

INDUSTRIAL LEAVE AS PART OF STAFF DEVELOPMENT IN TAFE

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**ABSTRACT**

*Staff in TAFE Colleges, heads of departments in those colleges, and TAFE authorities, all place a high priority on maintaining a knowledge of modern developments in industry and commerce as a component of staff development. One of the important forms of provision for this aspect of staff development is the release of staff from teaching duties to enable active direct experience of industry. This paper reports on a study of the operation of an industrial leave program in one state in terms of the attitudes of staff, the benefits to participants, and the changes in teaching programs reported to result from the experience of industry. It concludes that industrial experience should be an important component of staff development in TAFE.*

Introduction

Maintenance of a knowledge of modern developments in industry and commerce is seen as an important staff development need in TAFE by a wide range of participants (TEC, 1981). One of the important ways in which this need can be met is through the release of staff from teaching duties to actively participate in relevant industries. A program of providing for this participation was implemented in Victorian TAFE colleges in 1981. This paper reports on a study of staff attitudes in 1978, which helped inform the development of that program and an evaluation of the program as it operated in 1981. Four main sources of data are used in the paper.

- 1 A survey of the views of TAFE staff (203) and their heads of department (73) in nine colleges concerning staff development needs. This represented a response rate of 73 per cent of the sample of staff.
- 2 A survey of 288 full-time TAFE staff across Victorian TAFE institutions about their attitudes to industrial leave. This represented a 95 per cent response rate from a stratified sample of 305 TAFE teachers in 20 institutions.
- 3 A survey of 78 of the 87 participants in Industrial Release programs in Victoria during 1981.
- 4 Interviews with 56 of the participants in Industrial Release.

Attitudes of TAFE Staff

This section draws on information gathered in the two surveys conducted in 1978 before the introduction of industrial release programs as part of staff development in Victorian TAFE (Fordham and Ainley, 1979). The first concerned the perceived needs in staff development of full time teachers. The second involved an assessment of the attitudes of TAFE staff towards industrial leave as form of staff development. As shown in Table 1 the area rated as most important in terms of staff development was that designated as 'a knowledge of modern development in industry and commerce'. Some 74 per cent of teachers rated this as an essential area of staff development. Heads of section also rated this area of staff development as most generally important for the teachers in their section. Those people only differed from the teachers in the higher rating which was accorded to 'skills in curriculum development'.

The second survey showed strong support among teaching staff for a scheme of industrial release. Nearly 80 per cent claimed that their current contact with industry was inadequate. In ranking the importance of various possible ways of keeping up-to-date with modern developments in commerce and industry, 'hands on' experience was ranked most highly. Eighty five per cent of respondents indicated that they would participate in a scheme of industrial release defined as 'a period spent in industry, business, and other organizations for the purpose of updating knowledge of upgrading practical skills'.

Table 1 Perceptions of Victorian Full-time TAFE Teachers and Heads of Section Concerning Staff Development Needs

Area of teaching-related competency	Staff development needs of full-time teachers as perceived by ...		Proportion of full-time teachers indicating that further development in this area is 'essential' (per cent)
	Full-time teachers (median)	Heads of section (median)	
1 Knowledge of Basic Subject Matter	1.73	2.03	38.7
2 Teaching Skills Associated with Conducting Instruction	1.71	1.75	39.2
3 Understanding Assessment and Evaluation Procedures	1.82	1.78	32.8
4 Skills in Curriculum Development	1.64	1.38	43.4
5 Knowledge of Modern Developments in Industry and Commerce	1.18	1.30	74.1
6 Skills in Continuing Professional Development	1.84	1.66	31.1
7 Knowledge and Skills in a Wide Variety of Areas	1.95	1.86	23.3
8 Skills in Counselling Students	1.75	1.52	37.5
9 Interpersonal Skills	1.78	1.90	36.5
10 Knowledge 'Routine' Procedures	1.69	1.74	41.2
11 Knowledge of the Philosophy of TAFE	1.81	1.50	34.2
12 Knowledge of Elementary Administrative Procedures	1.91	1.83	26.2

