CURRICULUM IMPLEMENTATION IN TAFE IN WESTERN AUSTRALIA: TWO CASE STUDIES

Kerry J Kennedy
John Williamson
Catherine Patterson

TAFE National Centre for Research and Development
CURRICULUM IMPLEMENTATION IN TAFE
IN WESTERN AUSTRALIA:
TWO CASE STUDIES

Kerry J Kennedy
John Williamson
Catherine Patterson

This is a draft Report prepared for the TAFE National Centre for Research and Development, December, 1984. It is not to be cited without prior permission of the authors or the TAFE National Centre.
ACKNOWLEDGEMENTS

I would particularly like to thank staff in all the Colleges that the Project Team visited. Without them, there would have been no project. People gave freely and willingly of their time so that our task was made that much easier.

I am also indebted to my co-workers on the project, Catherine Patterson and John Williamson. As with all research projects, this one has been a learning experience for us all and for my part it has been a most productive one.

I have been particularly grateful for the advice and comments of Advisory Committee members, Charlotte Sandery (TAFE National Centre) and Bob Innes (WA Technical Education Division). They always seemed to come up with just the right suggestion at exactly the right time.

I must also thank Mrs Bea Hardman and Ms Pia Pantelis who typed drafts of this report. On more than one occasion they spotted errors that I missed. Any remaining errors, of course, are entirely attributable to me.

Kerry J Kennedy
Project Director
Faculty of Education
Western Australian Institute of Technology
# CONTENTS

<table>
<thead>
<tr>
<th>CONTENTS</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>ISSUES FROM THE LITERATURE</td>
<td>3</td>
</tr>
<tr>
<td>RESEARCH METHODS</td>
<td>9</td>
</tr>
<tr>
<td>RESULTS</td>
<td>11</td>
</tr>
<tr>
<td>I The Modular System in Electrical Trades Area</td>
<td>11</td>
</tr>
<tr>
<td>II The Plumbing Pre-apprenticeship Course</td>
<td>26</td>
</tr>
<tr>
<td>DISCUSSION AND CONCLUSIONS</td>
<td>37</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>44</td>
</tr>
<tr>
<td>APPENDIX A – STAGES OF CONCERN QUESTIONNAIRE</td>
<td>47</td>
</tr>
<tr>
<td>APPENDIX B – INTERVIEW SCHEDULE: PLUMBING</td>
<td>51</td>
</tr>
</tbody>
</table>
INTRODUCTION

In 1983 the TAFE National Centre commissioned a research project entitled CURRICULUM IMPLEMENTATION IN TAFE. The objectives of the project were:

1. to prepare a series of case studies reflecting the process of curriculum implementation in TAFE.
2. to examine the relevant aspects of curriculum implementation as they apply to selected areas of study in TAFE.
3. to identify general issues related to the implementation of TAFE curricula.

The objectives were formulated after a consideration of the experiences of curriculum developers in the 1970s and in a specific recommendation made by the TAFEC funded study An investigation into the curriculum development processes in TAFE in Australia.

The period of the 1960s saw considerable activity in curriculum development in the USA, Great Britain and Australia. In particular, there was emphasis on primary and secondary schools. Despite the large sums of money that were expended it soon became clear, however, that the development of curricula in itself did not guarantee that they would be used in classrooms.

As a result, one noticeable development was the emergence of a new curriculum language to describe important processes that were designed to assist teachers to use new curricula: dissemination, adoption, implementation, incorporation, continuation, etc. All of these processes had one theme in common; the recognition that curriculum development, if it is to be successful, must be followed up with strategies specifically designed to influence the potential users of the new curriculum product. This important aspect was recognised in the TAFEC funded project on curriculum development processes in TAFE when it recommended:

That studies be undertaken at the national level into the implementation phase of TAFE curriculum i.e. the processes used to translate given curriculum into a set of learning outcomes and that adequate resources be made available to effect such studies.

It was known from the literature that in the primary and secondary sectors of education, curriculum implementation was a highly personal, idiosyncratic process with teachers playing a major role in the interpretation of centrally produced curriculum documents. Thus the question of interest for the TAFE sector was whether similar characteristics also applied to TAFE teachers. In addition, there was also the question of the efficiency of processes that were used to assist teachers with new curricula. Results from studies with primary and secondary teachers indicated very poor success rates but little was known about TAFE teachers.

The information to be derived from a study of curriculum implementation in TAFE was seen to be relevant in three broad areas:
1. **POLICY RELEVANCE**

Staff development needs can be identified from studies of curriculum implementation. Data which indicate how teachers are actually using a curriculum allow TAFE Authorities to plan staff development programmes that will facilitate the desired operational form of the curriculum.

The curriculum development process can be informed by a knowledge of how potential users are likely to put the curriculum into operation. Front-end models of curriculum development may need to be revised in light of evidence about the actual use of curriculum.

Stronger links with the business community can be forged once TAFE can speak confidently about actual curriculum practices. Curriculum implementation studies would reveal what happens in TAFE classrooms and therefore allow criticisms to be countered and positive suggestions for improvement to be made.

2. **RELATIONSHIP TO OTHER RESEARCH ON THIS TOPIC**

A study of curriculum implementation in TAFE complements existing studies in two ways. First, it extends the work already carried out on curriculum development processes in TAFE. This is important because it enables the curriculum development process to be viewed holistically to include design, implementation and evaluation.

Second, it complements existing studies conducted in primary and secondary education sectors.

There is a belief that the results of those studies are generalisable but there is little empirical evidence to support such a belief. A study of curriculum implementation in TAFE goes some way to providing such evidence.

3. **NEW KNOWLEDGE GAINED**

At present, the vast majority of information relating to curriculum in TAFE is limited to the curriculum design process. Information gained concerning the way in which curriculum implementation is undertaken in TAFE and an assessment of its effectiveness provides valuable new knowledge concerning the TAFE curriculum process.

It was in this context that a study of curriculum implementation was undertaken in Western Australia from July 1983 to November 1984. The research team was based in the Faculty of Education at the Western Australian Institute of Technology and the project was conducted in co-operation with the Technical Education Division of the Western Australian Education Department. An Advisory Committee was set up consisting of representatives from the TAFE National Centre for Research and Development (Ms Charlotte Sandery), the Technical Education Division (Dr Bob Innes) and the research team of (Dr Kerry J Kennedy, Ms Catherine Patterson and Mr John Williamson).
The Broderick Report (1982) marked a significant phase in the history of curriculum development in TAFE. For the first time it was possible to view in an holistic manner the processes of occupational curriculum development as they operated in all Australian States. As Maling (1981) has pointed out, these processes were related to notions of systematic curriculum development espoused by educational technologists (Briggs, 1970) and systems theorists (Dick and Carey, 1978) rather than views of mainstream curriculum theorists such as Stenhouse (1975) and Schwab (1962). In this sense, occupational curriculum development in Australia has chosen to rely on the efficacy of curriculum design systems to create usable products.

The Broderick Report described such systems as they operated at the administrative levels of TAFE in each Australian State. The final recommendations highlighted the importance of carrying out studies related to the curriculum implementation process. This recommendation was supported by Hermann (1981) who cited the need to identify factors that would lead to the effective implementation of TAFE curricula. These suggestions recognise that a knowledge of curriculum design processes should be supplemented in order to understand the complete context of occupational curriculum development.

The purpose of this literature review, therefore, is to provide some indication of that context. In particular, it will examine the theoretical and conceptual issues related to curriculum implementation and review the methodological approaches that have been adopted.

Finally, it will indicate how the literature reviewed influenced the conduct of the present study. A wide range of studies will be referred to throughout the review. A more comprehensive treatment of the studies can be found in Kennedy, Williamson and Patterson (1984) which was published by the TAFE National Centre as the first phase of the present project.

Curriculum implementation: securing user compliance

The characterisation of occupational curriculum development as systems oriented taps only one dimension of the design process. A second dimension focuses on the actual location of curriculum development. Within the location dimension, occupational curriculum development can be generally described as external to the user. That is, curriculum is developed in a central location and disseminated for local use. In theoretical terms this approach has been described as the research, development and diffusion model (Havelock, 1971).

The R&D model has been used extensively and problems associated with it have been well documented (Stenhouse, 1975; MacDonald and Walker, 1976). In general, it has been argued that the most to be expected in using such a model is that the curriculum will be adopted by the intended users. A decision to adopt, however, cannot be equated with a decision to use the curriculum and, furthermore, it cannot be interpreted to mean that the adopted curriculum is in actual use. While the R&D components of the model ensure adherence to a systems oriented approach to curriculum development, developers have little control over their products once they are diffused into the user system.
Curriculum specialists have expended a great deal of time and energy in devising strategies to assist developers gain some control over the diffusion process so that their products will be used as they were intended. Communication theorists such as Rogers (1962), relying on an older tradition with its roots in rural sociology, seemed to provide an important clue by emphasising the importance of providing information to potential users concerning the product's main characteristics. The assumption was that the reception of such information would automatically lead to the appropriation of the new product on the part of users. Later writers such as Fullan (1972) also recognised the important role that users play, yet his emphasis differed. Whereas Rogers (1962) viewed the user as a passive receptor of information, Fullan (1982) was more inclined to see the user as an active decision maker. For him it was a matter of expanding the user's sense of efficacy over the environment and gradually expanding the user's role in the actual decision-making process.

The strategies suggested by the two writers are similar, in that they emphasise the role of the user; however, they are different in their views of the user: Rogers (1962) adopts a technological view while Fullan's view is more humanistically oriented. For both Rogers and Fullan, however, the aim is to secure the compliance of the user with the requirements of the innovation. This is done by the judicious selection of behavioural strategies where the actual strategies selected are determined as a result of how the user is viewed.

Some attention was paid to assessing the effectiveness of these strategies in a large scale investigation carried out by the Rand Corporation (Berman and McLaughlin, 1978). In general, it was shown that when the user was viewed in a technological perspective and strategies such as outside consultants, packaged management approaches and one-shot pre-implementation training were used, effective implementation could not be guaranteed. On the other hand, when more humanistic approaches were used, for example, involving the user in decision making, the level of implementation increased. The study indicated, however, that some kind of change to the received curriculum was almost inevitable: users seek to change the curriculum just as the curriculum itself seeks to change the behaviour of the user. This process was labelled 'mutual adaptation' and while it has been criticised recently (Crandall, 1983; Loucks, 1983) it provides an important conceptual framework for the study of implementation.

