to share my research findings concerning learning as conceptual change, and to contribute to the process of curriculum revision in the School of Science.

A Visiting Fellow is expected to exchange views and information in his or her field of expertise with Australian colleagues in the host university, to make an impact on the wider Australian community, and to share the Australian experience on returning home. The invitation was funded by Griffith University, who paid all travel and accommodation and subsistence. The visit took place from 11th September to 16th October 1983.

2.0 DESCRIPTION OF GRIFFITH UNIVERSITY

Griffith University is an alternative university inaugurated in the early 1970's as a direct response to the worldwide student unrest of the 1960's. The keywords which apply to this university are 'relevance', 'multidisciplinary', 'interdisciplinary', 'problem oriented', and 'career oriented'.

The traditional organisation of university faculties has been replaced with five Schools of study in which teaching and research activities are organised into important problems or themes of common interest. Thus the traditional compartmentalization of knowledge into disciplines has been replaced with multi- and interdisciplinary studies. This is designed to give students a wider appreciation of the general context (e.g., sociological, ecological, economic) of their areas of specialization.

The University awards bachelor's, master's, and doctoral degrees. Griffith graduates are apparently well received in the job market, and are as employable (if not more so) as graduates from more traditional universities.

2.1 Centre for the Advancement of Learning and Teaching (CALT)

The Centre has a central role in the running of the University (despite the fact that it is housed in an ad hoc prefabricated appendage to the Library building). Its contribution is to provide specialist assistance to the University and to improve teaching and learning.

The staff's function is to develop new courses (i.e., design courses, and set up teams to teach them). They oversee teaching methods employed in the schools, and are involved in the development of procedures for assessing students. They evaluate and revise existing courses with a view to upgrading or changing

them where necessary.

The role of CALT is thus innovative as well as supportive of faculty and students, and also seems to have an ombudsman responsibility.

2.2 The School of Australian Environmental Studies

This School is probably the showpiece of the University. It endeavours to examine the interaction between human societies and their environments. The main areas of emphasis in this School include 'ecology and ecosystem management', 'land use and management', 'social sciences', and 'applicable mathematics'. Each of these courses is focussed on the central problem of 'environmental problems and management'.

Career prospects for graduates of this School could be in areas such as the Public Service, in the Forestry Department, urban and regional planning, pollution control, environmental chemistry, university administration, and CSIRO research.

2.3 The School of Social and Industrial Administration

The growth of large, complex corporations, and the rapidly changing social, political, and economic environment has created the need for managers and policy makers of corporate bodies to be concerned with both the corporate purposes of the organization and

the inter-relationships of these purposes with the external environment. Courses consider organizations in the private, public, and voluntary sectors; commercial, industrial, and governmental enterprises; and trade unions, welfare, and social organizations. The School's objectives are to promote a general understanding of organizations, and the skills required to study and operate effectively within them, and to train graduates in the development of specialist skills and knowledge (e.g., economics, personnel, industrial relations, marketing, mathematics, statistics, computing).

This School is of particular interest in the context of the general modus vivendi of the NIPR. It is of interest that Professor David Limerick (School Chairman), and Dr Trevor Roberts, were previously NIPR personnel.

2.4 The School of Humanities

This School aims to develop student skills in thinking, arguing, and communicating, and to ensure that their studies develop in the context of the social and cultural life of Australia. The courses cover many topics such as literature, philosophy, sociology, politics, and history. An example of one course, 'Society and the Media', illustrates the programme of inter-related topics which deal with modern mass media, analysis of media texts, and the relations between such texts and the conditions under which they are produced, circulated, and consumed.

Careers for graduates of this School could include personnel work, retail management, film production, teaching, librarianship and public relations.

2.5 The School of Modern Asian Studies

As Australia is beginning to focus on her nearest neighbours in the East as trading partners, this School is becoming increasingly important. It concerns itself with the study of modern Asian nations, namely China, Japan, Indonesia, and the Malay World. The aims of the School are to foster an interdisciplinary inquiry into differing cultures and societies; to research and disseminate knowledge on modern Asia and to promote mutual understanding and awareness between Australians and Asians.