<u>Scale for full-time teachers</u>	<u>Scale for heads of section</u>
1 = essential	1 = most teachers
2 = helpful but not necessary	2 = a few teachers
3 = not needed at all	3 = no teachers

The survey also provided information concerning the preferred format of industrial release, the preferred period and frequency of that release, and preferred working conditions. Regarding the format of industrial release 65 per cent of staff preferred 'hands on' working experience as opposed to observational experience and 57 per cent preferred full-time to part-time release. Table 2 presents data which confirm an expected association between preferences regarding the type of experience and preference regarding the continuity of a program. Basically those who preferred 'hands on' experience also preferred a full-time program and those who preferred observational studies also preferred a part-time program. There was more variation concerning the frequency and period of release with the most commonly preferred arrangement being one to three months every two to three years. In terms of working conditions teachers preferred industrial release to be on the basis of their salary being paid their present employer (84 per cent) and working to the hours of attendance in industry (76 per cent).

Table 2 Preferred Modes of Industrial Release by TAFE Teachers in 1978 (Percentages have been recorded: N = 236)

Continuity	Style		Total
	'Hands on'	Observation	
Full-time	48.7	8.1	56.8
Part-time	16.5	26.7	43.2
Total	65.2	34.8	100

Within the general pattern of preferences for the organization of industrial release there was an indication of some differences between fields of study. Even though generally more respondents preferred 'hands on' experience to observation this was less pronounced for teachers from Building Studies, Engineering, Personal Services or General Studies than for the other seven fields of study. Relevant data have been shown in Table 3.

In summary the information gathered in 1978 suggested that maintaining a knowledge of modern developments in industry was seen as an important need in staff development, that industrial release was seen as likely to be an effective way of meeting that need, and that

Table 3 Preferred Type of Release by Field of Study for TAFE Teachers in 1978  
(Percentages shown in brackets)

Field	Type of Program	
	'Hands on'	'Observational'
1 Building studies, engineering personal services and general studies	70 (31%)	52 (23%)
2 Applied science, art and design, business studies, rural, paramedical and industrial services	79 (35%)	25 (11%)

most TAFE staff were prepared to participate in such a program. Within those general conclusions there were variations between TAFE staff with respect to the most appropriate format for Industrial Release.

Implementation of the Industrial Release Program

In Victorian TAFE at the time of the introduction of Industrial Release staff development was largely college based. Hence funds were made available by a standing committee to be used within specified guidelines (TSCSD, 1980). The general policy aim was:

to assist in improving the quality of TAFE in Victoria by maintaining the relevance of TAFE staffs' knowledge and skills to current industrial practice. (TSCSD, 1980)

It was specified that the programs should involve direct contact with industry, that the teacher should work to host industry conditions, and that the programs should be individually designed, but it was recognized that a variety of formats including both 'hands on' and 'observational' programs conducted on a full time or part time basis would be appropriate. Hence, while administrative procedures were common there was scope for variety in the type of program. However, there were also general expectations and in this paper we explore the relation of different program characteristics to these expectations.

Preceding the introduction of a system wide provision for industrial release in Victorian TAFE a workshop was held which involved staff from most colleges (TSCSD, 1980:15-23). Part of that workshop identified the intended benefits to participants of such schemes. In those expectations held for Industrial Release it was possible to detect two levels of outcome. At the first level it seemed to be expected that such contact with industry would result in "an increased awareness of modern industry and commerce" and "increased personal confidence and competence". These two types of outcome differ in that the first refers to the participants knowledge of practices while the second involves the participant feeling differently. At the second level it seemed to be expected that this experience might be manifest in changes which affect students: in the content of lessons, in teaching procedures, and in the approach of the department. These expectations have been represented in Figure 1.