Curriculum implementation and user autonomy

The task of securing user compliance to the demands of an innovation has proven to be an extremely difficult one. Indeed, the emphasis on selecting effective strategies has probably masked the far deeper issue of user autonomy. Users are important not because they are amenable to change by a selected behavioural strategy, but because they are individuals who inevitably imprint their own ideas, values, beliefs and understandings on the received curriculum. The concept of 'mutual adaptation' highlighted this point and confirmed an already existing trend to focus curriculum research on actual practice, that is, on events that take place in schools and classrooms. This change in thinking about the nature of research interests gained impetus from a number of directions.

First, the curriculum reform movement of the 1950s and 1960s stimulated interest in the process of change. This was particularly so in the
5.

United States of America and, to a lesser extent, in Great Britain and Australia. Curriculum developers assumed that quality efforts in the design and dissemination of innovation would guarantee high use rates in schools. Seminal studies such as that of Fullan and Pomfret (1977), however, indicated that in many instances use rates for such products, at least in the USA, had been radically overestimated. In these studies it was evident that users had not succumbed to the 'glossy products' of external developers.

Second, the problem of low usage of new curricula was highlighted by curriculum evaluators (Charters and Jones, 1973; Evans and Sheffler, 1976). As Kritek (1976) pointed out:

Evaluator [came] to realise that programs [could] not be faulted for failing to achieve intended outcomes if, in fact, they [had] not been successfully implemented. (p.# 87)

By the late 1970s such a view was commonly held (Hall and Loucks, 1977; Leithwood and Montgomery, 1980). The importance of studying curriculum implementation not so much in terms of strategies to be used in the process of implementation, but as the actual use of an innovation was accepted as a logical necessity if accurate measures of student learning were to be obtained.

Since that time, the study of curriculum implementation as the study of actual use has emerged as a discrete area of interest for curriculum specialists. The need to look 'behind the classroom door', to tap the thoughts, ideas and feelings of teachers and students, to examine organisational procedures and constraints: all are viewed as important ways of providing key information about the characteristics of new programmes and curricula.

At the same time, attempts have been made to measure the degree of implementation in order to establish the relationship to student outcomes or staff development needs. It is not too much to assert that a curriculum implementation industry is in the process of being created - an industry focused on the actual practice and use of curricula.

As the importance of studying curriculum implementation has been recognised, the question of appropriate methodologies for such studies has also arisen. As with educational research in general, the literature provides no definitive answers, yet an exploration of the alternatives will assist in providing a rationale for the present study.

Curriculum implementation: measured or portrayed?

In adopting a methodology for the study of curriculum implementation it is important to distinguish between means and ends. For example, if the developer aims to ensure full implementation of the product, the purpose for the implementation study will be to gather information that will indicate the actual level of implementation being achieved. A knowledge of this level can be used to improve the degree of implementation so that it more closely resembles designer specifications. Viewed in this way, the study of implementation is a means to an end. It places emphasis on the fidelity of users in conforming to pre-specified goals.

Different methods have been suggested for measuring user fidelity in relation to an innovation. Hall and Loucks (1977) identified eight
levels of use describing the potential behaviour of users ranging from non-use of an innovation through to renewal. The Levels of Use (LOU) model uses a structured interview technique with users. The main characteristics of the innovation are pre-specified and the results of the interview enable actual use to be compared with ideal use. The results of such interviews can be used to conduct staff development programmes which aim to secure higher degrees of fidelity to the innovation's main characteristics.

Matrix sampling has been suggested as another approach to measuring implementation (Newfield, 1980). Newfield recommends that the recurring characteristics of a programme be generated so that they reflect the user behaviour while implementing the programme. This results in a large item domain requiring dichotomous responses that can be statistically analysed. Newfield supports the use of self-report techniques such as questionnaires and log sheets while acknowledging the limitations of these data-gathering instruments. The overall results of this technique would be relevant to a range of decision-making situations including programme refinements and staff development.

These are but two examples of measurement approaches to implementation. They share a common concern with ends rather than means, with a focus on developer intentions rather than user responses, and they rely on an assessment of the behavioural characteristics that users display or report in relation to the innovation. They rely heavily on self-reported data and quantitative approaches to the analysis of that data. These attempts to measure curriculum implementation are firmly rooted in the traditions of positivistic educational research.

As an alternative to the measurement of implementation, there have been attempts to portray it within a particular local context. This alternative methodology provides a description of the interaction of the innovation within its educational context. Attention is focused on understanding the reality of the situation and it is acknowledged that implementation has unlimited variations and these variations should be welcomed and encouraged. This approach is favoured by curriculum researchers who believe that it is undesirable and misleading to predetermine implementation. Rather, their intention is to provide explanations of the complexities of implementation, thus promoting greater understanding of curriculum change. In order to portray or describe the implementation, data are usually gathered by direct observation, unstructured interviews, questionnaires and document analysis. These different sources of data can be used to cross-check findings and establish the patterns of the study. It is the complex nature of the implementation process that is of most concern to persons seeking to portray rather than measure what has actually happened.

As evidence of the further influence evaluators have had on the study of implementation, the work of people such as Parlett and Hamilton (1977), MacDonald (1977) and Becher and Maclure (1978) has been important. The emphasis on contexts, on illumination and on the dynamics of the classroom process extended evaluation methodology to concentrate on actual practice rather than on predetermined outcomes. In portraying what actually happened, implementation studies evolved as an end in themselves rather than as a means to an end.
Implementation studies in this genre are few, yet a number have appeared as the product of academic study. Elliott (1980) attempted to portray the implementation of Social Education Materials Project (SEMP) materials across selected school sites in Victoria. Using ethnographic techniques, he was able to describe how the materials were actually being used in classrooms by teachers and students and compared that use with the developer's intended use. In a similar manner, Patterson (1982) reported on the Implementation of the Arthritis Education Programme in selected primary and secondary schools in Western Australia. Using direct observation and informal interviews, she prepared case studies of each teacher's use of the materials within their particular classroom settings. The purpose of both Elliott's and Patterson's studies was to provide a picture of what was happening in classrooms. The process of curriculum implementation was simply portrayed - a process analogous to a photograph which captured actual practice at one point in time.

The decision to use either a measurement or a portrayal approach to the study of implementation is determined to some extent by the intentions of the designers for their materials and the purposes for which the study is being conducted. In the end, however, it would seem that it is not just a simple matter of saying use 'approach X' or 'approach Y'. Clearly no single approach will provide all the answers. The research strategy which is able to combine the best of the quantitative and qualitative approaches described above, would provide the most useful data. This multi-methodological approach, we believe, will recommend itself to other researchers.

Curriculum Implementation: translation from the ideal to the formal

The bulk of curriculum implementation research has been concerned with the interaction of users, products and environments. Goodlad (1979), however, has raised another issue; to what extent do curriculum materials accurately represent the intentions of designers? He has distinguished between the ideal and the formal level of materials. The former represents the philosophical intentions of the designers, while the latter represents the actual materials that have been produced. A recent empirical study by Sabar (1983) has indicated that significant gaps can occur in the translation from the ideal to the formal. The importance of this finding is that when teachers make changes to materials they may not be disagreeing with the philosophical intentions of the designers, but with those intentions as they have been embodied in the materials themselves.

An example from some local materials will help explain this point. Both the designers and the promoters of the South Australian Multicultural Education Materials intended that they should be used to highlight the cross-cultural aspect of multicultural education. Yet reports from teachers show that this is rarely done. Instead, the materials are generally used to highlight single rather than multiple cultures. Does this represent a philosophical difference between teachers and designers leading them to change the thrust of the materials? Some information provided by one of the designers suggests this is not the case. In a personal communication it was indicated that the one area over which the design team had no control was the actual packaging of the materials. An examination of the way the materials were packaged indicated that the intentions of the designers had not been incorporated. Rather, the packaging itself suggested the utility of using the materials in a mono-cultural way since individual countries were packaged separately.
within the kit. While teachers' actions were congruent with the nature of the materials, the materials themselves were not congruent with the intentions of the designers.

In a sense, this represents yet another type of implementation problem that deserves further study. It raises the important question of the best sources of information concerning the main features of the innovation or practice under study. If the designers of the innovation are to provide the information, then some attempts should also be made to ensure that what the designers envisaged was actually translated into the format of the materials. This is particularly important with a discrete product such as a set of curriculum materials.

Directions for the study of curriculum implementation in TAFE

The literature reviewed here suggested two broad questions which needed to be answered:

What strategies are employed in TAFE to assist users understand and appreciate new products and ideas?

What is the role of the individual user in the TAFE system?

The research also indicated that there was evidence of 'methodological pluralism'. This suggested to the authors that a multi-methodological approach would be the most effective way of tapping the complexities of implementation. In practical terms, this meant that case study methods would be used in conjunction with measurement approaches.

The next section of this report will deal in more detail with the research methods used to seek answers to the above questions.
RESEARCH METHODS

Design of the study

Studies of curriculum implementation focus on the post-design activities of individuals and organisations involved in the implementation process. The emphasis is on portraying the events associated with the installation of educational programmes in institutional settings and gaining some measure of the extent to which those programmes are actually being used.

The literature reviewed in the previous section would suggest the usefulness of multi-methodological approaches for any systematic study of curriculum implementation. Case study methods were used in the present study to allow for the in-depth analysis of two particular attempts to implement curriculum innovation in TAFE in Western Australia. These methods were supplemented by the use of a standardised questionnaire. Details related to these methods will be discussed with reference to the specific innovations studied.

Sample

Two specific curriculum innovations were selected for study: a modular system of apprenticeship training in the Electrical Trades area and a pre-apprenticeship training course in the Plumbing area. The innovations were different in their scope (the modular course was designed to service a three-year apprenticeship in the electrical trades while the pre-apprenticeship course was one year in duration and was designed as a preparation for a three-year apprenticeship); the number of personnel involved (the modular course included all electrical trades lecturers with responsibilities for apprenticeship training while the pre-apprenticeship course was set up with selected staff on selected sites); the student population (the modular system was directed at students who had secured an apprenticeship while the pre-apprenticeship course was specifically designed for students who had not been able to secure an apprenticeship); the major source of funding (the modular system was largely funded from State finances while the pre-apprenticeship course relied heavily on Commonwealth Government funding); and the design and dissemination process that had been used (the electrical trades modular system was designed by Head Office staff and disseminated to college lecturers while the plumbing pre-apprenticeship course involved the lecturers in course design even though the decision to run the course was made centrally). It was felt that these differences would allow useful comparisons to be made across the two areas.

Procedures

The modular system in the Electrical Trades area

Unstructured interviews were conducted with the Electrical Trades staff of a single college site. The purpose of these interviews was to allow the interviewees to provide as much information as possible about their perceptions of the implementation processes that had accompanied the introduction of the modular system into the Electrical Trades area. At the same time, information was also collected concerning the interviewees' perceptions of the innovation itself.
Information collected from these interviews was then used in two ways. Firstly, it provided a framework in which further interviews were conducted with personnel labelled as 'key informants'. These were people who had been associated with the introduction of the innovation and who were able to provide information about the intended purposes of the innovation as well as the planned processes of implementation.