Career opportunities include research and administration in overseas trade, defence, foreign affairs, research in Asia, and teaching.

2.6 The School of Science

This School appears to be the most traditional of the Schools at Griffith, and the one in which transition to the Griffith model is proving the most difficult. The School has an excellent research record, and it aims to encourage the interaction of teaching and research at all levels. It attempts to prune traditional science curricula to subject matter which is strictly relevant in modern scientific thought. The School aims to encourage students to

develop a practical understanding of the scientific approach to enquiry and to teach them basic experimental skills, as well as mathematical and writing skills. The School fosters links between itself and the society which it serves - i.e., it attempts to be relevant to the needs of industry, agriculture, medicine, etc. In addition, consideration is given to the social, economic, and philosophical aspects of science.

The first year programme, Foundation Year in Science (FYS), includes the foundations or basic principles of physics, chemistry, and biology, which are integrated with the foundations of mathematics (FYM), science, technology, and society, (STS).

Career opportunities include tertiary and secondary teaching, governmental research and administration, CSIRO research, hospital laboratory and research work, food technology and quality control, mineral technology, and industrial technology.

3.0 OVERVIEW OF MY ACTIVITIES AT GRIFFITH.

My mandate at Griffith University was an open-ended invitation to help in the School of Science in their consideration of their curriculum. Bearing in mind the model of learning as 'Conceptual Change' which is an integral aspect of my research activities, I decided to find out the existing ideas of members of the School of Science who were responsible for the Foundation Year Science Programme (FYS), to tailor my contribution to incorporate those

ideas, and to use them as the cornerstones of any collaborative research we might do.

In the five-week period I spent at Griffith University, I gave two informal presentations and helped to organise an afternoon seminar in which I also presented a paper. I became involved in a small research project in the School of Science, which included a lecture to the FYS students, the writing of a paper, and a continuation of the project into its second stage. I also had an opportunity to talk in depth with a number of individuals about research.

3.1 Informal Presentations.

I gave two informal presentations on aspects of research work completed for my PhD and while at the NIPR. These talks were:

3.1.1 Alternative conceptions: Barriers to learning - presented to the CALT group (Sept. 22nd).

3.1.2 The influence of intellectual environment on students' conceptions - presented to the CALT group, plus members of the School of Science, School of Australian Environmental Studies, and invited people from outside the University (Sept. 29th).

3.2 Formal Presentation.

As a member of CALT, I helped organise a seminar designed to meet the needs of science educators at the secondary and tertiary levels in the greater Brisbane area (i.e., including the University of Queensland, the Colleges of Advanced Education, the Queensland Institute of Technology, and local High Schools).

Two additional speakers were invited to present papers at this seminar. These were Dr Leo West from the Higher Education Advisory and Research Unit, and Dr Dick Gunstone from the Faculty of Education, both of Monash University, Melbourne.

The programme was titled "Some Current Ideas on Improving Student Learning", and included the following talks:

- 3.2.1 The use of students' existing knowledge to facilitate learning - Dr M.G. Hewson.
- 3.2.2 Effecting changes in students' learning - Dr D. Gunstone.
- 3.2.3 Some implications of recent research in student learning - Dr L. West.

The seminar was held on Wednesday afternoon, 12th October and was well attended.

3.3 Work in the School of Science.

In order to contribute to the curriculum design in the School of Science, I decided my best approach would be to introduce some ideas from constructivist psychology (on which I am currently working) to help staff in their teaching, and to help students become better learners. The ideas I chose to work with concerned the facilitation of meaningful learning by taking account of students' existing everyday knowledge, and encouraging students (and staff) to organise knowledge by linking ideas into conceptual maps.

I thus became involved in a small research project initiated by Dr Peter Healy and Mr Roger Landbeck. My contribution to this research was to provide some theoretical perspectives as to why the use of summary cards in examinations would provide better student learning, and to help in the data analysis.