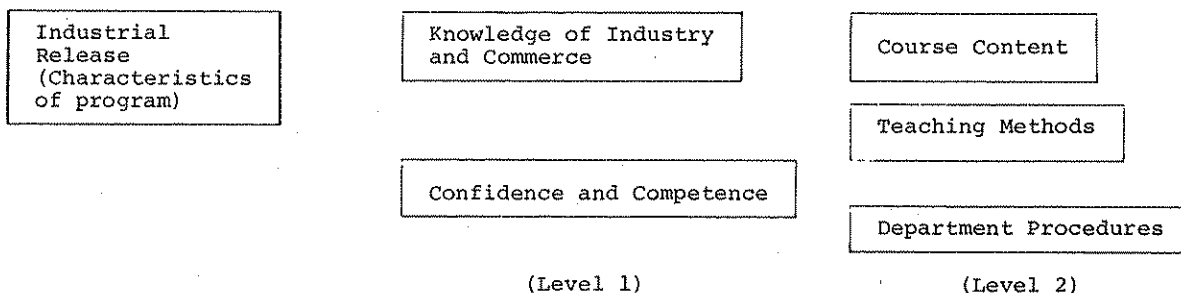


Figure 1 Levels of Outcome from Industrial Release Programs

Patterns of Participation and Organization

Levels of Participation

During 1981 the typical program of Industrial Release was of 5 days duration and in total some 759 person days were used for these programs. Eighty-seven separate programs were identified.

Details of the duration of the programs have been recorded in Table 4. Data reported elsewhere suggest that participation was generally representative of occupational fields (though there was some under-representation of general studies), and involved teachers averaging 9 years teaching experience (a little more than average) and 11 years pre-teaching experience in industry (Ainley, 1982).

Table 4 Frequency Distribution of the Duration of Industrial Release Programs in 1981

Duration (Days)	Number of Programs	Percentages	Duration (Days)	Number of Programs	Percentage
1	1	1.1	11	1	1.1
2	6	6.9	14	1	1.1
3	14	16.1	15	2	2.3
4	10	11.5	16	2	2.3
5	24	27.6	17	1	1.1
6	2	2.3	18	1	1.1
8	3	3.4	20	4	4.6
9	1	1.1	22	3	3.4
10	8	9.2	>22	3	3.4

Mean = 8.72                                      Median = 5.02  
 Standard deviation = 9.72                      Mode = 5

The Format of Programs

In discussing the format of programs it is possible to consider continuity ('full-time' or 'part-time') and style ('hands on', 'mixed', or 'observational'). Table 5 contains information about the continuity and style of programs conducted during 1981. In terms of continuity thirty nine per cent of programs were full-time of one week or more, thirty nine per cent were part-time extending over more than one week, and twenty two per cent were short programs completed in less than one week.

With regard to the style of program conducted it can be seen about 16 per cent of programs were described as 'hands on' with a further 38 per cent involving some direct experience. Most (nearly 80 per cent) of the short programs of less than one week were mainly observation. Participants in those programs commented during the interview that they had too little time to be involved in the firm in a direct way or that the purpose of the program was to observe some specific facet of the industry. In addition an association between continuity and style was noted in that programs which were full-time were more likely to involve some 'hands on' experience. Differences in program style across occupational field were observed and have been recorded elsewhere (Ainley, 1981).

Table 5 Continuity of Style of Program in 1981

Style	Programs of One Week or More			All Programs		
	Part-time	Full-time	Total	Part-time	Full-time	Total
'Hands on'	4	10	14	4	10	14
Mixed	11	18	29	15	18	33
Observation	19	6	25	34	6	40

$\chi^2 = 11.03$  with 2 df  $p < .01$                                        $\chi^2 = 19.21$  with 2 df  $p < .01$

In addition an association between continuity and style was noted in that programs which were full-time were more likely to involve some 'hands on' experience. Differences in program style across occupational field were observed and have been recorded elsewhere (Ainley, 1981).