Secondly, a Stages of Concern (SoC) questionnaire (Hall, George and Rutherford, 1977) was administered to staff who had been involved in the initial unstructured interviews (see Appendix A). The purpose of the questionnaire was to validate the interview responses. At the same time the SoC questionnaire was also administered to Electrical Trades staff at two other college sites. The purpose of including a larger sample of college sites was to improve the generalisability of responses that had been gained from a single college site.

The usefulness of the SoC questionnaire has been demonstrated recently in the Australian context by Marsh (1983). It is a 35-item Likert scale instrument and its purpose is to indicate the concerns of innovation users as they progress with the implementation of an innovation. The SoC is based on the assumption that user concerns are developmental in nature and move from an exclusive emphasis on 'self' to concerns about the 'task' and eventually to concerns about the 'impact' of the innovation on students. These concerns have been described on a scale from 0 to 6 as shown in Figure 1 below:

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>REFOCUSING</td>
</tr>
<tr>
<td>5</td>
<td>COLLABORATION</td>
</tr>
<tr>
<td>4</td>
<td>CONSEQUENCE</td>
</tr>
<tr>
<td>3</td>
<td>MANAGEMENT</td>
</tr>
<tr>
<td>2</td>
<td>PERSONAL</td>
</tr>
<tr>
<td>1</td>
<td>INFORMATION</td>
</tr>
<tr>
<td>0</td>
<td>AWARENESS</td>
</tr>
</tbody>
</table>

From Marsh (1983) and based on Hall, George and Rutherford (1977).

Figure 1. Hypothesised Stages of Concern (SoC) for Innovation Users

**Plumbing pre-apprenticeship course**

A structured interview schedule (see Appendix B) based on the results of interviews that had been conducted with Electrical Trades staff was developed. This allowed for some comparison of interview responses to be made. The schedule was used with selected staff involved in the course (across three college sites). At the same time, staff were asked to complete SoC questionnaires. The use of the same instrument which had been used with the Electrical Trades staff again allowed for meaningful comparisons to be made.
I. THE MODULAR SYSTEM IN THE ELECTRICAL TRADES AREA

A. Interviews

1. Defining the innovation

   (1) The context of the innovation

   The impetus for curriculum change in the Electrical Trades area came from at least four main sources:

   a) A job analysis survey of the area conducted in 1977.

   b) A newly devised Technical Education Division policy which required the conversion of existing syllabus documents from topic statements to specific performance objectives.

   c) The attempts to establish reciprocity of licensing requirements for electricians across Australia.

   d) A projected shortage of electricians for the North West Shelf Project.

   Each of these elements influenced the final form that the innovation took. The job analysis survey indicated the need for a greater emphasis to be placed on practical aspects of apprenticeship training and for a closer relationship to be developed between theory and practice. The pressure from the Technical Education Division was for a specific format for curriculum statements to be followed. A comparison of licensing requirements across Australia had indicated that considerably less time was being devoted to the testing and assessment of apprentices in Western Australia than was the case in other States. The projected shortage of electricians led to the setting up of a Special Trade Training Scheme largely financed by the Commonwealth Government. This scheme was used to trial the development and implementation of a modular training system. Thus in any change to be made to existing electrical trades curricula, these four areas of concern had to be taken into consideration.

   As a result of such considerations, the decision was taken to adopt a modular system of training for Electrical Trades apprentices in Western Australia. It is important to understand, therefore, that the changes which took place in the Electrical Trades area over four years were in response to pressures external to the area rather than from a single theoretical perspective on curriculum organisation and delivery. There were theoretical dimensions to the changes but these dimensions did not dictate the form that the actual change took. Thus the modular system as it currently operates in the Electrical Trades area cannot be defined in terms of a simple model that might be found in a textbook. Rather, account needs to be taken of the specific components.
of the innovation as it has operated in Western Australia from 1981 to the present.

(ii) The components of the modular system in the Electrical Trades area

The components of an innovation are best thought of as the essential features or characteristics of the innovation. At the outset, it is important to note that two different types of components - those that we have called 'present' and 'future' - emerge from the data. These concepts are not typically found in the curriculum literature yet they appeared frequently in the discussions with the curriculum developers. They have considerable explanatory power when consideration is given to user reaction to the innovation in a later section of this report.

a) Present components of the innovation

Flexibility of design. Modules were designed as self-contained units of instruction. They could be sequenced in a variety of ways depending on the requirements of a particular course.

Specific performance objectives. Content was expressed in terms of specific performance objectives. These indicated the level of student achievement in topics and sub-topics.

Spiralling of topics. As the apprentice moves from stage to stage, topics are dealt with in more detail and with a greater degree of complexity. Initially, topics are introduced at a very simple level but these are built up on in later stages. In this way, topics are developed in a spiral manner moving from the simple to the complex and from the concrete to the abstract.

Criterion referenced testing. Criterion referenced testing was used at the end of each module to assess student performance and as a means of promoting student mastery of the topic.

Theory–practice nexus. Practical aspects of the course were emphasised and theory sessions were to be closely linked with practical sessions that would provide immediate demonstration/illustration for the theory.

b) Future components of the innovation

Self-paced learning. The introduction of a modular system for the Electrical Trades area was the first step in a move towards self-paced learning. The curriculum changes introduced in 1981, however, were not intended to be self-paced.

Mastery learning. The term 'mastery' appeared in many of the early documents and there was a real expectation that students should be able to demonstrate mastery of topics at the end of each module. Yet it was also realised that in the apprenticeship training the shortage of time was a constraint which made mastery learning a goal for the future rather than
the present. Thus, like self-paced learning mastery learning became associated with what the innovation might achieve for the future.

In summary, the modular system may be described as a flexibly designed course of apprenticeship training that has been broken down into self-contained units of instruction. Each unit contained sub-topics that are further broken down into specific performance objectives. Across the three-year apprenticeship, important topics reappear to be treated in greater depth. Student performance is tested at the end of each module by means of a criterion referenced objective test. While self-pacing and mastery learning are not features of the present innovation, it has been recognised that the innovation in its present form has the potential to embrace these concepts.

2. User response to the innovation

Unstructured interviews were conducted with staff from a single college site. They provided information about user response to the specific components of the innovation as well as to the actual process of implementation itself (i.e. the manner in which the innovation was introduced to the user system). Each set of responses will be discussed in turn.

(1) Responses to the specific components of the innovation

Criterion referenced testing. The general area of assessment and testing evoked the most comment from staff. This is perhaps understandable when it is realised that prior to the introduction of the modular system, assessment was based on a single end-of-year examination. With the modular system came an entirely new method of assessment based on regular testing and aimed at assessing specific skills related to the attainment of specific performance objectives. The problem areas included:

For many lecturers, the end-of-year examination represented the ideal form of assessment. It was one with which they were most familiar and they expressed confidence in it.

Objective tests with multiple choice answers did not meet the lecturers' expectations as a rigorous method of assessing student attainment. Objective tests were perceived as being easier than more traditional forms of testing. There were reservations that such testing could maintain the standard of tradespeople being produced by TAFE. Concerns were expressed that standards were dropping. Even though there was little evidence regarding the effectiveness of either method of assessment, there was strong support for the traditional method of an end-of-year examination.

Many lecturers had experienced an increase in the administrative load associated with the new assessment system. A single examination was replaced by a series of small tests that had to be marked at regular intervals. A
number of lecturers felt that no allowance had been made for this increased load, especially since other requirements of the modular system such as more emphasis on practical work also meant an increased work load.

In the view of some lecturers, students were not getting practice with important written communication skills, as written responses were no longer required and a tick indicated the correct response.

On the other hand, some lecturers suggested improvements that could be made in assessment processes. Several noted that questions on content from preceding modules could be included in later modules and others said that mid-year and end-of-year examinations could be reinstated along with testing at the end of each module. None of these suggestions was adopted by Head Office personnel and the suggestions remained as untested potential solutions to some of the perceived problems of the assessment system.

Spiralling of curriculum content. A number of lecturers expressed varying degrees of concern over the way specific content was spiralled across the three stages of the apprenticeship. At times they felt this resulted in topics not being dealt with in depth and consequently resulted in boredom for the students. Some stated that the most interesting material was in Stage 3 and this was a long time for a student to have to wait before learning important aspects of particular topics.

The issue of lecturer autonomy in deciding what should be taught and when it should be taught was also raised in this context. Some lecturers commented that they liked to go into detail on particular topics - especially those which dealt with subject matter that they felt was particularly important - yet with topics cut down into small segments they felt constrained.

Use of specific performance objectives. The use of specific performance objectives to guide selection of content was generally seen to be an improvement on the previous system which relied on topic statements to be filled out by lecturers. At the same time, however, there was some concern that the specific performance objectives were constraining in the same way as the spiralling of content. It was felt that the students were constantly getting small pieces of information about topics and at no time did they ever get a broader picture. At the same time there did not seem to be the opportunity to synthesise all the information they were getting.

Theory-practice nexus. All lecturers agreed that theory and practice should be closely linked. Many of them, however, referred to the difficulties they perceived were involved in gaining organisational support for the suggestions made in the curriculum documents. In the documents it was seen that the theory/practice component would be in the ratio of two-thirds to one-third. In reality, however, an equal amount of time was
often provided for both components since college timetables were constructed along lines that could not always take curriculum philosophy into account. There was meant to be provision for withdrawing students from practical sessions to talk with them briefly but there were no proper facilities for withdrawal of this kind in many colleges. This was particularly the case in the older colleges.

**Flexibility of design.** There were a small number of positive comments about the ease with which the modules could be re-sequenced and used in courses other than the apprenticeship training.

**Self-paced learning.** While it was generally agreed by the lecturers that in actual practice the modular system was group-paced rather than self-paced a number of lecturers were unclear as to whether the system was intended to be self-paced or not.

**Mastery learning.** The problems of promoting mastery when time was limited were commented upon by lecturers. The fact that time was limited was often blamed on the modular system itself. For many lecturers there was a real tension between a desire to produce tradespeople with the required necessary skills and the shortage of time in which to do so. While the whole format of the curriculum document suggested that students should be mastering specific skills and understandings, lecturers were very much aware that this was not always occurring in the limited time available.

In general, then, lecturers indicated a number of concerns they had about the specific components of the modular system. There was neither a sense of total opposition to the system nor outright rejection of it. There were, however, very clear professional concerns especially as regards the assessment and evaluation system that had been adopted, and of all the components this one evoked the most discussion and concern.