I used the model of Learning as Conceptual Change in an attempt to show the students in the Foundation Year Science programme that properly organised knowledge was meaningful knowledge, and that meaningful knowledge was more easily learnt than unstructured, meaningless knowledge. According to the Conceptual Change Model, it was necessary to show the students that conceptual organisation was an intelligible and meaningful endeavour and that it was fruitful, in that learning was demonstrably better. I used extracts from J.D. Novak's Learning How to Learn Programme* as the basis of this intervention.

* *J.D. Novak et al, learning How to Learn, Department of Education, Cornell University, Ithaca, N.Y. 14853*

A short preliminary paper has been written by myself, Dr Healy, and Mr Landbeck:

Facilitating learning: The use of the summary card in examinations.

This paper has been submitted to the Journal of Chemical Education.

In a follow-up study, we decided to repeat the original procedure of allowing students to take summary cards into examinations, and to give students explicit instructions on how to organise their knowledge. I thus gave the FYS class a lecture on:

Strategies of Meaningful Learning (Oct. 5th).

The benefits of this procedure will be assessed in November examinations, and, if possible, a paper will ensue.

3.4 Conversations with Griffith Staff and Students.

I had a number of useful conversations with people in CALT (Mr Don Margetson, Mr Roger Landbeck, Dr Ortrun Skerit) on the role of CALT, and was able to share ideas of mutual interest with them. In addition I talked with members of the School of Science on the problems currently being experienced in that school.

I had interesting interviews with several students doing postgraduate work related to my fields of interest, i.e., cross-cultural problems in learning science, student difficulty in understanding science, and the training of medical clinicians using ideas from constructivist psychology.

4.0 COMMENTS ON THE GRIFFITH MODEL

As a visitor to Griffith University I was invited to submit my personal comments on the University, the School of Science, and CALT. I would like to emphasize that the comments which follow are purely subjective and are based on a rather limited exposure to the system.

I would, however, like to describe a few of the tensions that were apparent to me, and then make some tentative suggestions concerning changes with respect to the Foundation Year Programme in Science. I will conclude with a brief look at the implications of the Griffith model for developing countries.

4.1 Tensions in the University

Griffith is an alternative university which is following a pattern strikingly different from that of the conventional university. This divergence from the traditional style of tertiary education is a sincere attempt to be relevant to the needs of Australian

society, to be problem oriented and career directed. From all accounts, the University is succeeding admirably, and I was assured that Griffith graduates were competing very well with graduates from other universities. Nevertheless, a niggling suspicion that "different" implied "inferior" seemed to prevail both inside and outside of the university. In my experience of experiments in alternative education at the school level in the USA and South Africa, this tension is unavoidable. An alternative educational institution appears threatening to traditional institutions, especially if it explicitly attempts to deal with problems which are overlooked or not catered for in traditional institutions. An institution which overtly tries to be relevant to society or dedicated to improving the efficiency of teaching and learning makes other institutions feel vulnerable in just those areas. It is common for disparaging remarks about low standards, poor student calibre, etc. to be levelled at the alternative institution. In terms of the Conceptual Change Model, the Griffith style of tertiary education is certainly intelligible (i.e., it makes good sense). It is apparently plausible (i.e., it is feasible in concept and possible to implement), but this is not without its problems as I shall describe later. It is probably still too early to decide whether or not the system is fruitful (i.e., successful). There are, however, indications that Griffith University has gained recognition in academic circles while upholding a radically different system which may, in the long run, prove a trendsetter for the traditional institutions.

4.2 Tensions in CALT

The Centre for the Advancement of Learning and Teaching is the core of the University. The members of the Centre are required to act as supportive helpers in the various schools as well as critical evaluators of courses. This tension is felt keenly by some of the CALT members. In addition, while CALT is crucial to maintaining the University on its designated path of 'relevance, problem orientation, and career directedness', its low profile appears to suggest to members of the University that the Centre is dispensable, and that the money saved could be better used in other areas of the University. This tension of being indispensable in the Griffith plan, but dispensable in the eyes of certain colleagues puts CALT members in an awkward and vulnerable position.