Initiation of the Program

One of the important intended characteristics of Industrial Release programs was that the individual participant would play an important role in initiating and planning a program to suite their own requirements. In that process it was considered that a head of department would assist, and that a college body would approve, but that the program would be essentially designed to match the individuals requirements. In practice just under half of all the programs were initiated by an individual submitting a proposal. However the head of department was

important in initiating about one third of programs and had an even larger role in planning. Fordham and Ainley (1980) stressed the role of department heads in general staff development and it seems they played an important role in Industrial Release programs in particular.

#### Some Programs

One of the themes above has been the variety in the types of program undertaken as part of Industrial Release. To illustrate some of the variety of programs undertaken the following brief descriptions of a few of those reported are included.

- *Program A involved a staff member for four days per week over a two week period working in a medical research establishment. It was concerned with acquiring skills in, and learning about, tissue culture and other sterile techniques, labelling with radioactive tracers, and electrophoresis. It also involved learning about practical variations on more standard laboratory procedures. Much of the detail involved was not available in books and there were additional benefits in learning about new equipment and establishing valuable contacts. The program was closely related to the development of new units in a Biology technicians course.*
- *Program B was in the automotive engineering area. The participant worked in the service division of a large truck manufacturing company. It was initiated by the head of department, who had a number of similar projects for other staff planned, lasted for one week, and was full-time. It began with observation but moved quickly into direct work experience. Some new time saving methods of work were reported (e.g. tappett adjustment), and a wider range of more modern examples were available for use in teaching students. The program also enabled a wider range of contacts to be established for further enquiries.*
- *Program C involved two weeks full-time work for a business machine company. It extended the staff members previous substantial experience in industry into a wider range of data processing skills especially those regarding practical applications in small business. The program involved 'hands on' experience (but not a regular work load) and access to observation of a range of procedures. In addition to boosting confidence and learning about the organization of an industry the program resulted in knowledge of practical applications of accounting systems, hardware and machines, business requirements, and controls in systems. It also provided practice in programming. A number of different examples have been introduced into college courses and new short courses for small business and transition education are planned.*
- *Program D involved a building studies teacher spending one week with a building surveyors department. It involved a mixture of 'hands on' and observational experience in processing building applications, inspecting building applications, writing reports, examining proposals for planning permits, on-site inspections of sewerage lines and scaffolding, and final inspections for occupancy certificates. The program was more concerned with finding out about the way regulations are interpreted and the procedures which are followed than with specific new techniques.*

#### Reported Benefits

In an earlier section of the paper it was suggested that it might be possible to distinguish two types of outcome: benefits to participants and changes in teaching in TAFE.

#### Benefits to Participants

Participants in programs reported the extent to which they benefited in seven areas on a four point scale from nil to considerable. From the reported benefits it was possible to test the proposition that benefits to participants could be considered in terms of two underlying dimensions. The results of a factor analysis recorded in Table 6 confirmed the presence of two underlying dimensions. These were a knowledge component related to an awareness of present practices and future needs in industry and an affective component related to confidence perceived adaptability, and future roles. Interestingly, the perceived quality of employment guidance which could be offered to students was associated with this second dimension rather than with the knowledge dimension. Similarly the continuing contact with business and industry was associated with the affective rather than the knowledge dimension. One possible interpretation is that both these aspects of TAFE teaching depend more on the confidence of the staff member than on knowledge of what happens.

Table 7 records statistics regarding the responses given by respondents to questions about the extent to which they benefited from the Industrial Release program during 1981. Overall it can be seen that their views of the benefits on industrial release programs were positive. On the two items concerned with a knowledge of business or industry the general response was that the effects were considerable. Over the items concerned with personal development the responses were commonly moderate with an even more positive response being accorded to the item concerned with continuity of contacts in business and industry.