(11) **User response to the process of implementation**

Lecturers reported two main concerns in this area:

- A lack of staff development to accompany the introduction of the modular system.
- A lack of resources to assist with its implementation in the colleges.

These will be discussed in turn.

**Staff development.** There was a widely-held perception among those interviewed that there was little or no staff development to assist individual lecturers with the implementation of the modular system. At the same time there were recollections of end-of-year seminars where issues relating to the modular system were discussed. The overall impression of most lecturers was that it was rushed from the very beginning and consequently there was no time for specific staff development activities.
Resources and equipment. There was unanimous agreement that there were insufficient resources supplied to facilitate the implementation of the modular system. The increased emphasis on practical work called for new equipment and materials which were not always available in each college. In addition, the facilities available in the colleges often did not allow for an easy transition between theory and practice activities as envisaged by the modular system. Thus, important aspects of the innovation did not seem to receive support from the Technical Education Division as the larger organisational resource system. This was taken to be a disadvantage of the modular system itself since it meant that lecturers were in many cases unable to meet the demands of the innovation.

The unstructured interviews thus raised a number of issues that college staff saw as being important. The Stages of Concern Questionnaire (SoC) (Hall, George and Rutherford, 1977) was then administered to those who had provided the interview data as a means of validating the responses. It was also administered to Electrical Trades staff on two other sites in order to improve the generalisability of the results.

B. Stages of concern questionnaire

1. Site 1

Individual and group percentile scores for each dimension of the SoC questionnaire are shown in Table 1. A graphic representation of the mean scores is shown in Figure 2. A number of points can be made about these results.

There was considerable variability in responses as indicated by the size of the standard deviations from the mean scores for each dimension of the questionnaire. The mean scores alone tend to mask such variability but it is important to keep in mind that the individual lecturers on Site 1 provided a range of responses on each dimension of the questionnaire. This range indicates that when mean scores are taken to represent the dominant high and low stages of concern of the composite group they should be interpreted cautiously.

At Stage 0 (AWARENESS), the mean percentile score was 39.7 with a range of scores from 10.0 to 60.0. There were no scores that could be characterised as high (about the 75th percentile), with 44.4% of scores classified as low (below the 40th percentile) and 55.6% classified as medium (between the 40th and 75th percentile). The lack of high scores indicated that all those interviewed were significantly involved with the innovation while the low to medium scores indicated that individuals had concerns of varying intensity about the innovation. The exact nature of these concerns is indicated by individual scores on the other dimensions of the questionnaire.

At Stage 1 (INFORMATIONAL), the mean percentile score was 65.7 with a range of scores from 43.0 to 90.0. The mean score was the second lowest for any dimension (after Awareness). For no individual did the Stage 1 score represent the highest stage of concern and for only
TABLE 1

Individual and group

Stage of concern percentile scores for Site 1 (Electrical)
(n=9)

<table>
<thead>
<tr>
<th>Subject Number</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>29</td>
<td>51</td>
<td>96</td>
<td>85</td>
<td>86</td>
<td>93</td>
<td>99</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>43</td>
<td>70</td>
<td>88</td>
<td>54</td>
<td>44</td>
<td>94</td>
</tr>
<tr>
<td>3</td>
<td>46</td>
<td>80</td>
<td>80</td>
<td>39</td>
<td>82</td>
<td>95</td>
<td>52</td>
</tr>
<tr>
<td>4</td>
<td>53</td>
<td>90</td>
<td>92</td>
<td>52</td>
<td>96</td>
<td>36</td>
<td>84</td>
</tr>
<tr>
<td>5</td>
<td>60</td>
<td>45</td>
<td>35</td>
<td>27</td>
<td>66</td>
<td>55</td>
<td>42</td>
</tr>
<tr>
<td>6</td>
<td>46</td>
<td>45</td>
<td>87</td>
<td>60</td>
<td>33</td>
<td>64</td>
<td>20</td>
</tr>
<tr>
<td>7</td>
<td>23</td>
<td>48</td>
<td>70</td>
<td>73</td>
<td>59</td>
<td>91</td>
<td>99</td>
</tr>
<tr>
<td>8</td>
<td>53</td>
<td>72</td>
<td>85</td>
<td>88</td>
<td>63</td>
<td>80</td>
<td>84</td>
</tr>
<tr>
<td>9</td>
<td>10</td>
<td>90</td>
<td>96</td>
<td>56</td>
<td>66</td>
<td>76</td>
<td>87</td>
</tr>
</tbody>
</table>

Group profile (n=9)

<table>
<thead>
<tr>
<th></th>
<th>X</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39.7</td>
<td>62.7</td>
<td>79.0</td>
<td>63.1</td>
<td>67.2</td>
<td>70.4</td>
<td>73.4</td>
</tr>
<tr>
<td></td>
<td>16.3</td>
<td>20.1</td>
<td>19.2</td>
<td>22.0</td>
<td>18.8</td>
<td>21.9</td>
<td>28.4</td>
</tr>
</tbody>
</table>
Figure 2. Mean stage of concern percentile scores for Site 1 (Electrical)
one individual did it represent the second highest stage of concern. These results indicate that relative to other stages of concern, Stage 1 concerns were considered to be low.

At Stage 2 (PERSONAL), the mean percentile score was 79.0 with a range of scores from 35.0 to 96.0. The mean score was the highest for any dimension of the questionnaire. For 22.2% of lecturers the Stage 2 score represented the highest stage of concern while for 33.3% it represented the second highest stage of concern. These results indicated that relative to other stages of concerns, Stage 2 concerns can be taken to be high for this sample of Electrical Trades lecturers.

At Stage 3 (MANAGEMENT), the mean percentile score was 63.1 with a range of scores from 27.0 to 95.0. The mean score was the third lowest for any dimension of the questionnaire (after Awareness and Informational). For 11.1% of lecturers the Stage 3 score represented the highest stage of concern while for another 11.1% it represented the second highest stage of concern.

These results indicated that, relative to other stages of concern, Stage 3 concerns can be taken to be moderate.

At Stage 4 (CONSEQUENCE), the mean percentile score was 67.2 with a range of scores from 33.0 to 96.0. The mean score was the fourth highest for any dimension of the questionnaire. For 22.2% of lecturers the Stage 4 score represented the highest stage of concern while for another 11.1% it represented the second highest stage of concern. These results indicated that relative to other stages of concern, Stage 4 concerns can be taken to be moderate.

At Stage 5 (COLLABORATION), the mean percentile score was 70.4 with a range of scores from 36 to 95. The mean score was the third highest for any dimension of the questionnaire. For 11.1% of the lecturers the Stage 5 score represented the highest stage of concern while for another 22.5% it represented the second highest stage of concern. These results indicated that relative to other stages of concern, Stage 5 concerns can be taken to be moderate.

At Stage 6 (REFOCUSING), the mean percentile score was 73.4 with a range of scores from 20.0 to 99.0. The mean score was the second highest for any dimension of the questionnaire. For 33.3% of the lecturers Stage 6 concerns represented the highest stage of concern while it did not represent the second highest stage of concern for any of the lecturers. These results indicated that relative to other stages of concern, Stage 6 concerns can be taken to be moderate. Taken together, these results indicated that for a majority of lecturers on Site 1 Personal concerns were considered to be highest.

A description of these concerns is provided by Hall, George and Rutherford (1977):

The individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and her/his role with the innovation. This includes analysis of her/his role in relation to the reward structure of the organisation, decision making and consideration of potential
conflicts with existing structures and personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.

Uncertainty about the demands of the innovation was also reflected in the interviews and in particular in connection with the 'future' components of the innovation. While self pacing and mastery learning were not intended to be present components of the innovation, they were implicitly suggested in other components such as the use of specific performance objectives and the use of criterion referenced testing. Thus it should not seem surprising that Personal concerns should feature very strongly as lecturers attempted to work out for themselves exactly what was required. During this process they would also be trying to reconcile their personal views with organisational demands for the innovation. The interview data often suggested that there were conflicts between the views of individuals and the views of Head Office personnel. Again, this indicates why Personal concerns registered highly in this sample of lecturers.

Other concerns such as Management, Consequences and Collaboration were considered moderate. Since the stages of concern are seen as developmental in nature, it could be expected that while the current Personal concerns have current priority, they will eventually be replaced by those concerns that are presently shown as moderate.

In fact, these data do provide some support for the developmental nature of the concerns since Stage 1 concerns were considered low, Stage 2 concerns were considered high, while the remainder were considered moderate.

A final interpretation can be made from an examination of the Refocusing concerns. While Personal concerns remain high for this sample of lecturers, the second highest stage of concern is on Refocusing. Thus, there is no lack of ideas for resolving some of the concerns. This interpretation is supported by the interview data where a number of ideas was suggested for amending the system of criterion referenced testing. It may be that given organisational support these Personal concerns can be easily resolved.

2. Sites 2 and 3

Individual and mean percentile scores for each dimension of the SoC questionnaire for all lecturers on Sites 2 and 3 are shown in Tables 2 and 3 respectively. A graphic representation of the mean scores is shown in Figure 3. A number of points can be made about these results.

As with the responses from Site 1, there was considerable variability of responses among lecturers from Sites 2 and 3 as indicated by the uniformly large standard deviations from the mean scores on all dimensions of the SoC questionnaire. Thus, caution needs to be exercised when mean scores are taken to represent the dominant high and low Stages of Concern of the composite group.

At Stage 0 (AWARENESS), the mean percentile score for Site 2 was 31.6 (range, 10.0 to 46.0) while for Site 3 it was 41.0 (range, 10.0 to 66.0). These compare with a mean percentile score for Site 1 to 39.7
(range, 10.0 to 60.0). Stage 0 represented the highest stage of concern for 4.6% of lecturers and it represented the second highest stage of concern for another 4.6% of lecturers across the three sites. The lack of high Stage 0 concerns indicates that all lecturers across the sites were involved with the innovation. The low scores indicated that lecturers did have concerns about the innovation. The exact nature of these concerns is indicated by scores on the other dimensions of the questionnaire.