The low profile kept by CALT seems to be strategically good even if it creates unfortunate tensions. If CALT is responsible for curriculum reform, (in particular in schools which do not think such reform is necessary) then the best role for CALT members is to act as facilitators in initiating involved participation by staff in this change. This may be described as 'strong leadership from behind'. In this role, CALT members act discreetly, and while change may be successfully effected, CALT itself may not be able to take the credit. This is difficult for academics who need to promote their own careers by means of publications and overtly measurable success. I see this tension as one which leads to satisfaction as well as frustration. Perhaps a greater

involvement in empirical educational research may resolve some of this tension. I do think, however, that the Centre should be housed in more substantial, central quarters which would be symbolic of the importance of CALT to the University.

4.3 Tensions in the School of Science

Of all the Schools at Griffith University, the School of Science would appear to be the most traditional in character. On the one hand, its name is reminiscent of Faculties of Science in traditional universities. On the other hand, while some of the courses offered appear to conform to the Griffith model, some of those with which I became quite familiar seem to be quite traditional in character. I believe this is because there are some fundamental tensions within this school.

4.3.1 Teaching basic scientific principles versus teaching interesting, relevant research themes. In teaching the nature and origins of physical, chemical, and biological phenomena, the School has opted to interface teaching and research, and to eliminate many of the "narrowly defined subjects" which "are no longer relevant in modern scientific thought".* The Foundation of Science course thus teaches a series of more or less related topics which are structured into three parallel streams, and interfaced with Science, Technology, Society and Foundation Year Maths.

I was told that the maths and physics interrelationship worked very well, but that this was less true for the other topics,

* *Griffith University Handbook, 1983.*

particularly biology topics. The problem seemed to be the tension between giving students information on subject matter which is intrinsically interesting and therefore motivating, and the teaching of the basic principles and fundamental facts upon which to build meaningful scientific knowledge. One frustrated science lecturer complained that the FYS is too superficial, and that unless the basic scientific groundwork is established it is very difficult to be problem oriented, contemporary, or relevant.

4.3.2 Macroproblems versus microproblems. The Griffith Model expects lecturers to teach within the context of problems. In my view there appears to be some difficulty concerning what counts as a problem. Scientists claim that they are by definition problem solvers. The problems dealt with in the laboratory or tutorial are often microproblems such as 'what are the conditions necessary for photosynthesis?' (to be simplistic). As I understand it, the Griffith requirement is that scientific data such as that concerning photosynthesis should be taught in the context of macroproblems, e.g., 'what is the effect of industrialization on the flora and fauna of the area?' This level of problem would include photosynthesis and a number of other biological topics.

Most of the Science lecturers have probably been trained at conventional universities, which involved learning science in a logically progressive way. A general tendency is for any lecturer to regard the old way as the best way -- it is much easier to teach in the same way in which one has been taught, unless one can be convinced otherwise. One of the problems seems to be the

necessity to convince science lecturers that the Griffith model is more effective than the traditional model. My limited experience at Griffith indicated that there was some uncertainty about this, and the traditional model of teaching science is being used.

4.3.3 Publishing versus teaching. A persistent tension at many universities exists because academics' reputations depend on their publications, whereas they are paid to teach. At Griffith it is clear that the School of Science excels in terms of its research and publications, and there is a commitment to breaking down traditional disciplinary barriers. It is necessary for scientists to protect their reputations by extensive publishing. This leaves little time for reflective teaching.

This lack of attention to teaching and to student problems is evident in the response of a drop-out FYS student to a questionnaire. The student (C.H.)* wrote that he anticipated a science programme which would "expand and exercise my mind and brain; widen my perspective on life; to develop my capacity to reason; to attain a higher level of objectivity, to be able to approach problems with a sane, rational and dispassionate mind while at the same time retaining my humanity". He commented that "My overwhelming recollection of university life...was that I was a receptacle into which an awesome amount of information had to be crammed in a very short period of time. I felt like a little robot milling around". "It seemed to me that a large proportion of the (PSC) class including myself, were lost, and in a state of confusion. Many people resorted to just copying (laboratory)

* *These comments are obtained from a questionnaire sent out by R.C. Landbeck to students who had withdrawn from the FYS programme*

results from their more knowledgeable colleagues".