**Table 6 Factor Analysis of Items Concerned with Benefits to Participants in Industrial Release**

Item (abbreviated)	Factor		Loadings
	1		2
Present practices in industry and commerce			0.70
Future needs of industry and commerce			0.97
Confidence in dealing with students	0.51		
Adaptability to future organizational changes	0.64		0.32
Future positions of responsibility	0.76		
Quality of employment guidance you can offer students	0.71		
Continuing contact with business and industry	0.37		
Eigen Values	3.01		1.30
Total variance explained = 62%			

Note: Factor loadings less than 0.30 have been omitted

The information from the interviews confirmed this general pattern of results. The most common comment concerned learning about and using new or special techniques. In some cases the technique or equipment was new to the industry while in other cases the techniques were an extension of previous experience in other aspects of that industry. Examples of benefits which were related to new developments were the learning of techniques in plumbing for LP gas installations, learning about systems of microprocessor control in a processing plant, learning about new developments in the technology of sewing machines and the use of moulded frames in furniture manufacturing. Examples of extending experience included the development of skills in decorative pottery for someone experienced in production pottery, and the extending of experience in confectionary manufacture by someone whose prior work had been in cooking and baking. Another commonly mentioned aspect of knowledge of business and industry concerned organizational procedures. An example of this was provided by a participant from the electrical trades who was concerned with the job profiles of electricians, the ways in which that work interlocked with the rest of the major plant in which he was located, the importance of electrical control systems based on micro amplifiers and semi-conductors, and the training needs of an employee in such a plant.

**Table 7 Effects on Participants (Percentages in Categories have been recorded)**

Item (Abbreviated)	Median <sup>a</sup>	Nil (1)	Slight (2)	Moderate (3)	Considerable (4)
Present practices in industry and commerce	3.88	1	4	13	81
Future needs of industry and commerce	3.67	3	11	26	60
Confidence in dealing with students	3.11	18	17	25	40
Adaptability to future organizational changes	2.98	7	24	40	29
Future positions of responsibility	2.90	19	16	37	29
Quality of employment guidance	3.46	3	17	35	45
Continuing contact with business and industry	3.80	1	7	20	72

Just under half those interviewed mentioned an aspect of personal development as a major benefit of the industrial release program which they had undertaken. Confidence and credibility were the most frequently mentioned terms in this area. One staff member who worked as a technician with an electronics equipment repairer indicated that the experience had provided a great deal of confidence. Credibility was also mentioned in relation to students in that being able to draw upon recent examples enhanced the credibility of the staff member and therefore the effectiveness of the teaching. Several participants (23 per cent) mentioned contacts in industry in the context of being able to ring up someone they knew through working with them and of 'feeling part of the scene'.

Changes in Teaching

One of the limitations on evaluating the impact of Industrial Release was that some participants had only just returned from the program so that the time available for any change was short. Within this limitation two types of changes were mentioned: changes made by an individual teachers in the content of lessons or teaching procedures, and changes made by the teaching department in content, methods or systems of employment advice to students.

Regarding the participants' own teaching two questions were asked in which a rating of the effect from considerable to nil was sought. Results regarding the participants own teaching have been recorded in Table 8. Despite the limitations outlined above it was found that the typical participant in an Industrial Release Program in 1981 reported a moderate impact on teaching both in terms of content and teaching procedures. A slighter stronger effect was noted for content changes than for changes in teaching procedures.

Table 8 Reported Effects of Industrial Release on Teaching in TAFE

Item	Median Rating	Effect (%)			
		Nil (1)	Slight (2)	Moderate (3)	Considerable (4)
Changes in the lesson content	3.27	1	17	42	40
New teaching procedures	2.88	11	25	39	25

With respect to changes across a teaching department, about two thirds of the survey respondents reported some change in the work of the teaching department. Most frequently mentioned changes were reported in course content (including the development of new courses, units or modules) and the detail of course content (especially in examples and exercises). However a significant number of respondents mentioned teaching procedures and employment advice. In most cases the changes described were not sweeping changes. Occasionally the changes were part of a new course development but most commonly they consisted bringing some content up to date or replacing a small section of course.