**TABLE 2**

Individual and group Stage of concern percentile scores for Site 2 (Electrical) (n=5)

<table>
<thead>
<tr>
<th>Subject Number</th>
<th>Stage of concern percentile scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>46</td>
</tr>
<tr>
<td>2</td>
<td>46</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>46</td>
</tr>
</tbody>
</table>

Group profile (n=5)

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>31.6</td>
<td>40.2</td>
<td>64.2</td>
<td>61.4</td>
<td>41.0</td>
<td>59.6</td>
<td>75.0</td>
</tr>
<tr>
<td>SD</td>
<td>19.7</td>
<td>28.4</td>
<td>29.7</td>
<td>28.6</td>
<td>17.8</td>
<td>16.3</td>
<td>25.5</td>
</tr>
</tbody>
</table>
TABLE 3

Individual and group Stage of concern percentile scores for Site 3 (Electrical) (n=8)

<table>
<thead>
<tr>
<th>Subject Number</th>
<th>Stage of concern percentile scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>23</td>
</tr>
<tr>
<td>2</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>66</td>
</tr>
<tr>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>53</td>
</tr>
<tr>
<td>6</td>
<td>46</td>
</tr>
<tr>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>8</td>
<td>60</td>
</tr>
</tbody>
</table>

Group profile (n=8)

| x    | 41.0 | 47.3 | 68.5 | 58.5 | 58.6 | 72.8 | 66.8 |
| SD   | 23.2 | 10.4 | 29.7 | 27.8 | 27.0 | 29.6 | 24.7 |
Figure 3. Mean stage of concern percentile scores for Sites 2 and 3 (Electrical)
At Stage 1 (INFORMATIONAL), the mean percentile score for Site 2 was 40.01 (range, 5.0 to 69.0) while for Site 3 it was 47.3 (range, 40.0 to 72.0). These compare with a mean percentile score for Site 1 of 62.7 (range, 43.0 to 90.0). Across all sites, the Stage 1 score was the lowest for any dimension apart from Stage 0. The Stage 1 score did not represent the highest stage of concern for any lecturer on any site and it represented the second highest stage of concern for 13.6% of lecturers across the three sites. These results indicate that the concerns of lecturers for information about the innovation were low relative to their other concerns.

At Stage 2 (PERSONAL), the mean percentile score for Site 2 was 64.2 (range, 21.0 to 91.0) while for Site 3 it was 68.5 (range, 5.0 to 91.0). These compare with a mean percentile score for Site 1 to 79.0 (range, 35.0 to 96.0). On Site 1, the Stage 2 score was the highest for any dimension of the questionnaire while for Sites 2 and 3 it was the second highest. The Stage 2 scores represented the highest stage of concern for 36.4% of the lecturers and it represented the second highest stage of concern for 18.2%. These results indicate that the personal concerns of the lecturers about the demands of the innovation were relatively high compared with their other concerns.

At Stage 3 (MANAGEMENT), the mean percentile score for Site 2 was 61.4 (range, 34.0 to 99.0) while for Site 3 it was 58.5 (range, 7.0 to 88.0). These compare with a mean percentile score for Site 1 of 63.1 (range, 27.0 to 88.0). On Sites 1 and 3, the Stage 3 score was ranked fifth highest while on Site 2 it was ranked third highest.

The Stage 3 scores represented the highest stage of concern for 9.1% of all lecturers across sites and the second highest stage of concern for a further 9.1%. These results indicated that management concerns about the innovation were generally low compared with other concerns.

At Stage 4 (CONSEQUENCES), the mean percentile score for Site 2 was 41.0 (range, 19.0 to 59.0) while for Site 3 it was 58.6 (range, 27.0 to 92.0). This compared with a mean percentile score for Site 1 of 67.2 (range, 33.0 to 96.0). On Sites 1 and 3, the Stage 4 scores were ranked fourth highest while on Site 2 it was ranked fifth. The Stage 4 scores represented the highest stage of concern for 13.6% of lecturers across sites and the second highest stage of concern for another 9.1%. These results indicated that concerns about the impact of the innovation on students were generally low compared with other concerns.

At Stage 5 (COLLABORATION), the mean percentile score for Site 2 was 59.6 (range, 36.0 to 80.0) while for Site 3 it was 72.8 (range, 10.0 to 98.0). This compared with a mean percentile score for Site 1 of 70.4 (range, 44.0 to 95.0). On Site 1 the Stage 5 score was ranked third highest, on Site 2 it was ranked fourth and on Site 3 it ranked highest. The Stage 5 scores represented the highest stage of concern for 9.1% of lecturers across sites while for another 27.3% they represented the second highest stage of concern. These results indicated that concerns about collaboration amongst lecturers were generally low compared with their other concerns.
At Stage 6 (REFOCUSING), the mean percentile score for Site 2 was 75.0 (range, 40.0 to 97.0) while for Site 3 it was 66.8 (range, 22 to 92). This compared with a mean percentile score for Site 1 of 73.4 (range, 20.0 to 99.0). On Site 2, the Stage 6 score ranked highest, while on Sites 1 and 3 it ranked second and third respectively. The Stage 6 scores represented the highest stage of concern for 27.3% of lecturers across sites and for a further 18.2% they represented the second highest stage of concern. These results indicated that there were concerns about possible changes that could be made to the innovation and that these were moderate compared with other concerns faced by the lecturers.

The general pattern that emerged from this cross-site analysis was one of general agreement at least about the ranking of concerns and about those concerns that were uppermost in the minds of the lecturers. There was not perfect agreement as indicated in Table 4.

**TABLE 4**

| Rank Order Correlation of Mean Percentile Scores Across Sites |
|-----------------|-----|-----|-----|
| Site            | 1   | 2   | 3   |
| Site 1          |     | .77 | .83 |
| Site 2          | .62 |

The rank order correlations range from .62 to .83, yet the general trends in the data are useful for trying to gain a total picture of responses and attitudes to the modular system. Nevertheless, if specific interventions were to be designed to overcome these concerns it would be necessary to pay closer attention to the unique characteristics of each site. For example, while the personal concerns of lecturers about the demands of the innovation are generally high for the total sample, they do not represent the highest concerns for those lecturers on Site 3. On this site, it is concerns about co-operation with other lecturers that are identified as being most important. It is important to be aware of such specific features within the general pattern, so that particular action can be planned for them.

The agreements obtained in the cross-site analysis of the SoC data suggest that lecturers on Sites 2 and 3 may well share the specific views of lecturers on Site 1 concerning the modular system. The generally high level of Personal concerns shared by the lecturers across sites suggests that the demands of the innovation are not well specified. At the same time, the level of refocusing concerns suggests that there are plenty of ideas about possible changes that could be made. These two areas of concern would need to be addressed in any future evaluation of the modular system. The views expressed by lecturers on Site 1 would act as an important guide to specific issues. Additional interview data would also serve to highlight specific uncertainties and possible remedies.
II THE PLUMBING PRE-APPRENTICESHIP COURSE

A. Interviews

1. DEFINING THE INNOVATION

   (1) The context of the innovation

   The context in which the plumbing pre-apprenticeship courses were developed has been described by Juracich and Brand (1984). They identified the following ten problems as adversely affecting the original plumbing pre-apprenticeship course which had been set up in 1972.

   a) Reduced work content caused by the poor economic climate and by technological change which caused new materials/joints/methods, new plumbing codes and changes to regulations.

   b) Price cutting which tended to benefit the community but adversely affected the plumbing industry.

   c) Poor workmanship - resulting in poor public image.

   d) Specialisation within industry resulted in employers being unable to provide industry-wide training.

   e) New products and information on 'Do it Yourself Plumbing' resulted in less work for qualified plumbers.

   f) Breakdown of effective communication between water authorities, inspectors and business operators, especially with regard to inspection for adherence to regulations.

   g) The lack of an industry voice in 1980-82 due to few Plumbing Trade Advisory Committee Meetings being held.

   h) Responsibility for training moving from the employer to the public sector with all of its concomitant problems.

   i) Disillusionment with the pre-apprenticeship programme resulting in the employer organisation demanding modifications.

   j) A low priority for the allocation of resources to the plumbing sector in TAFE colleges.

   These conditions led the Master Plumbers and Mechanical Services Association to prepare, in December 1981, a submission to the Department of Employment and Training. Two of the recommendations contained in this submission were:

   a) to revise the plumbing apprentice 'off-the-job' syllabus.

   b) to set up a new pre-apprenticeship course in plumbing on the basis of 20 weeks in TAFE, interspersed with 16 weeks of work experience in industry.
In June 1982, the TAFE Plumbing Advisory Committee formed a sub-committee to take these recommendations into account and to review training at both pre-apprenticeship and apprenticeship level. The result was the establishment of a new pre-apprenticeship programme along the following lines:

a) a 40 hour per week education/training programme for 36 weeks;

b) an increase in the number of basic skills to be taught within the pre-apprenticeship course in each case integrating skill and theory;

c) work experience was to be an integral component;

d) there was to be a reduction in the terms of indenture from four to three years;

e) resources in colleges were to be upgraded to match those required by the new syllabuses.

The task of translating these guidelines into curriculum was not an easy one, as Juracich and Brand (1984) commented:

It was in [an] atmosphere of doubt and concern that the new pre-apprenticeship began to develop. A tremendous amount of time and energy was spent persuading opponents to give the course a chance by reserving their opposition and by assisting to overcome some of the obvious problems.


(11) The components of the Plumbing pre-apprenticeship course theory-practice nexus. The pre-apprenticeship course had to demonstrate a close relationship between theory and practice. The course was modularised with each module being based on tasks performed by tradespeople. The modules were reinforced by site-simulated work that was able to be completed on-site at each college.

Co-operation between industry and education representatives. A management committee consisting of representatives from employers, unions and TAFE was established. It had responsibility for placing students on work experience, facilitating parent/child evenings and evaluating the programme.

Broad-based on-the-job industry experience. During the course of training, students were placed with employers who were able to provide training commensurate with the level of training in TAFE. In this way students gained experience from a realistic work environment and were able to compare environments by being placed with different employers on different occasions.

Ongoing course evaluation. Progressive evaluation of the course was seen to be important to ensure that the needs of all parties involved – students, employers, parents and teachers – were being met. Evaluation included both student assessment as well as general course evaluation.
2. **User response to the innovation**

Structured interviews were conducted with a number of staff from each of the three college sites involved with the innovation. They provided information about user responses to the specific components of the innovation as well as to the process of implementation itself. Each set of responses will be discussed in turn.

(1) **Responses to the specific components of the innovation**

**Theory-practice nexus.** This component of the innovation was the most discussed by all staff interviewed. For the majority of staff, it represented the most significant aspect of the innovation. It was recognised that modularisation and site-simulated work were essential features of this component. All staff agreed with the emphasis on the practical component of the pre-apprenticeship and that it was successful in producing students with basic plumbing skills. Some reservations were expressed concerning the relative advantages for students of doing a course such as this, that is, dedicated to a single trade rather than a course that concentrated on a family of trades. Yet even when such a reservation was expressed it was in the context of explaining the perceived success of the practical emphasis in the present course.