In the research project Peter Healy, Roger Landbeck, and I noted that a small number of students were so confused about what they had been taught that they felt unable to make effective summaries of their notes. Our study involves steps to remedy this situation, and we feel it is entirely possible to make teaching more effective in a cost-effective and time-effective way.

5.0 SUGGESTIONS FOR THE FOUNDATION YEAR SCIENCE PROGRAMME

Five weeks is barely enough time to appraise a situation, let alone be presumptive in making suggestions for change. I will, however, offer some tentative ideas for the FYS programme.

As I have described in the preceding section (4.3), it appears as if the FYS programme is "falling between two stools" in its attempts to teach both basic science and contemporary science. The course seems patchy and superficial. Some students feel overworked and confused and at least one staff member I talked to felt frustrated because he could not teach science "properly".

Firstly, as one of the criteria in the FYS seems to be to give students a feeling for the excitement, range and relevance of science, I suggest this aspect could be taken care of by screening contemporary television series such as Jacob Bronowski's 'The Ascent of Man', Carl Sagan's 'Cosmos', or Richard Attenborough's 'Life on Earth'. BBC television has screened a variety of

excellent scientific productions. The exposure of students to such high quality programmes should do a great deal to whet their appetites for the rigours of science.

Secondly, a number of carefully selected macroproblems in science could form the basis of FYS, in which context the fundamental scientific facts, principles, and procedures could be taught in a logical and meaningful way. This would ensure that courses in the Main Studies Programme (years 2 and 3) could build upon knowledge acquired in FYS.

Thirdly, students could be given explicit instructions in how to handle scientific information, as the J.D. Novak et al 'Learning how to Learn Programme'. This involves the active participation of the student in organising scientific knowledge. The use of hierarchical concept maps or a heuristic device such as the "Vee" could benefit student learning. The view of learning involving a process of conceptual change* provides a promising way in which lecturers can plan their teaching strategies to make learning more efficient.

6.0 THE GRIFFITH MODEL FOR DEVELOPING COUNTRIES

Tertiary education in developing countries often suffers from the "ivory tower" syndrome. Educating people in disciplines which are not relevant to the country's needs, which are not problem oriented in meeting those needs, and which do not have obvious career advantages is expensive and wasteful of money, time, and

personnel resources. Griffith University offers a working model which overcomes most of these problems.

While not without its ongoing difficulties, Griffith is paving a way which has much to recommend it. The University has been in existence for more than ten years, and is clearly viable. Technical institutions are also much needed in developing countries, but the Griffith model offers more than technology. It offers a holistic (multidisciplinary and interdisciplinary) approach to learning which is a really successful alternative to traditional university education.

The implementation of a Griffith model in developing Africa would inevitably have to counter the accusations of "second class", as many African countries still look to the traditional university as a sign of status. I believe the Griffith model shows up the less satisfactory aspects of traditional universities. Once this dissatisfaction is experienced, the path is clear for laying foundations for establishing tertiary institutions which are holistic, relevant, and successful. Each such university should be seen as unique, as it would seek to serve the particular needs of particular countries, while at the same time embodying the vast store of human knowledge, cultures, and civilizations in its array of courses offered to students.

7.0 CONCLUSIONS

My visit to Griffith University was extremely valuable. In the first place, I was able to share my research findings in a wider sphere than before, and gained relevant insights into my work through a number of useful discussions. The invitation afforded me the opportunity of using my ideas on 'learning as conceptual change' at a macro level by becoming involved with a first year science programme. Up till now I have been applying these ideas at a micro level by looking at conceptual change in individuals in very restricted subject areas. This was a challenge for which I am grateful as it has served to convince me of the usefulness of this line of research.

Griffith University is a unique institution and I feel privileged to have had the chance to be a Visiting Fellow in the Centre for the Advancement of Learning and Teaching.