A substantial percentage of those interviewed mentioned some impact of the Industrial Release program on their teaching (nearly 90 per cent). Those comments were considered as either content changes (59 per cent of interviews), the use of different examples (80 per cent), or changes in teaching methods (25 per cent). Some of the modifications to course content mentioned included the preparation of new units in tissue culture for a biology technicians course and the development of a module on a graphical approach to building estimation which followed experience in a building firm which used these methods. Other modifications were of a smaller scale such as the wider use of specification sheets in a course concerned with fashion buying, and the incorporation of new techniques of surveying with laser instruments. The use of different and more appropriate examples was the most commonly reported form of impact on teaching. Typical cases involved safety procedures used in the servicing of car air conditioning units, the use of breakdown sheets in garment manufacturing, and quick methods of tappett adjustment in large trucks.

Changes in the work of teaching departments were also described. Two staff members concerned with fashion buying suggested to colleagues in the department that the area of fabric evaluation needed expansion and modification. Another case involved two staff who observed the role of personnel in computer servicing. At their suggestion changes were made to the organization of students in groups to work on practical fault-finding exercises.

#### The Effects of Different Types of Program

In this section of the paper we explore the issue of whether differences in the characteristics of programs (duration, style, and continuity) were associated with differences in the outcomes reported by participants. To do this the technique of multiple regression was used and based on the model represented in Figure 1. It has been represented according to the convention that any variable is potentially influenced by all variables to its left in the model. Definitions of the variables in precise terms are contained in Appendix 1.

Results of the analysis have been represented in Table 9. Those regression coefficients which were at least twice the standard error (and thus could be considered significantly different from 0 at the five per cent level) have been underlined.

From the results of the analysis it appeared that, other measured things equal:

- (a) programs of longer duration had a greater impact on the work of teaching departments than shorter programs,
- (b) those who reported more marked changes in items related to their own confidence in industry

also reported greater changes in their teaching procedures (examples used etc) and in the work of their department than did those who reported less impact on their confidence,

Table 9 Influence of Program Characteristics on Program Outcomes: Standardized Coefficients

Independent Variables	Dependent Variable				
	Knowledge of Industry	Personal Development	Lesson Content	Teaching Procedures	Department Impact
Duration	.17	.14	-.12	-.12	.28
Time Fraction	.10	.28	-.02	-.24	-.03
Style	-.14	.00	.20	.12	.11
Knowledge of Industry			.18	.27	-.13
Personal Development			.23	.37	.48
Multiple Correlation	.18		.37	.51	.57
% Variance Explained	3.3		13.8	26.1	32.9

Note: Coefficients significant at the 5 per cent level have been underlined.

- (c) those who participated in full-time programs, or programs of larger time fractions, reported a greater impact on their confidence etc than did those whose programs occupied a smaller time fraction,
- (d) those who reported greater effects on their awareness of industry reported greater impact on the teaching procedures which they used, and
- (e) part-time programs appeared to have a direct effect on teaching procedures whereas (as noted in (b) and (c)) full-time programs had a transmitted effect on teaching procedures as a result of enhanced personal development and confidence.

#### Industrial Release: A Summary

The general conclusion from these data would appear to be that, at least in the view of participants, industrial release programs had beneficial effects on their knowledge and confidence, on their teaching and on the work of their departments. Within the general categories considered participants were able to identify a number of specific features of their teaching which had been modified as a consequence of their Industrial Release program. The path analysis based on multiple regression methods did not suggest any particular program format would be universally better than others. However, the results did reinforce the importance of the variable described as representing personal development or confidence in changes to teaching procedures and the work of the teaching department. Knowledge of industry was a similarly important variable in influencing reported changes in teaching procedures. In addition the results suggested that full-time programs were associated with greater changes in reported confidence than were part-time programs and that the longer the period the greater the reported impact on the teaching department. That finding was in accord with the opinions of participants about Industrial Release. Those people were satisfied with the programs but generally favoured programs which were of longer duration and which involved more direct experience.

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