**Co-operation between industry and educational representatives.** This component was not commented upon at great length by any of the users. Most comments referred to the general usefulness of having good relationships with industry and the unique role played by the Management Committee in the present project. The sample of users interviewed did not perceive that the Committee had a great deal of impact on their day-to-day teaching but rather had an impact with employers and TAFE.

**Broad based on-the-job industry experience.** The work experience component of the innovation was seen to be an important element and, because lecturers were involved in student supervision while the students were on work experience, the lecturers were able to assess its usefulness. Some problems had emerged which related to employers who were unable to provide students with a range of activities during the work experience period. In particular, there was the problem of students being allocated heavy manual jobs for the entire work experience period. It was felt that these problems could be solved with a minimum effort as experience would indicate the best employers with whom to place students.

**Progressive ongoing evaluation.** For all lecturers, this was an entirely new way of running a course. They were involved in sessions where student feedback on the course was given and in which their own reactions were also sought. In addition, evaluation days had been held for all staff participating in the course. Reactions to these processes were mixed and while some saw value in them they also were critical of the amount of time being devoted to evaluation.

Some felt such time could often have been better used if it had been more closely related to students' needs. Other lecturers,
however, could see little value in the evaluation sessions at all.

(ii) User response to the process of implementation

Three main problems were perceived relating to the implementation process:

a) Lack of lead time before the innovation was introduced. If more lead time had been provided it would have meant that there was no rush to develop materials (which has to take place in the first stages of course implementation).

b) Lack of resources to accompany the innovation. This problem was felt more acutely by those colleges that were not set up for site-simulated work. This was an initial problem and at the time of interview it seem to have been generally resolved on all sites.

c) Lack of staff development. There was a strong feeling on the part of most lecturers that there had been no real staff development to accompany the introduction of the innovation. Even though lecturers had been especially selected to be involved in the course, a number felt that some initial training would have been useful.

An important aspect of the implementation process was the extent of lecturer involvement in the process of developing the instructional modules. This occurred as the course was being implemented. As the modules were taught they were revised and refined. Evaluation sessions were conducted to obtain input from all lecturing staff. Essentially, teams of staff on each site were responsible for developing the modules. While it does not seem that this was designed as a staff development exercise, it has nevertheless served that purpose.

In summary, it seems that the Plumbing pre-apprenticeship course has been well accepted by the lecturers involved and has engendered a considerable degree of support.

While there are some reservations about the role progressive evaluation should play, this is not the case with the other components of the course. These latter components are all accepted as important and there was a high degree of commitment to them. Even though some deficiencies were highlighted in the process of implementation, these were not perceived to be significant barriers to successful implementation. At the same time, the role of lecturers in preparing modules of instruction has played an important, if unintended, staff development function.

B. Stages of concern questionnaire: all sites

The stages of concern (SoC) questionnaire (Hall, George and Rutherford, 1977) was administered to all staff who had been involved in the interviews on each college site. Individual and group percentile scores for each dimension of the SoC questionnaire are
shown in Table 5. A graphic representation of mean percentile scores for each site is shown in Figure 4. A number of points can be made about these results.

There was considerable variability in responses as indicated by the size of the standard deviations from the mean scores. This is the case for each site as well as for the sample as a whole. Since the following discussion will be based on mean scores some caution must be exercised since they tend to mask the variability both between sites and within sites.

**TABLE 5**

<table>
<thead>
<tr>
<th>Site</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>10</td>
<td>19</td>
<td>17</td>
<td>2</td>
<td>19</td>
<td>44</td>
</tr>
<tr>
<td>(n-2)</td>
<td>37</td>
<td>43</td>
<td>21</td>
<td>56</td>
<td>43</td>
<td>5</td>
</tr>
<tr>
<td>X</td>
<td>23.5</td>
<td>31.0</td>
<td>19.0</td>
<td>29.0</td>
<td>31.0</td>
<td>24.5</td>
</tr>
<tr>
<td>SD</td>
<td>19.1</td>
<td>17.0</td>
<td>2.8</td>
<td>38.2</td>
<td>17.0</td>
<td>27.6</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>34</td>
<td>52</td>
<td>39</td>
<td>82</td>
<td>84</td>
</tr>
<tr>
<td>(n-2)</td>
<td>53</td>
<td>19</td>
<td>14</td>
<td>18</td>
<td>82</td>
<td>72</td>
</tr>
<tr>
<td>X</td>
<td>31.5</td>
<td>26.5</td>
<td>33.0</td>
<td>28.5</td>
<td>82.0</td>
<td>78.0</td>
</tr>
<tr>
<td>SD</td>
<td>30.4</td>
<td>10.6</td>
<td>26.9</td>
<td>14.9</td>
<td>0.0</td>
<td>8.5</td>
</tr>
<tr>
<td>3</td>
<td>29</td>
<td>72</td>
<td>63</td>
<td>80</td>
<td>90</td>
<td>84</td>
</tr>
<tr>
<td>(n=1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

At Stage 0 (AWARENESS), the mean percentile score was 27.8 with a range of scores from 10.0 to 53.0. There were no scores that could be characterised as high (above the 75th percentile), with 80% of scores classified as low (below the 40th percentile) and 20% classified as medium (between the 40th and 75th percentile). The lack of high scores indicated that all lecturers interviewed were significantly involved with the innovation while the low to medium concerns indicated that individuals had concerns of varying intensity about the innovation. The exact nature of these concerns is indicated by scores on the other dimensions of the questionnaire.
Figure 4. Mean stage of concern percentile scores for Sites 1 to 3 (Plumbing)
At Stage 1 (INFORMATIONAL), the mean percentile score was 37.4 with a range of scores from 19.0 to 72.0. The mean score was the third lowest for any dimension. For no individual did the Stage 1 score represent either the highest or second highest stage of concern. These results indicate that, relative to other stages of concern, Stage 1 concerns could be considered to be low.

At Stage 2 (PERSONAL), the mean percentile score was 33.4 with a range of scores from 14.0 to 63.0. The mean score was the second lowest for any dimension. For no individual did the Stage 2 score represent either the highest or second highest stage of concern. These results indicate that, relative to other stages of concern, Stage 2 concerns could be considered to be low.

At Stage 3 (MANAGEMENT), the mean percentile score was 38.6 with a range of scores from 2.0 to 80.0. The mean score was the fourth lowest for any dimension. For one individual, the Stage 3 score represented the highest stage of concern but it did not represent the second highest stage of concern for any individual. These results indicate that for 80% of the sample, Stage 3 concerns were considered low, relative to other concerns.

At Stage 4 (CONSEQUENCES), the mean percentile score was 63.2 with a range of scores from 19.0 to 90.0. The mean score was the highest for any dimension of the questionnaire. For three individuals, the Stage 4 score represented the highest stage of concern. For one other individual it represented the second highest stage of concern. These results indicate that for four of the five lecturers in the study, Stage 4 concerns were considered high, relative to other concerns.

At Stage 5 (COLLABORATION), the mean percentile score was 57.8 with a range of scores from 5.0 to 84.0. The mean score was the second highest for any dimension of the questionnaire. For no individual did Stage 5 concerns represent the highest stage of concern but for four of the lecturers they represented the second highest stage of concern. These results indicate that Stage 5 concerns were considered to be moderate, relative to other stages of concern.

At Stage 6 (REFOCUSING), the mean percentile score was 31.4 with a range of scores from 38.0 to 69.0. The mean score was third highest for any dimension of the questionnaire. For one individual Stage 6 concerns represented the highest stage of concern but it did not represent the second highest stage of concern for any individual. These results indicate that, relative to other concerns, Stage 6 concerns were low for four of the five lecturers.

Taken together, these results indicated that concerns about the consequences of the innovation for students were considered to be highest. A description of these concerns is provided by Hall, George and Rutherford (1977):

Attention focuses on the impact of the innovation on students in their immediate sphere of influence. The focus is on the relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.
Since the purpose of the innovation is to equip students with basic plumbing skills which will allow them to contribute in a real working environment this concern is understandable. Indeed, it is possible to view the innovation as one that concentrates on developing practical skills almost to the exclusion of theory. Thus, student performance is constantly being measured, whether through the modules or site-simulated work. In a real sense, the innovation is student oriented so that lecturer concerns would seem to be addressing a crucial aspect of the innovation's operation.

The second highest concern is in the area of collaboration. Hall, George and Rutherford (1977) note:

The focus is on co-ordination and co-operation with others regarding use of the innovation.

Considering the use of teams on each site and the extensive use made of evaluation, these concerns can be understood. This is especially the case if there exists some doubt as to the usefulness of the group processes that are currently being used.

Other concerns can be interpreted in the context of the first and second highest concerns described above. Stage 0 (AWARENESS) concerns were low to medium indicating that all lecturers interviewed were currently using the innovation and were familiar with it. Low scores for Stages 1 (INFORMATIONAL), 2 (PERSONAL) and 3 (MANAGEMENT) are consistent with the hypothesised developmental nature of concerns since the highest concerns came at Stage 4 (CONSEQUENCES). These results indicate that the majority of lecturers had resolved any problems about the personal demands of the innovation and had satisfactorily worked out ways to manage it on a day-to-day basis. Thus, their attention was able to be focused on the needs of students and in working out ways in which the innovation could have the most effective impact on students. Alongside these were Stage 5 (COLLABORATION) concerns, and this would seem to reflect the organisational arrangements of the project that highlighted group processes and decision making. In the interviews, a number of lecturers had indicated some uneasiness about the evaluation component of the course that relied heavily on these processes. Thus, it seems that there was a recognition on the part of lecturers that collaboration and co-ordination were important aspects of the innovation and that attempts should be made to ensure that they worked effectively. The lack of Stage 6 (REFOCUSING) concerns indicated that the majority of lecturers were not yet at the stage of reformulating the current innovation. They were still concerned about ensuring that the innovation in its present form was working for the benefit of students.

A final point to note in relation to this innovation is that while this interpretation of the results applies to the majority of these lecturers involved, it does not apply to all. For one lecturer, Stage 3 (MANAGEMENT) concerns were highest and for another Stage 6 (REFOCUSING) concerns were highest. These results support the point made by Hall, George and Rutherford (1977) that individuals are likely to proceed through the stages of concern at varying rates and thus any remedial action in the form of providing staff development must take individual rather than mean scores into consideration.
Comparing the results of implementing innovation in the Electrical and Plumbing areas

One way to obtain a direct comparison of the results from the implementation of innovation in the two areas was to compare the results obtained from lecturer responses to the SoC questionnaire. In Figure 5 a comparison of mean percentile scores has been made using a single mean score for each dimension of the questionnaire. These means were derived by averaging individual responses from all sites and treating the result as the mean score for the innovation. Table 6 shows a comparison of the frequency of highest and second highest stages of concern for the two innovations. A number of points can be made about these results.

The highest mean score for the innovation in the Electrical area was for Stage 6 (REFOCUSING) concerns with the second highest mean score being for Stage 2 (PERSONAL) concerns. This compares with the highest mean score in the Plumbing area for Stage 4 (CONSEQUENCES) and the second highest mean score for Stage 5 (COLLABORATION) concerns. In developmental terms then, it would seem that lecturers in the Plumbing area had resolved many of the problems that still confront those in the Electrical area. Whereas the latter were still concerned about the demands of the innovation, the former are now able to concentrate on making changes to the innovation that would improve its impact on students.

This interpretation would seem to be supported by the results shown in Table 6, where 36.4% of the total sample of lecturers in the Electrical area indicated that Stage 2 (PERSONAL) concerns were the highest while a further 27.3% indicated that Stage 6 (REFOCUSING) concerns were highest. These concerns were reinforced with 18.2% of

<table>
<thead>
<tr>
<th>TABLE 6</th>
<th>Comparison of the frequency of highest and second highest stages of concern for innovations in the Electrical and Plumbing areas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage of concern</td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 0 1 2 3 4 5 6</td>
<td></td>
</tr>
<tr>
<td>Highest</td>
<td>Second Highest</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Electrical area (n = 22)</td>
<td>4.6 0.0 36.4 9.1 13.6 9.1 27.3 4.6 13.6 18.4 4.6 9.2 27.6 18.4</td>
</tr>
<tr>
<td>Plumbing area (n = 5)</td>
<td>0.0 0.0 0.0 0.0 20 60 0.0 20 0.0 0.0 0.0 20 80 0.0</td>
</tr>
</tbody>
</table>
Figure 5. Comparison of mean stage of concern percentile scores for innovations in the Electrical and Plumbing areas.
the sample indicating that Stage 2 (PERSONAL) concerns represented their second highest concerns. In the Plumbing area, 60% of the sample indicated that their highest stage of concern was Stage 4 (CONSEQUENCES) and 80% indicated that their second highest stage of concern was Stage 5 (COLLABORATION).

These results raise the question concerning why the innovations in the two areas have produced different concerns for the lecturers involved. Since, developmentally, the lecturers in the Plumbing area seem to have overcome many of their problems relating to the nature of the innovation, it would be of some interest to know how this was achieved and why it has not been achieved in the Electrical area. These and other issues will be taken up in the final section of this report which will explore the implications of the results of this study for understanding the process of curriculum implementation in TAFE.
DISCUSSION AND CONCLUSIONS

Since the present study was concerned with the implementation of two specific innovations in two study areas in TAFE in Western Australia, it would be inappropriate to make unrealistic claims concerning the generalisability of the results. Yet, important lessons can be learnt from studying discrete innovations especially where attention has been paid to the context in which the innovations have operated. This section of the report, therefore, will highlight those aspects of the present study that have the potential to provide important information about implementation processes in TAFE.

1. Explaining the outcomes of different approaches to implementation

An important finding of this study was related to the results obtained from using the stages of concern (SoC) questionnaire (Hall, George and Rutherford, 1977) to assess user concerns about the innovations in the two study areas. For lecturers in the Electrical area, concerns focused predominantly on the demands of the innovation on individuals and on changing the innovation, whereas for lecturers in the Plumbing area concerns were focused on increasing the impact of the innovation on students and finding effective ways to work as a group. In terms of the developmental rationale behind the SoC questionnaire, these results indicated that the Plumbing staff had overcome many of the problems that still worried staff in the Electrical area and because of this the Plumbing staff were now able to concentrate on the needs of their students rather than on their own needs. An explanation of these results should assist in clarifying and understanding implementation processes in TAFE.

Fullan and Pomfret (1977) have suggested the following four sets of factors that might be considered as the major determinants of successful implementation. An examination of these factors in relation to the two innovations in the present study may suggest why, for one of the innovations, users did not move beyond concerns focused on their own needs, while for the other innovation, users were able to focus their attention on the needs of students.

The two innovations in the present study can be analysed in terms of these factors.

A. CHARACTERISTICS OF THE INNOVATION
   1. Explicitness (what, who, how)
   2. Complexity

B. STRATEGIES
   1. Inservice training
   2. Resource support
   3. Feedback mechanisms
   4. Participation

C. CHARACTERISTICS OF THE ADOPTING UNIT
   1. Adoption process
   2. Organisational climate
   3. Environmental support
   4. Political complexity

D. CHARACTERISTICS OF THE MACRO-SOCIOPOLITICAL UNITS
A. Characteristics of the innovations

It was clear that the Plumbing pre-apprenticeship course was much more clearly defined, that is, explicit, in the minds of users than was the Electrical apprenticeship course. This was highlighted by the need to include 'future' components when describing the essential features of the innovation in the Electrical area. For many users in the Electrical area it was unclear as to whether 'self-pacing' and 'mastery learning' were really meant to be features of the innovation. Such confusion can lead to frustration for users as they attempt to define for themselves what the innovation is and what its demands are for them. A further problem had to do with the perceptions of the innovation held by designers and users. The former had very clear ideas about the main features of the innovation and they were unaware of the problems of users. The issue, therefore, becomes one of differing perceptions regarding the innovation and it would seem to be an important one to overcome.

The question of degree of complexity of the innovations is not quite as difficult to resolve as is the issue of explicitness. The Plumbing pre-apprenticeship course was more complex than the modular system in the Electrical area. The latter was basically an instructional innovation that did not drastically alter the apprenticeship training system. The Plumbing course was an attempt to provide a greater proportion of 'front-end' training, which was intended to influence the existing mode of apprenticeship education. Yet complexity may go further than the actual components of the innovation.

It may be, as Rogers and Shoemaker (1971) have suggested, that degree of complexity is measured by the perceived complexities of the innovation in the minds of the users. If this is the case, then the innovation in the Electrical area would be ranked as more complex than the one in the Plumbing area. The interviews indicated that users saw considerable problems with such issues as student evaluation and successfully integrating theory and practice, and these were features of the innovation that required new skills and new practices for users. It does not seem that such problems arose in the Plumbing area, or if they did they had been overcome by the time of the study. As Fullan and Pomfret (1977) point out, however, there is probably some relationship between complexity and explicitness so that those innovations that are explicit should not create significant problems for users.

B. Strategies

Specific inservice training was not a feature associated with either innovation, at least in the minds of the users. In addition, both groups of staff felt that more resource support could have been provided, although comments from the Electrical area were much stronger on this point. Limited attempts at providing feedback mechanisms had been provided in the Electrical area while in the Plumbing area such mechanisms were built into the innovation through evaluation sessions. Participation was a key feature of the innovation in the Plumbing area where users actually designed, implemented and evaluated the training modules and were involved in general course evaluation. In the Electrical area, users were involved only as implementers.
C. Characteristics of the adopting unit

In the Electrical area, users adopted the modular system of training for apprentices because the decision had been made by a central authority that such would be the case. In the Plumbing area, users were especially selected to be involved and it seems that selection was on the basis of their potential to meet the objectives of the new course. Little is known about the effects of such involvement on subsequent implementation but even the operation of a 'Hawthorne effect' might influence those users who had been chosen. These conditions, however, may well affect the organisational climate of the adopting units. It could be hypothesised that the climate of sites that had been especially selected would be more favourable to implementation than that of sites which had the adoption decision forced upon them from a central authority. This might especially be the case where additional funds accompanied the innovation as in the Plumbing area.

The two innovations were implemented by different staff on different sites with different student populations. Fullan and Pomfret (1977) have suggested that factors such as social class, urban differences, role expectations for different students and teacher capacity to implement may have an important part to play in successful implementation. Yet very little is known about the impact of these factors. Suffice to say that, in terms of the present study, these factors may have influenced outcomes in a manner that has yet to be understood.

D. Characteristics of macro-sociopolitical units

The political context of innovation is always an important factor to take into consideration. The innovation in the Plumbing area had a much larger political constituency than did that in the Electrical area. The former was involved with Commonwealth Government initiatives in apprenticeship training, employer groups and a State Government department. The latter was largely a local initiative, although a number of external influences operated in stimulating the change effort. The complexity of the political context and its influence on subsequent implementation is difficult to untangle, yet it is important to be aware of it. For example, in the Electrical area, final reporting was done to the local authority responsible for making the initial adoption decision; whereas, in the Plumbing area, reporting was done to a much more broadly based group some of whom had been personally involved in the innovation. While such contexts may well play an important role in implementation, it is uncertain at this stage exactly what that role is or how it influences implementation.

Two main points can be made as a result of the above analysis. First, the processes of implementation are so complex that at present it is impossible to attribute cause and effect. Second, any attempt to explain these processes must be considered as a preliminary interpretation, subject to further empirical study. Within these constraints, the following comments can be made.

The three factors that emerge as being particularly significant in the present study have to do with explicitness of the innovation,
feedback mechanisms, and participation. The innovation in the Plumbing area could be rated very high on these factors while that in the Electrical area rated low. Thus a tentative interpretation of the results might indicate that if users are to move from their own personal concerns about the innovation to being concerned with the impact of the innovation on students, then implementation processes have to ensure that the main features of the innovation are well specified, mechanisms are provided for feedback to all participants including administrators, lecturers, students and parents, and provision is made for active and meaningful user participation in decision making, either at the adoption stage or during initial implementation. These processes have been identified as being important by Fullan and Pomfret (1977) as a result of their review of the literature. The present study highlights them because they represent a clear demarcation between the two innovations studies and hence point to a possible explanation for the advanced SoC developmental stage reached by users in the Plumbing area.

The point should be stressed again that this interpretation is tentative only and needs to be subjected to further empirical testing. As Berman (1981) has commented, there has been a tendency in studies of educational change to confuse variance studies with process studies. Whereas the latter are able to provide insights into the processes associated with change and describe events that seem to be linked with successful implementation, the former attempt to account for variation in a dependent variable by planned variation in one or more independent variables. The present study was clearly an analysis of processes rather than an analysis of variation, and the results would be treated accordingly. Nevertheless, an important advance in our understanding of implementation will have been made if further studies can confirm that successful implementation, characterised by a concern for the impact of the innovation of students, is related to the following factors:

1. Explicitness of the innovation in the mind of the users;
2. The provision of feedback mechanisms for all participants involved in the implementation process;
3. Active user participation in decision making.

The present study clearly suggests that much could be gained from further studies along these lines.

2. The role of the user in TAFE

This study clearly indicated that, in terms of implementation processes, users in TAFE have much in common with their colleagues in the compulsory education sectors. Like primary and secondary teachers, the TAFE lecturers in the present study have well-defined views about the nature and purpose of training and education and their views influence decisions about implementation. TAFE lecturers cannot be treated as passive receptors of ideas, practices and innovations: they critically assess whatever is brought before them and will suggest or make changes where they think this is important. While they are very much aware of their role in serving the needs of industry they are also aware of their own professional competence as tradespeople and educators.
Many studies of curriculum implementation based on primary and secondary schools have indicated the strong role played by users as the mediators of innovation. This was also the case for TAFE lecturers in the present study. When they were critical of innovation it was usually for the reason that, in their view, improvements could be made to either the implementation process or to the actual product being implemented. It seems important to understand that individual lecturers have a very strong sense of what is best for their students and are not content to settle for anything less. The TAFE lecturers in this study revealed that they were highly professional, highly motivated decision makers who had the ability to adapt and modify innovations to suit the needs of their students and their particular environments. Assessing the extent of modification was not an aspect of the present study but there seems little doubt that TAFE teachers will modify innovations in what they see to be the interests of their students.

3. Providing staff development to assist curriculum implementation

All lecturers in the present study were agreed that very little had been done in the way of providing specific staff development experiences for staff involved in implementing the innovations. In the Electrical area, the views of lecturers were at odds with the views of course designers, who were as adamant that such experiences had been provided. Nevertheless, user perceptions at least indicate that the impact of any staff development was minimal.

Given either the lack of effectiveness or complete lack of staff development, a surprising result of the study was the relative unimportance attached to Stage 1 (INFORMATIONAL) concerns. Lecturers did not appear to want any further information about the innovation even though this had not been specifically provided through staff development. This raises the question, then, of what should be considered as appropriate staff development to accompany curriculum implementation given that information about the innovations can be disseminated through other channels?

Fullan and Pomfret (1977) have pointed out that intensive staff development as distinct from single workshops or pre-service training can be an important strategy to assist implementation. The aim of such a program would be the complete resocialisation of the user until he/she felt comfortable with the demands of the innovation. The program should take place not only prior to implementation but during early implementation as well, and should provide users with demonstration models and experiences as well as psychological reinforcement. Thus, staff development should be neither isolated nor shortlived; rather, it should be seen as an ongoing activity that is a crucial factor in bringing about successful implementation.

A final point has to do with the provision of staff development not only for initial users of the innovation but also for users who come to it after a first round of implementation. It seemed to be the case, in the Electrical area in particular, that most effort went into initial implementation but little time seemed to be devoted to inducting new lecturers into the course.

This may well be as much a task of pre-service training as in-service staff development yet it is one that clearly needs attention. Staff
development should be included as a training device for all users during both initial and subsequent implementation.

4. Relationship between curriculum design and curriculum implementation

It was pointed out in the introduction to this report that TAFE systems in Australia have relied on the efficacy of systematic curriculum design models to produce usable curricula. It seems clear from the results of this study that such models do little more than produce curriculum documents that must then be interpreted by users. A realistic approach to curriculum design will therefore take into consideration possible user reactions and attempt to cater for them. This can be most easily done where the users are also the designers (as in the case of the instructional modules for the Plumbing pre-apprenticeship course) but can also be attempted by a central design team preparing materials for dissemination. It involves viewing curriculum development as an holistic process involving both design and implementation. The lessons learnt from curriculum implementation must inform the design process otherwise design takes place in a vacuum and barriers to successful implementation can be created from the beginning.

5. Curriculum decision making and implementation

The two innovations in the present study provided examples of different decision making structures and highlighted the importance of initial implementation. For both innovations, decisions to proceed with the development task were made centrally and without reference to potential users. In the Electrical area, the design phase then proceeded and products were disseminated for use in local colleges. In the Plumbing area, the design and evaluation of the instructional system was placed in the hands of the users who then became decision makers in regard to course construction. The success of the Plumbing course would seem to suggest that major policy decisions can be made centrally if users can become active decision makers during initial implementation. It does not seem to be a matter of handing over all decision making to local groups. Rather, it is a matter of providing decision-making opportunities that will involve users in developing a sense of ownership over the curriculum documents. It is a complex process that requires real power to be placed in the hands of users.

6. Classroom level implementation

This study has not sought to report on classroom level implementation yet it recognises that much can be learnt from close observation of the operational curriculum. The emphasis in the present study has been on the perceptions and concerns of users about implementation processes. These perceptions and concerns are important to understand, since at present very little is known about them and it can be hypothesised that they, in fact, determine the form that curriculum will take. An appropriate follow-up study would be one that sought to trace the relationship between concerns and classroom practice.
7. Implications of the present study for policy makers

Policy makers are often faced with the harsh realities of allocating limited resources in the context of unlimited demand. Unfortunately, this study will make that task harder rather than easier. The study has indicated the importance of paying close attention to the implementation phase of curriculum development. This cannot be done without allocating resources to ensure that adequate equipment is available to accompany the introduction of new courses, that ongoing staff development is a feature of both pre-implementation and initial implementation phases of projects, and that adequate time is made available for staff to become involved in meaningful activities related to the innovation. At the same time, renewed attention must be paid to the curriculum design process to ensure that it takes implementation realities into consideration. Thus, it is not simply a matter of transferring resources from the 'front-end' of curriculum development to later stages; it is a matter of attending to curriculum development as an holistic process and appreciating it as an interactive activity.

In the TAFE context, the end result of well-developed vocational curricula is a skilled tradesperson or technician who can contribute to society both socially and economically. Thus, if methods can be found to improve curriculum processes they should be supported in the interests of both individuals and society as a whole. The present study has suggested a number of directions that could be followed to bring about curriculum improvement and, it is hoped, lay the groundwork for future studies. As Fullan and Pomfret (1977) have pointed out:

A great deal of work remains to be done on conceptualizing the meaning and processes of implementation, on gathering and analysing data on different aspects of the process, on assessing the consequences of different strategies, and on deriving specific policy recommendations at all levels of the political and educational system.
REFERENCES


APPENDIX A
STAGES OF CONCERNS QUESTIONNAIRE

NAME: ________________________________________________

The purpose of this questionnaire is to determine what people who are using or thinking about using various programs are concerned about at various times during the innovation adoption process. The items were developed from typical responses of school and college teachers who ranged from no knowledge at all about various programs to many years experience in using them. Therefore, a good part of the items on this questionnaire may appear to be of little relevance or irrelevant to you at this time. For the completely irrelevant items, please circle "0" on the scale. Other items will represent those concerns you do have, in varying degrees of intensity, and should be marked higher on the scale.

For example:

This statement is very true of me at this time. 0 1 2 3 4 5 6 7

This statement is somewhat true of me now. 0 1 2 3 4 5 6 7

This statement is not at all true of me at this time. 0 1 2 3 4 5 6 7

This statement seems irrelevant to me. 0 1 2 3 4 5 6 7

Please respond to the items in terms of your present concerns, or how you feel about your involvement or potential involvement with (please specify the innovation). We do not hold to any one definition of this program, so please think of it in terms of your own perceptions of what it involves. Remember to respond to each item in terms of your present concerns about your involvement or potential involvement with the above named innovation.

Thank you for taking time to complete this task.
Irrelevant  Not true of me now  Somewhat true of me now  Very true of me now

<table>
<thead>
<tr>
<th></th>
<th>I am concerned about students' attitudes towards this innovation.</th>
<th>0 1 2 3 4 5 6 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>I now know of some other approaches that might work better.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>3</td>
<td>I don't even know what the innovation is.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>4</td>
<td>I am concerned about not having enough time to organize myself each day.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>5</td>
<td>I would like to help other faculty in their use of the innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>6</td>
<td>I have a very limited knowledge about the innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>7</td>
<td>I would like to know the effect of reorganization on my professional status.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>8</td>
<td>I am concerned about conflict between my interests and my responsibilities.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>9</td>
<td>I am concerned about revising my use of the innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>10</td>
<td>I would like to develop working relationships with both our staff and outside staff using this innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>11</td>
<td>I am concerned about this innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>12</td>
<td>I am not concerned about this innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>13</td>
<td>I would like to know who will make the decision in the new system.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>14</td>
<td>I would like to discuss the possibility of using the innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>15</td>
<td>I would like to know what resources are available if we decide to adopt this innovation.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>16</td>
<td>I am concerned about my inability to manage all the innovation requires.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>17</td>
<td>I would like to know how my teaching or administration is supposed to change.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
<tr>
<td>18</td>
<td>I would like to familiarize other departments or persons with the progress of this new approach.</td>
<td>0 1 2 3 4 5 6 7</td>
</tr>
</tbody>
</table>
19. I am concerned about evaluating my impact on students.

20. I would like to revise the innovation's instructional approach.

21. I am completely occupied with other things.

22. I would like to modify our use of the innovation based on the experiences of our students.

23. Although I don't know about this innovation, I am concerned about things in the area.

24. I would like to excite my students about their part in this approach.

25. I am concerned about time spent working with non-academic problems related to this innovation.

26. I would like to know what the use of the innovation will require in the immediate future.

27. I would like to coordinate my effort with others to maximize the innovation's effects.

28. I would like to have more information on time and energy commitments required by this innovation.

29. I would like to know what other faculty are doing in this area.

30. At this time, I am not interested in learning about this innovation.

31. I would like to determine how to supplement, enhance, or replace the innovation.

32. I would like to use feedback from students to change the program.

33. I would like to know how my role will change when I am using the innovation.

34. Coordination of tasks and people is taking too much of my time.

35. I would like to know how this innovation is better than what we have now.
Interview Schedule

1. Could you describe the plumbing pre-apprenticeship course for me?
   Probes: Exactly how is it different from other forms of preapprenticeship training?
   How does it differ from traditional apprenticeship training?
   What is it, do you think, that makes people describe it as an innovation?

2. How long have you been involved in the course?
   Probes: When did it start?
   How did you get to be involved?
   Are you particularly committed to pre-apprenticeship training?

3. How was the course introduced at your College?
   Probes: Was it a college initiative?
   Who was largely responsible for it?

4. Have you come across any particular problems during the implementation of the course?
   Probes: How have you dealt with these problems?
   How much help have you had in overcoming some of these problems?

5. Did you receive any special training or staff development to help you with the course?
   Probes: If Yes: Could you describe the training you received?
   If No: Do you think some kind of training would have been helpful?
6. Have you collaborated very much with other people who have been teaching the course?

Probes: Have you ever met with people who are teaching the course at the other Colleges?
Do you think collaboration is a useful thing?

7. Can you think of ways in which the course might be improved?

Probe: What improvements have taken place since the course first began?